Abstracts of the IAPSCON 2009
19th to 23rd November 2009

1 Laparoscopic management of advanced paediatric urology at SRMC- our initial experience
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We present our initial experience with 6 cases of advanced paediatric urology managed at our hospital from 2007 to 2009. The cases ranged from heminephrectomy, ureterolithotomy, laparoscopy assisted PUJ repair and laparoscopic adrenalectomy. In our experience laparoscopy is feasible for advanced paediatric urology and has the advantage of magnified visual field, early recovery and excellent post op results compared to open surgery. Though the initial operative time is more compared to open procedures, over a period of time with experience, the operative time will reduce.

2 Our initial experience with 2 cases of ARM operated by Laparoscopic assisted anorectoplasty
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Case 1- Preterm- 34 week, male baby, born by emergency LSCS – abruptio placenta. Antenatal scan at 20 weeks-normal. On examination, Anal pit at the site of normal anus, depth - 5mm and surrounded by pigmented skin with radiating rugosity. X-ray showed dextrocardia. Echocardiography done on day1 of life revealed, dextrocardia, 3 pulmonary veins draining into left atrium, 1 pulmonary vein draining into IVC – scimitar vein. Ultrasound abdomen showed, right kidney not visualized in its normal position. Sigmoid double barrel colostomy done on day 1 of life. Post op course uneventful. MCU done at 6 months, Small capacity bladder and Grade -5 vesico-ureteric reflux. Lap assisted pullthrough done. Post op course uneventful. After 2 months planning for Cystoscopy, Colostomy closure and Concomitant ureteric reimplantation with or without tapering. Case 2 – LAARP done for 6 month old male child, for high ARM. No associated anomalies. Post op course uneventful. Colostomy closure done after 2 months. Passing stools 1-2 times daily. Adequate weight gain present at 1 year follow up.

3 Laparoscopic cholecystectomy for cholelithiasis in children
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Aim: To evaluate the role of laparoscopic cholecystectomy (LC) in the management of cholelithiasis in children.
Methods: A retrospective review of our experience with LC for cholelithiasis at our institution, between April 2006 and November 2008 was done. Data points reviewed included patient demographics, clinical history, hematological investigations, imaging studies. operative technique, post operative complications, post operative recovery and final histopathological diagnosis.
Results: During the study period of 32 months, 18 children (8 males and 10 females) with cholelithiasis were treated by LC. The mean age was 9.4 years (range 3 to 18). Seventeen children had symptoms of biliary tract disease and 1 child had incidentally detected cholelithiasis during a ultrasonogram abdomen for unrelated cause. Only 5(27.8%) children had definitive etiological risk factors for cholelithiasis and the remaining 13 (75.2%) cases were idiopathic. Sixteen cases had pigmented gallstones and 2 had cholesterol gallstones. All the 18 patients underwent LC, 17 elective and 1 emergency LC. The mean operative duration was 74.2 minutes (range 50-180). Post operative complications occurred in 2 (11.1%) patients. The average duration of hospital stay was 4.1 days (range 3-6).
Conclusion: Laparoscopic cholecystectomy is confirmed to be a safe and efficacious treatment for pediatric cholelithiasis. The cause for increased incidence of pediatric gallstones and their natural history need to be further evaluated.

4 First 200 cases of laparoscopy in a single unit: Learning curve and beyond
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Aim and Introduction: This is a report of 200 laparoscopic procedures in a single Paediatric Surgical Unit in a teaching hospital. The aim of presentation is to highlight the ever expanding indications with justification and to stress that once the learning curve is traversed, progress is rapid and most gratifying.
Method: 200 patients underwent laparoscopic procedures for different indications: Appendicitis, Gall bladder disease, inguinal hernia, GERD, diaphragmatic hernia, mesenteric cysts, renal stones, non functioning kidneys, accessory urethra in duplication urethra, undescended impalpable testes,
intersex disorders, sacrococcygeal teratomas, retroperitoneal ganglioneuromablastoma, splenectomy for hemolytic disease, Hirschsprung’s disease, high Anorectal malformation, ovarian cyst, urachal cyst, undiagnosed abdominal pain etc. Thoracoscopic procedures were done like plication for eversion diaphragm, oesophageal duplication cyst excision and lung biopsy. Wolf laparoscopic set was used along with hand instruments of 3 mm and 5 mm. Age range was 47 days to 14 years.

Results: There were 8 conversions. Time taken gradually came down. Indications have widened over the last one year in a significant way. There were no anaesthesia related complications. Port site infection was seen in 4 patients. Hernia recurred in 3 out of 124 patients. No change in testicular position or size was noticed in any. One case of eversion had a recurrence owing to faulty technique. One out of 5 HD cases had to be converted because of wrong patient selection.

Conclusion: Laparoscopy in children gives versatility to the surgeon. Several indications are coming up. Lap assisted procedures hold a great promise in HD and Anorectal malformations. Once the initial learning curve is mastered, the progress is fast. Laparoscopic surgery is poised to become the preferred approach to surgery in children.

5 Airway reconstructions in children
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Introduction: Airway anomalies-both congenital and acquired - are associated with significant morbidity and mortality. With more children being ventilated in intensive care units, the incidence of these anomalies is on the increase. A airway anomaly program was initiated at our centre to care for these difficult children in a comprehensive manner. This presentation summaries our experience.

Material and Methods: This is a retrospective study of a cohort of children referred to our airway team for assessment and therapy. Records of these children were maintained and a review of these records forms the basis of this study. Children with foreign bodies, non anatomical causes such as tracheobronchitis were excluded from the study. A total of 32 children were included in this study. Causes of airway anomalies were subglottic stenosis 13, tracheal stenosis 4, laryngomalacia 5, tracheobronchomalacia 13 and vascular compression 4. These children were evaluated by a detailed history, gastroesophageal reflux studies and microlaryngoscopy and bronchoscopy examination. Other investigations such as CT scans, echocardiogram, reflux studies were performed as required. Several of these children had tracheostomies. After a detailed assessment of airway structure and function, therapy was planned. Therapy included surgery (laryngotracheoplasty, tracheal resections, slide tracheoplasty etc.) in 20. There were 2 deaths-one from a cardiac related complication and the other from sepsis. Of the 30 children alive, 28 have normal airways restored. Two children are on long term tracheostomy. There was no other significant morbidity or mortality.

Conclusions: Airway anomalies are potentially life threatening and can cause significant morbidity. A comprehensive program of managing these children provides excellent results. Most children have an excellent chance of return to complete normalcy.

6 Antigrade balloon dilatation in laparoscopic assisted anorectoplasty
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Objective: To present our technique of Laparoscopic assisted anorectoplasty (LAARP) for High & Intermediate anorectal malformations (HIARM).

Method: 15 term infants with HIARM were operated from 2003 to May 2009. Three had Down syndrome. After a preliminary colostomy, LAARP was performed by 6 weeks to 5 months. Eight had recto-prostatic urethral fistula, 2 had bladder neck fistula, 2 had rectobulbar fistula. No fistula in 3. The fistula was disconnected with Harmonic scalpel or epitiome diathermy scalpel (9). A 3mm curved dissector was used to gently tunnel behind the urethra under vision from above & by assessing from the perineal incision. In 12 infants Fogarty & Foley’s catheter were retrieved one after the other through the tunnel. The balloon was inflated to dilate the tunnel under vision by withdrawing the balloon 1 to 1.5 cm at a time till the external sphincter is reached. In three cases oesophageal balloon dilator (1.2 to 1.5 mm) was used to dilate the entire tunnel gradually. Urinary catheter was removed after 5 days. Regular dilation was started after 12 days. Conversion to laparotomy was done in 2.

Results: 11 children are alive & well. One child died on day 1 due to anaesthetic reason. Another had slide tracheoplasty for tracheal stenosis at 9 months & died 3 months later due to RSV infection. 9 are on regular follow up. One child had anal stenosis & three had mucosal prolapse. One presented with skin level stenosis after a year. Children after 2 to 3 years need bowel management program.

Discussion: Dilation from perineum by an expandable trochar may traumatize the muscle complex. In our technique, dilation is performed under vision & the balloon dilates the tunnel uniformly. The muscle complex is preserved with minimal disturbance to the anatomy.

7 Apert’s syndrome – A nine years follow up Growth and development
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Aims and Objective: To present twins with Apert’s Syndrome
followed up regularly.

**Materials and Methods:** Twins with Apert’s Syndrome were operated at the age of 50 days. The procedure performed was Cranietomy and fronto-orbital advancement. The children followed up regularly and Growth and development were recorded. Both are going to School. Growth and development would shown. Pre procedure MRI would be compared with 8 year MR brain. Hand and foot reconstructive surgery has yielded satisfactory functional results.

**Conclusion:** To present the growth and development of Twins with Apert’s Syndrome following cranietomy and fronto-orbital advancement.

**8**

**Management of hepatobiliary ascariasis in children at a tertiary care referral center**

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**Aim:** Ascaris lumbricoides is the most common helminth infesting humans and its manifestations are protean. Surgical disease due to ascariasis is not restricted to the GIT alone due to its wandering habit; hepatobiliary ascariasis constitutes a major chunk of its morbidity and mortality.

**Materials and Methods:** The present study was conducted in a combined prospective and retrospective manner over a period of 7 years. 149 cases of up to 15 years of age were included in the study. Patients were included on the basis of radiological or operative evidence. All patients were managed as per set departmental protocol.

**Results:** Most patients 89% were from rural areas; disease was more common in older children and both sexes were equally affected. Seven clinical presentations were recorded; biliary colic in 49%, cholangitis in 24%, obstructive jaundice in 7%, acalculus cholecystitis in 7%, liver abscess in 7%, pancreatitis in 5% and biliary peritonitis in 0.7%. Ultrasonography was the main diagnostic modality used for diagnosis and follow up. Conservative management was successful in 83% patients medical therapy alone was required in 69% and endoscopic management was required in 14%. 17% patients required surgical intervention with the main indications being persistent biliary ascariasis in 24%, biliary ascariasis with liver abscess in 20% and biliary ascariasis with calculi in 16%. Cholecystectomy with CBD exploration was most common procedure done in 80% patients and operative drainage of associated liver abscess was required in 20% patients. There was a 1.34% mortality in our series. Reinfection was seen in 4% patients on follow up.

**Conclusion:** Hepatobiliary ascariasis is common in high prevalence areas and a high index of suspicion should be maintained when examining a child especially an older one with symptoms of hepatobiliary disease. Grey scale real time sonography stands out as the diagnostic modality of choice. Conservative management is quite successful. Surgery still has an important role in management especially in patients with complicated disease.

**9**

**A novel approach for prevention (?) Treatment) of necrotizing enterocolitis: An experimental study on rats**

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**Aim:** An increasing population of tiny newborns is now at risk for developing necrotizing enterocolitis. Inadequate tissue oxygenation, bacterial overgrowth and enteral feeding with immaturity are the risk factors for NEC. Human milk is an ideal complete food for newborn. Since feeding itself is a contributory factor for NEC, add to that is the ileus associated with sepsis, premature tiny newborn on ventilatory support are usually not feed anything orally. Moreover the pathology in NEC involves the distal ileum and colon the most. Hence we propose maternal milk through per rectal route (enema) to utilize the protective components of milk.

**Material and Methods:** Holtzman strain male rats, divided as follows: Set 1: a) Sham Group, b) NEC group and c) Milk Group. Set 2: Animals treated similar to set 1, however they would be sacrificed at the end of four weeks. Hypoxia would be produced by placing the rats in a 100% CO2 chamber for 3 minutes. Rats were then reoxygenated for 6 minutes with 100% oxygen. The procedure would be repeated for three consecutive days.

**Results:** Mean weight gain for animals of set 2 were 80.33gms, 61.00gms and 81.66gms for sham, NEC and milk pretreatment group respectively. There was statistical difference in weight gain between sham and NEC group (0.0129) and between NEC and milk pretreatment group (0.0024).

**Histology:** NEC group showed loss of normal architecture with areas of ischemic necrosis, submucosal congestion, hemorrhage and occasional transmural involvement especially in ileum and colon. Milk pretreatment did help preserve the cellular architecture. In set 2, NEC group revealed focal areas of loss of cellular architecture with mononuclear inflammatory infiltrates. Healing process was especially evident in the colonic specimen.

**Conclusion:** Milk pretreatment through the per-rectal route does provide immunity against the deleterious effects of Ischemia/reperfusion injury and help preserve the histology and cellular function besides maintaining the weight gain in rats.

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**Evaluation of blood levels of nitric oxide as a means to differentiate neonatal hepatitis from extra hepatic biliary atresia**

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Aims: With the currently available diagnostic modalities, many times it is not possible to differentiate between neonatal hepatitis and extra hepatic biliary atresia without a per-operative cholangiogram. In this study we have tried to evaluate the usefulness of nitric oxide levels in the peripheral blood as a marker of extra hepatic biliary atresia.

Methods: During the period June 2008 – May 2009 20 patients of infantile obstructive cholangiopathy were enrolled in this study and were evaluated by pre-operative levels of nitric oxide in the peripheral blood. The nitric oxide levels were reflected by the serum levels of their stable metabolites nitrate and nitrite. The nitrate was reduced to nitrite by nitrate reductase and the nitrite levels assessed by the Greiss reaction spectrophotometrically at 540nm. On the basis of an operative cholangiogram 17 patients were diagnosed as extra hepatic biliary atresia (Group I) and the remaining 3 patients had a patent bilio-enteric pathway (Group II) that could be successfully flushed; histopathology of the liver confirmed the diagnosis of neonatal hepatitis. The mean levels of nitric oxide for each group were compared statistically and the significance of difference/p value calculated.

Results: The mean age of the patients in the two groups was 2.79 months +/- 0.751 SD and 2.667 months +/- 0.577 SD respectively. The p value for this difference was 0.866 (>0.05); the two groups were therefore comparable. The mean nitric oxide levels were 62.433 +/- 16.325 SD and 36.96 +/- 11.794 SD respectively in Groups I and II. The p value for this difference was 0.022 (>0.05); the difference was therefore significant. The mechanism for this difference will be discussed.

Conclusion: The blood levels of nitric oxide in patients of infantile obstructive cholangiopathy were found to be significantly higher in cases of extra hepatic biliary atresia as compared to those with neonatal hepatitis. These preliminary results suggest that this may serve to pre-operatively differentiate extra hepatic biliary atresia from neonatal hepatitis and hence avoid a per-operative cholangiogram. However, a larger study will be required to validate these results.

11 Recovery of liver functions following Kasai portoenterostomy for biliary atresia

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Aims: Biliary atresia is a progressive fibrosclerosing cholangiopathy of infancy. Recovery of liver function tests [LFT] following Kasai portoenterostomy has not been documented. The present study aims to review the results of serial LFTs in 8 patients with kasai portoenterostomy.

Material and Methods: During October 2007 –June 2009, 8 patients [males=4, females=4] of biliary atresia were operated in the department of Paediatric surgery. All the patients had LFT [total & direct bilirubin, SGOT, SGPT, Alkaline phosphotase, gamma glutamyl transferase, serum albumin and prothrombin time], ultrasonography and HIDA scan. Kasai portoenterostomy was performed with age at surgery varying from 45 days-123 days [median=62 days]. The liver function tests were serially repeated at 2-3,6,9,12,15,18,21 months post operatively and HIDA scan was performed at 10-12 months of surgery.

Results: The follow up ranges from 3 months -21 months[mean=11 months]. All patients had type III atresia [patent gall bladder with atretic ducts-4/8, patent GB & CBD along with proximal atresia in 2/8, atretic GB & ducts in 2/8]. 5 patients, more than 6 months postoperatively, were anicteric with serum bilirubin<1 mg%, had excretory HIDA and SGOT/PT showed a declining trend, with near normal levels[mean 53,63 IU/L respectively] at last follow up. Alkaline phosphotase & GGT, however, showed abnormally high values at last follow-up [mean1218 IU/L, 525IU/l respectively]. 3 patients < 6 months postoperatively had total serum bilirubin varying from 2-4 mg%, Alkaline phosphotase and GGT were high [mean 1800,625 IU/L]

Conclusions: Declining trends of serum bilirubin and SGOT/PT after Kasai portoenterostomy are associated with abnormally high levels of alkaline phosphatase and GGT. The persistent elevation of ALP & GGT following Kasai may be suggestive of ongoing intrahepatic cholestasis, it merits close follow up.

12 Long term predictors of success after surgery in biliary atresia

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Aim: To evaluate the long term predictors of success after Kasai portoenterostomy in children with biliary atresia.

Material and Methods: A retrospective analysis of 23 patients over a period of 10 years was carried out. They were evaluated with respect to their clinical picture, liver function tests and HIDA scan both pre-op and post-op. These various variables were compared between these two groups to help in an early prediction of success or failure following Kasai portoenterostomy. Also the complications of portal hypertension after a successful surgery were evaluated.

Results: Twelve patients had a successful outcome and 11 had an unsuccessful outcome after surgery. Serum bilirubin, HIDA scan, GGT and liver histology were found to be useful in early prediction of success vs failure. Also the incidence of complications was determined in the so called successful Kasai survivors.

Conclusion: HIDA scan and serum bilirubin levels before and after surgery, were the most useful predictors of success vs failure in biliary atresia. Early prediction of success vs failure will help to optimize treatment in both the groups with
regards their nutritional status and timely referral for liver transplantation.

13 Role of hepatic angioplasty in the successful treatment of Budd Chiari syndrome
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Aim: To study the usefulness and evaluate the outcome after hepatic angioplasty in children with Budd Chiari syndrome. 

Material and Methods: A retrospective analysis of 11 patients with Budd Chiari syndrome was carried out. They were diagnosed with the help of USG-Doppler, liver biopsy and MR venography. They were treated with hepatic angioplasty and balloon dilatation of the thrombosed veins followed with prolonged anticoagulation.

Results: Of the 11 patients, only 1 child had a portocaval shunt and an unsuccessful outcome in the early period of this analysis. Six children had a favourable result in the immediate period following hepatic angioplasty and continue to do well on follow up. One child died of hematemesis while awaiting angioplasty and one died of renal failure in the immediate post angioplasty period. Three children did not respond favourably to angioplasty, had poor liver histology and had persistent ascites requiring prolonged anticoagulation.

Conclusion: Hepatic angioplasty and balloon dilatation is an effective and less invasive modality for the treatment of Budd Chiari syndrome in children.

14 Single stage complete repair of bladder extrophy in adolescence with failed initial closure
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Bladder extrophy children presenting late with failed initial closure is not uncommon in Indian scenario. We present our experience of single stage complete repair of 4 adolescent patients with failed initial closure.

Materials and Methods: 3 boys and 1 girl with age ranging from 8 to 21 years (mean age- 14 years) underwent standard bladder closure with penile disassembly technique for epispadias repair as described by Grady and Mitchell along with bladder neck repair and bilateral ureteric reimplantation. 2 boys had their bladder augmented in the same sitting due to small fibrotic bladder plate. Ileocystoplasty was performed in 1 patient and another patient underwent Arap type of agumentation using non detubularized sigmoid segment with proximal end brought out as a temporary end colostomy. Other 2 patients had sigmoid cystoplasty after 1 year due to small capacity bladder.

Results: The repair resulted in hypospadias in all the 4 children. Position of the meatus was coronal in 2 patients and distal penile in 1. One patient who had Arap type of bladder agumentation had post operative obstruction due to adhesions and underwent re exploration and adhesionolysis. Contience was defined as dry for more than 3 hours and partial continence was defined as dry for 1-3 hours and incontinence was defined as patient dry for <1 hour. 3 patients are continent and 1 patient is partially continent. Vesicoureteric reflux is not seen in any of these patients.

Conclusion: Single stage complete repair with or without bladder augmentation is ideal procedure for patients presenting late in adolescence after failed initial closure. Contience was achieved in 75% of cases using this procedure.

15 Experience with video assisted thoracoscopic removal of pulmonary hydatid cysts in children
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Pulmonary hydatid disease is prevalent in many parts of world including India. In our small series of 5 pediatric patients, all patients were diagnosed with clinical and radiological findings on plain X-ray chest and CT (Computed Tomography) chest. All of them received oral albendazole 10 mg/kg/day soon after diagnosis except in one patient in which preoperative differential diagnosis was bronchogenic cyst and lung abscess (case 4). All underwent video assisted thoracotomy. Simple endotracheal intubation was utilized in all cases. Complete thorascopic removal was successful in 3 cases, while conversion to open thoracotomy was required in 2 cases. All of them showed rapid recovery except for one patient in whom prolonged intercostal drainage was present for 2 weeks. The average duration of procedure was 150 minutes and average length of hospital stay was 4.5 days except case 2, which was discharged on day 15 due to prolonged air leak. Histopathology in all cases was suggestive of hydatid cyst. At mean follow up of 6 months, all patients are asymptomatic and doing well.

16 To compare the efficacy of Intralesional Bleomycin with Sodium Tetradeyl Sulphate in treatment of Hemangiomias and Lymphangiomas
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Aim: Sclerosing agents have been tried as an alternative to surgical excision in the conservative management of lymphangiomas and hemangiomas. Sclerotherapy is effective in more than 90% of cases but not in involuting lesions. Sclerosing solutions are both tissue irritants and thrombogenic agents that provoke an inflammatory reaction, which causes fibrosis and obliteration of vascular channels. Sclerosants currently used are bleomycin, sodium tetradeyl sulphate as 1- 3% solution, steroids, OK-432 fibrin glue and Interferon 2 alpha. We selected prospectively 120 patients to compare the
efficacy of intralesional Bleomycin with Sodium Tetradecyl Sulphate in treatment of Hemangiomas and Lymphangiomas in our set up.

**Materials and Methods:** Bleomycin powder (15U) was reconstituted with 15 ml normal saline, dilution (1U/ml). In children less than 1 year of age maximum dose was limited to 0.5-1 U/kg and in children older than 1 year and in adults; a dose of 1-15 units was injected intralesionally per session depending on the size of the lesion. A single dose of 15 U per session was never exceeded in our study and sclerosant dosages were given at an interval of 14 days, depending on the local response. Sodium tetradecyl sulphate (SotradecolR) was injected as a (1-3 ml of 2% solution) in all the lesions depending on their size. All the lesions were initially aspirated followed by injection of the sclerosant.

**Results:** The maximum and minimum doses of bleomycin given for lymphangiomas were 25 U and 210 U, the mean dose being 119U while the maximum and minimum doses for hemangiomas were 30 U and 195 U (mean dose 121 U) divided over a maximum of 15 doses. The total numbers of injections performed were 769 with a highest accumulative dose of 210 U in case of lymphangiomas and 195 U in case of hemangiomas. Reduction in the size of mass was usually seen by 2 weeks to 6 months of treatment in case of lymphangiomas using bleomycin, however the duration was much less in case of hemangiomas (2 weeks to 3 months). The duration was 4 weeks to 6 months in cases of lymphangiomas and 3 weeks to 7 weeks in hemangiomas when sodium tetradecyl sulphate was used. Sodium tetradecyl sulphate was injected in volume of 1-3 ml of 2% solution depending on the size of the lesion. Complete resolution or significant improvement occurred in 80% (24) of hemangiomas and 73.3% (22) of lymphangiomas treated with bleomycin. The results were 60% (18) both for hemangiomas and lymphangiomas who underwent sclerotherapy using sodium tetradecyl sulphate. Poor response rate was observed in 20% (6) of hemangiomas and 26.6% (8) in lymphangiomas of bleomycin group and 40% (8) of hemangiomas and lymphangiomas in sodium tetradecyl sulphate group. Greater than 50% resolution was seen in 8 patients of bleomycin group and 6 patients of sodium tetradecyl sulphate group in hemangiomas and chances of more than 50% resolution of hemangioma were 2.67 times odds than that with sodium tetradecyl sulphate. The chances of more than 50% resolution in lymphangiomas with bleomycin were 1.5 times odds than that with sodium tetradecyl sulphate. The maximum number of injections required for complete resolution were 10 and 15 in cases of hemangiomas and lymphangiomas respectively using bleomycin while it were 15 in all cases of lymphangiomas and 13 in hemangiomas when sodium tetradecyl sulphate was used. Minimum number of injections required was 7 when bleomycin was used in hemangiomas and 10 for lymphangiomas. The same figure was 10 and 12 for sodium tetradecyl sulphate. The complications of bleomycin were all minor; fever in 15, transient increase in size of swelling in 7, leucocytosis in 10, anaemia in 4 and skin discolouration in 4 children. Complications when sodium tetradecyl sulphate was used were also minor and included 7 children with fever, skin discolouration in 36, transient increase in swelling in 10 and leucocytosis in 20 children. Significant discolouration was seen in patients when sodium tetradecyl sulphate was used in 21 patients of lymphangiomas and 15 patients of hemangiomas had skin discolouration using sodium tetradecyl sulphate.

**Conclusion:** In our study although both the drugs were found to be effective for sclerotherapy of hemangiomas and lymphangiomas but given the various criteria used to assess the efficacy; bleomycin was found to be more effective than sodium tetradecyl sulphate.

17 Evaluation and management of blunt abdominal trauma in pediatric age

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**Aim:** 1. Study mode of injury and age distribution. 2. Study of frequency of solid organ injury. 3. To assess for feasibility for non operative management based on clinical and radiologic features. 4. To formulate protocol of management of blunt abdominal trauma.

**Materials and Methods:** We reviewed the medical records of 100 patients consecutively evaluated in the Department of Pediatric Surgery in a Tertiary care centre Hospital who presented with Blunt Abdominal Trauma between August 2007 and June 2009. All diagnoses were confirmed by ultrasound (US), computed tomography (CT) and graded. The following data were collected for all patients: age, sex, mechanism of injury, associated injuries, delayed operation for intestinal injuries, and morbidity and mortality related to intestinal injury. Non-operative management was preferred in patients with stable vital signs, who were treated with IV Fluids and blood transfusions, strict bed rest, frequent physical examinations, and 48 to 72 h of intensive care. Operative therapy was performed in patients with shock in spite of fluids and blood transfusions and associated hollow viscus injury.

**Result:** Most of patient were managed by non-operatively, those who required exploration were those who presented in shock at initial presentation, associated hollow viscus Injury. There was mortality in two patients being managed non operatively in Hepatic injury.

**Conclusion:** Many studies over the years have confirmed the efficacy and safety of this non-operative approach. With the advent of evidence-based practice, over the next few years we should be able to draw on prospective studies to develop protocols to enable efficient use of resources and maximize patient safety. The non-operative management of children following blunt abdominal trauma is likely to remain the standard of care.
Results in these patients. There was an average follow up of 2 years. Table 1 summarizes the presentation, clinical features, findings of imaging modality (CT scan) and outcome in these patients. There was an average follow up of 2 years.

Methods: From July 2003 to June 2009, 414 children had blunt trauma abdomen with forty one having bowel injuries. These 41 patients formed the basis of the study. Retrospective analysis of the data was done to document the presentation, clinical features, findings of imaging modality (CT scan) and outcome in these patients. There was an average follow up of 2 years.

Results: There were 29 were boys and 12 girls. The median age at presentation was six years (range 2.5 to 9 years). Road traffic accident was the most common mode of injury. Fifteen patients underwent laparotomy within 3 hours of presentation because of obvious bowel injury (Free air in plain x-ray or frank peritonitis). Twenty six patients were explored later than 6 hours either because of positive CT scan findings or ultimate progression to peritonitis. CT scan findings of these 26 patients revealed that 3 had dye leak, 4 had free air and 12 patients had free fluid and localized collections. Seven patients had “normal” scans, which were explored for development of peritonitis as assessed on serial physical examination.

Conclusion: Gastrointestinal injuries due to blunt abdominal trauma pose a management challenge. Diligent and serial clinical examination is the most effective diagnostic tool and that CT scan findings can only be of corroborative assistance.

Aim: Bowel perforation following blunt abdominal trauma in pediatric age group is rare; diagnosis of these injuries in children can be difficult and delayed. The purpose of this study is to present the diagnostic problems in children with bowel perforation following blunt abdominal trauma.

Discussion: CBBF is a rare malformation. About 18 cases are reported in the literature. Associated biliary tract anomalies are common and two types are recognised; absence of common bile duct and obstruction to bile outflow from the left lobe of the liver. Based on the type of associated biliary tract anomaly and the pathology of the left lobe, a classification of CBBF is proposed by the senior author of this paper (T.M. Ramanujam): Type I – CBBF with normal biliary tract, Type II – A & B, CBBF with atretic, absent, or hypoplastic biliary tree &/or left lobe pathology. Probable embryogenesis for this anomaly is postulated based on abnormal biliary tract or the left lobe. Although, the accepted treatment is ligation of the fistula by a thoracotomy, abdominal approach offers the additional advantage of performing operative cholangiogram and biliary drainage if indicated.

20 Caecal duplication mimicking intussusception

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Maulana Azad Medical College and associated Lok Nayak and GB Pant Hospitals, New Delhi, India

Aim and Introduction: To report a case of caecal duplication that presented as intussusception, and to highlight the importance of unusual differential diagnosis.

Case Report: A 3 month old male infant presented with crying, bilious vomiting and abdominal distension. Examination revealed tachycardia and a tender right iliac fossa mass. Plain x-ray suggested intestinal obstruction. Clinical diagnosis of intussusception was made. Ultrasound showed a cystic lesion in the right lumbar region. The kidneys were normal. No target sign was observed. Exploratory laparotomy revealed an intra-mural cyst in the posterolateral wall of the caecum. The ileum was dilated proximal to the lesion. The appendix was normal. The cyst was aspirated to reveal mucoid fluid. The caecum was open to reveal sub mucosal cyst within the wall of caecum. The cyst was excised along with the caecum and an ileo-ascending anastomosis performed. Post operative recovery was uneventful. Histology showed a typical enteric duplication cyst.

Conclusion and Discussion: Intussusception is a common cause of intestinal obstruction in infancy. However, uncommon causes such as duplication cyst should be considered in differential diagnosis. Ultrasound may be helpful in suggesting an alternate pathology such as a cyst. The surgical approach could then be changed in favor of a laparoscopy, especially when ultrasound is suggestive of a cystic mass. In retrospect, this case could have been managed by a laparoscopic assisted...
approach. The cyst along with ileocaecum could have been delivered out through a port site and resection anastomosis could have been done outside.

21 Central venous lines in pediatric age group: A single center experience
Subhasis Saha
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Aims: The aim of this study is to highlight the importance of central venous access and discuss its feasibility in the pediatric age group.
Methods: A retrospective analysis has been made of all the patients aged between 1 day to 14 years, in whom a central venous line has been inserted from May 2003 to June 2009. The method of insertion, the route of insertion, the indications and complications, if any were studied.
Results: 166 neonates, infants and children had to have a central venous access in our series. 14 children had insertion of depo ports for administration of chemotherapy. In 12 children we placed Hickman catheter for chemotherapy administration either as they could not afford the cost or early in our series when chemo port of pediatric size was not available. 15 patients had insertion of central venous lines for perioperative monitoring. 55 babies, mostly neonates had line insertion for administration of total parenteral nutrition. The rest were sick babies who needed a central line for injecting antibiotics and intravenous fluids. Most of the cases were done in OT under GA. A few cases were done at the bedside with sedation and local anesthesia. There were no major complications. Minor complications include anatomical incorrect placement, wound infection, sepsis.
Conclusion: Central venous line placement in neonates and children is a safe and feasible procedure. It should be done with fluoroscopic guidance wherever feasible. Placing a line in neonates, particularly in premature babies requires special expertise.

22 Non tuberculous Cervical Lymphadenopathy in Children
Kamineni Hospitals and KIMS, Narketpally, Hyderabad, India

Introduction: Cervical is an extreme common pediatric surgical reference. Tuberculosis remains the commonest next only to non specific lymphadenopathy. Uncommon and rare conditions continue to bowl pediatric surgeons.
Aims and Objectives: to present 18 cases of such rare cases on specific lymphadenopathy.
Materials and Methods: 168 cases of cervical lymphadenopathy referred to the pediatric surgical unit were reviewed. 18 cases were found to have rare causes. The clinical features, Chest xray findings, FNAC/ Histopathology, Microbiological reports were specifically analysed. Hemogram, ESR, CXR, Mantoux, were carried out in all.
Results: CMV was found in 3 cases, Histiocytosis in 6 cases, Neuroblastoma 3, Cat Scratch disease in 1, metastatic disease in 2 remaining were non specific granulamatos and small cell tumors that could not be categorized into any specific pathology. No child with these diagnosis had any systemic Symtoms. Histiocytosis was confirmed by bone marrow examination. Detailed histopathology would be presented.
Conclusion: Detailed examination and pathological search is mandatory in all cases of cervical lymphadenopathy with non confirmatory initial pathology, so as not to miss these specific rare causes.

23 Long term follow up of Choledochal cyst – Single centre experience
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Aim: Choledochal cyst is an important cause of hepatobiliary disorders in our country. The purpose of present study is to evaluate its various modes of presentations, surgical methods and their outcome in children.
Materials & Methods: In this retrospective study, all patients with diagnosis of choledochal cyst were included. The data included age, sex, modes of presentations, surgical technique, and outcome. Duration of follow up is one to six years.
Results: Total number of patients was 35. Male to female ratio was 24:11. The mode of presentation was recurrent abdominal pain (n=20), palpable lump (n=6), fever, nausea and vomiting (n=10), peritonitis (n=3) & jaundice (n=16). Choledocho- duodenostomy done in 12 patients, Roux-en-Y choledocho-jejunos tom in 18 patients and two were managed by cystojejunostomy. Three patients suffered from severe attacks of cholangitis, of which one was kept on external tube drainage following biliary peritonitis. One patient expired due to severe uncontrolled cholangitis. The third patient, after roux-en-Y hepatico jejunos tom, developed sub acute intestinal obstruction and terminal ileal gangrene for which ileostomy was done. In follow up, all except one patient are doing well. The follow up loss is 20%.
Conclusions: Choledochal cyst is an important entity which may present in various ways, hence, early diagnosis and timely intervention should be emphasized. The outcome is usually satisfactory.

24 Choledochal cysts in children: Presentation, treatment and outcome
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Aim: Choledochal cysts are dilatations of the biliary tree. Incidence in Asian countries is high as compared to western population. This study was undertaken to analyze the presentation, evaluation, management of children with choledochal cysts.

Methods: Sixteen patients who presented to us were analyzed. Patient demographics, presenting complaints, co-morbidities, diagnostic modalities used, biochemical abnormalities, treatment, outcome and histopathological findings were studied. The follow-up included symptoms of cholangitis, small bowel obstruction, hematomatological and biochemical tests.

Results: There were 11 girls and 5 boys. The median age was 7 years. Abdominal pain was the presenting symptom in 90% of the children. Vomiting was present in 31% of children. There was hyperbilirubinemia in 25 percent of the patients. All the patients underwent ultrasound of hepatobiliary system. Seventy five percent patients had undergone CECT abdomen while only 31% underwent MRCP. There were 12 cases of Type I while 4 cases of Type IV B choledochal cyst. All underwent complete cyst excision with Roux-en-Y hepaticojejunostomy. Early complications included fever (31%), pain & vomiting (12.5%). Late complications included persistent bile leak in one patient.

Conclusion: This study analysed small group of patients with choledochal cyst. None has classical presentation. USG was the imaging modality of choice and was supplemented well by CECT. MRCP was not done mainly because of cost constraints and also was technical difficulties. Complete excision and Roux-en-Y-hepaticojejunostomy gave good results with fewer complications.

25 Choledochal cysts – Pre and Post MR era – Experience with 89 cases

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Introduction: Choledochal Cysts are not uncommon in pediatric Surgical Practice. Imaging revolutionized diagnosis. MRI completely defines anatomy and picks up AJPBDS.

Aims and Objectives: To present the series of 89 choledochal cysts. To stress the impact of MRCP in the management of Choledochal Cysts.

Materials and Methods: records of all choledochal cysts seen and treated between 1984 and 2006 were studied. Clinical presentation, Age of operation, Pre op Diagnostic evaluation and operative details and follow up were picked up for this analysis.

Results: 58 were girls and 31 were boys. 21 cases were treated before one year of age mostly after 2000. 24 cases were treated before 5 years of age remaining a ft after 18 years of age. The unit also does adult Surgery. Jaundice was presenting symptom in 9 cases and LFT showed raised bilirubin in 23 cases. Vague pain was recorded in 34 cases. remaining were detected during routine ultrasound. Ultra sound was done in 56 cases, all were after 1995. 11 of 33 prior to 1995 had ultrasonographic evaluation and 6 had CT Scan. MRCP was done in 43 of 56 cases seen after 1995. ERCP was done in 7 cases. Acute presentation was seen in 11 cases. All had Amylase / Lipase / Imaging confirmed acute pancreatitis. 11 cases recorded choliithiasis. Ultrasound had picked up all cases after 1995. Type 1 was recorded in 53, Type IV in 30, Choledochocele in 2 and Carolis in 4. MRCP showed pancreas divisum in 4 cases, AJPBDS in 22 and long Channel in 13 cases. 79 complete excision of choledochal cyst was performed, Lilly’s procedure in 3 cases, Laparoscopic excision and ex vivo choledochojejunostomy in 4 cases. 12 cases had established cirrhosis nd confirmed in histology. 4 children during the follow up period showed Portal hypertension. Complications recorded were wound infections in 11, Burst abdomen in one, Adhesive obstruction in 3, anastomotic leak in 2 cases. Follow up records were available for 62 cases. More than 5 years 41, one to 5 years 13 and less than one year in 8. All were alive after surgery. Long term complications recorded were stricture in two, Portal hypertension in 4. Redo biliary anastomosis was performed in one.

Conclusions: Choledochal Cyst is being diagnosed early with ultra sound and MRCP picks up ductal anatomy and aberrations.

26 Cloacal extrophy variant in a female child

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Case Report: A female neonate with unusual cloacal extrophy and lumbosacral lipomeningomyelocele weighing 2.3kgs was born in our hospital. The normal looking vulva was displaced posteriorly in the perineum that harbored a single orifice through which a catheter could be easily passed. The clitoris was not bifid. She had a bladder neck (and probably a trigone). She had two separate hemiuteri with separate vaginas that opened by separate orifices on the two sides of cloacal plate lateral to the bowel plate; the vagina on the left side was too short to bring it to the anterior abdominal wall. There was evidence of hydrocolpos bilaterally. The ureteric orifices could not be visualized. She was also diagnosed to have S-shaped fused hydronephrotic kidney on the left side on ultrasound; the right renal fossa was empty. The bowel plate was separated and the tail gut was brought out as end colostomy. Side-to-side vagina-vaginostomy was performed and the right vagina was brought out as a stoma on anterior abdominal wall. The bladder was closed over a small Foley’s catheter. The neonate was electively ventilated. As the urine output from urinary catheter was very meager, a percutaneous nephrostomy on the hydronephrotic kidney on the 1st postoperative day. The child could be weaned off the ventilator on 3rd postoperative day, and was started on feeds. But unfortunately, on the 4th postoperative day, she died suddenly due to unexplainable hyperpyrexia.

Discussion: Classical Cloacal Exstrophy in the female child
usually has two hemiclitoris and the urethra is epispadiac. The absence of these features makes this case rare. The presence of vaginal orifices higher up on the cloacal extrophy plate is also unusual. Fusion anomalies of the Mullerian duct structures as seen in this case are common and seen in up to 2/3rds of cloacal extrophy patients. Crossed fused renal ectopia has also been known to co-exist.

27
Segmental dilatation of small intestine (a case report)
Karthik S Bhandary, V. Kumaran, G. Rajamani, S. Kannan, N. Venkatesa Mohan, Muthulingam, R. Rangarajan
Coimbatore Medical College, Coimbatore, India

- 3 Yr old male child, Abdominal pain-on & off past 6 mths, Mainly around umbilical region. Vomiting 2mths duration, Bilious. Abdominal distention-2mths duration.
- Clinically-Vague mass felt in Left Hypochondrium, Umbilical region, Left hypochondrium.
- Soft in consistency, Freely mobile in all direction, Resonant to percussion.
- USG Abd- Segmental volvulus. Laproscopy-Dilatation of a segment of Ileum of about 15cm from Ileoacaecal junction. Which was resected and Anastomosed
- Histopathology revealed-Multiple sections studied from the recived dilated segment shows nonneoplastic mucosa & other layers of wall. Adequate ganglion cells seen. No evidence of granuloma or Neoplasm

Segmental dilatation of the ileum (SDI), also termed ileal dysgenesis or segmental megalium, is characterized by a sharply defined and markedly dilated segment of the ileum flanked by normal-caliber afferent and efferent bowel. Segmental dilatation of the ileum is a rare condition, with only 125 published cases.

28
Laparoscopic assisted ano rectal pull through – reformed techniques
Karthik S Bhandary, V. Kumaran, G. Rajamani, S. Kannan, N. Venkatesa Mohan, Muthulingam, R. Rangarajan
Coimbatore Medical College, Coimbatore, India

Aim: To discuss the technical modifications of laparoscopic assisted ano rectal pull through practised at our institute and analyse the post operative outcome and complications associated.

Materials and Methods: A retrospective and prospective study from January 2001 to May 2009 analyzing laparoscopically assisted ano rectal pull-through for high ano rectal malformations (LAARP) at the Department of Paediatric Surgery, Coimbatore Medical College Hospital.

Results: A total of 40 patients have undergone laparoscopically assisted ano rectal pull-through for ano rectal malformations (LAARP). Male – 34 Female – 6, Age group -2 months to 6 years. Staged procedure was done in 39 patients, one case of recto vestibular fistula underwent single staged procedure. All the patients withstood surgery well. One patient required conversion due to problem in gaining enough length for the distal rectum in a patient with rectovesical fistula so colostomy was closed and rectified at a proximal splenic flexure. The complications were mucosal prolapse in (6 cases), anal stenosis (3 cases), adhesive obstruction (2 cases), distal rectal necrosis (1 case), Urethral diverticulum (1 case). On follow up with Clinical Evaluation, Anal USG (ultra sonogram), CT pelvis, MRI pelvis, Manometry, Distal loopogram. The progress has been satisfactory and weight gain was adequate.

Conclusion: The advantages of the reformed techniques are, transcutaneous bladder stitch provides excellent visualization, traction over the fistula helps in dissection of the puborectalis, dividing the fistula without ligation is safe, railroading of Hegars dialators over the suction canula creates adequate pull through channel saves time, makes procedure simpler with reproducible comparable reports.

29
Our experiences with advanced minimally invasive surgery: Innovative approaches
Karthik S Bhandary, V. Kumaran, G. Rajamani, S. Kannan, N. Venkatesa Mohan, R. Rangarajan, Muthulingam
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Aim: To discuss the technical modifications of advanced minimally invasive surgeries practised at our institute and analyse the post operative outcome and complications associated.

Materials and Methods: A retrospective and prospective study from January 1999 to May 2009 analyzing the modified maneuvers of advanced laparoscopic surgeries at the Department of Paediatric surgery, Coimbatore Medical College Hospital.

Results: A total of 928 patients have undergone minimally invasive procedures over the past 10 years. Advanced laparoscopic procedures include rectopexy (7 cases), malrotation (8), hiatus hernia (10), anorectal anomaly (40), nephrectomy (16), Hirschprung’s disease (30), adrenalectomy (2), pyloplasty (7), cholechocholith cyst (5), infantile hypertrophic pyloric stenosis (5), hydatid cyst (3) and colovaginoplasty (2). Thoracoscopic procedures totalled about 72 cases started with biopsy and subsequently progressed to thoracoscopic decortication (40 cases), congenital diaphragmatic hernia repair (13), bronchogenic cyst excision (1), pericardietomy (3). Our conversion rate was around 5% in the years 1999-2000, which has come down to 3% from the year 2005 onwards. Conversions were for sliding hiatus hernia, ileal perforation, perforated colon, appendicitis, Meckel’s diverticulum and laparoscopic nephrectomy. Our postoperative complications were fever (15%) in a majority of the patients. One case of cholechocholith cyst developed bile leak, which was reopened, and Roux-En-Y hepaticojejunostomy was performed. A case of bronchogenic cyst that developed pneumothorax after discharge improved with ICD. One mortality occurred in a case of thoracoscopic...
decortication due to disseminated tuberculosis.

**Conclusion:** Through the course of our work we ran into several difficulties and with time circumvented these with our own modifications like, In nephrectomy retaining the lateral peritoneal attachment of the kidney until we divide the vessels there by avoiding the need for a retracting port and an assistant. For ligation of the ureter we employ Rhoeder’s knot. Antegrade stenting of the ureter for keeping the ureter open and to steady it for uretero-pelvic anastomosis during pyeloplasty. Since complete disconnection of PUJ leads to confusion in orienting the ureter a small lateral bridge is retained till completion of posterior layer of suturing. Choledochal cysts are subjected to excision followed by choledocho – duodenostomy due to the ease of the procedure as well as reduction in the number of anastomosis Cyst is retained for traction during anastomosis. It for uretero-pelvic anastomosis during pyeloplasty. Since complete disconnection of PUJ leads to confusion in orienting the ureter a small lateral bridge is retained till completion of posterior layer of suturing. Choledochal cysts are subjected to excision followed by choledocho – duodenostomy due to the ease of the procedure as well as reduction in the number of anastomosis. Cyst is retained for traction during anastomosis. Thoracoscopic decortication we have limiting ourselves to two ports of access with high pressure suction to decorticate and use sponge holding directly to decorticate and retrieve tough peel. Our techniques have evolved over the time and now we are able to save time, and improve the quality of life of our surgical neonates. we would like to throw light on retrieval techniques which have made a huge difference.

30 **Comparison of ultrasound-guided hydrostatic reduction and barium enema reduction of intussusception in pediatric age group**

Adwait Prakash, Rahul K Gupta, Beejal Sanghvi, Sandesh V Parelkar, Sanjay N Oak

*Seth G.S.M. College and K.E.M. Hospital, Mumbai, India*

**Aim:** Currently the standard methods for therapeutic reduction of intussusception in children involve considerable use of ionizing radiation. In this study, an attempt is being made to assess feasibility as well as efficacy of ultrasound guided hydrostatic reduction along with its comparison with reduction by barium enema under fluoroscopic guidance.

**Patients and Methods:** The study is presently being undertaken with patients divided into two groups. Group 1: Barium reduction group and group 2: USG Guided hydrostatic reduction group. All children clinically suspected of having intussusception were evaluated by sonography. Those with positive findings on sonography were included in the study. Excluded were the patients in shock, those with peritonitis, gross abdominal distension and recurrent intussusception. Criteria for successful reduction were disappearance of the intussusceptum and passage of fluid through the ileocecal valve. Post reduction sonography was used for confirmation.

**Results:** The two methods were compared for rate of success, time consumed for reduction, complications and rate of recurrence. Sonographic hydrostatic reduction scored distinctly over barium reduction on all the parameters.

**Conclusion:** Ultrasound-guided hydrostatic reduction for pediatric intussusception is preferred because it is safe, accurate, has a higher success rate, and avoids radiation exposure. It is a perfect method for the non-operative treatment of pediatric intussusception.

31 **Spectrum of Duodenal Obstruction**

Bhat Nisar Ahmad

*Sheri Kashmir Institute of Medical Science, Srinagar Kashmir, India*

The duodenum is most common site of neonatal intestinal obstruction, accounting for nearly half of the cases. Various abnormalities causing duodenal obstruction include intrinsic obstruction from web or complete bowel discontinuity and extrinsic obstruction from annular pancreas, Ladd’s bands, preduodenal vein & volvulus. Diagnosis is often simple & does not require any special investigation. In last one decade more than 40 pts of duodenal obstruction were seen in our institution, three of them were very interesting. One of patients with duodenal obstruction had a delayed presentation with unique complication of stone formation at the site of obstruction. Second case also had delayed presentation causing a severe malnutrition and third case although the diagnosis was simple but we were encountered with a rare case of duodenal obstruction.

32 **ERCP in management of CBD round worms in a 3 year old child**

Deepak Kishore Kalari, Sandesh V Parelkar, Sanjay N Oak, Beejal Sanghvi, Rahul Gupta

*Seth G.S.M. College and K.E.M. Hospital, Mumbai, India*

Ascaris lumbricoides, or the common roundworms, has a worldwide distribution but is mainly seen in Asian and Latin American countries. The usual habitat is the small intestine, mainly in the jejunum. But if the worm load is high, which may go up to a thousand worms, the worms tend to migrate away from the usual site of habitat. We are presenting a rare case of ascariasis infestation of hepat-biliary tract in a 3 years female child which was managed by ERCP avoiding open surgery.

33 **Esophageal anastomosis medial to preserved aygos vein in esophageal atresia with tracheoesophageal fistula: Restoration of normal mediastinal anatomy and improved outcome**

Kumar Abdul Rashid, Madhukar Maletha, Tanvir Roshan Khan, Ashish Wakhlu, Jile Dar Rawat, Shiv Narain Kureel, Raj Kumar Tandon

*Department of Pediatric Surgery, King George Medical University, Lucknow, India*

**Purpose:** The purpose of our study was to prospectively study the technical feasibility and advantages of esophageal anastomosis medial to the preserved aygos vein in neonates.
diagnosed with esophageal atresia with tracheoesophageal fistula (EATEF). The results were compared to the cases where azygos vein was either not preserved or the anastomosis was done lateral to the arch of preserved azygos vein.

**Material and Methods:** All patients with EATEF who underwent primary between January 2007 and July 2008 are included in the study. The patients with long gap esophageal atresia with or without tracheoesophageal fistula were excluded. Patients were randomly divided into three groups comparable with respect to the gestational age, age at presentation, sex, birth weight, associated anomalies and the gap between the pouches after mobilization: Group A (azygos vein ligated and divided), Group B (azygos vein preserved with esophageal anastomosis lateral to the vein), and Group C (azygos vein preserved with esophageal anastomosis medial to the vein). All the patients were operated by extrapleural approach. The three groups were compared with respect to operative time and early postoperative complications like pneumonitis, anastomotic leaks and mortality. Odds ratio and Chi square test were used for the statistical analysis.

**Results:** A total of 134 patients were admitted in the study period of which 116 underwent thoracotomy and primary esophageal repair. Eleven patients with long gap esophageal atresia with or without tracheoesophageal fistula and 7 patients who expired before surgery were excluded. Group A had 35; Group B had 43 and Group C 38 patients. No significant difference was observed in average operative time. Incidence of postoperative pneumonitis was higher in group A (28%) as compared to group B (13.95%) and group C (11.62%) but not statistically significant (p > 0.005). Anastomatic leak occurred in 7 patients in group A (20%), 6 patients in group B (13.95%) and 4 patients (10.52%) in group C (p > 0.005). Anastomotic leaks were 4 minor and 3 major in group A; 4 minor and 2 major in group B and 3 minor and 1 major in group C. Mortality was 5 in group A, 3 in group B and 2 in group C (p > 0.005). All patients with major anastomotic leaks in group A and group B expired after re-exploration with esophagostomy and feeding jejunostomy. One patient with major leak in group C also died after re-exploration and esophageal re-anastomosis. The minor leaks were managed conservatively and all of them healed spontaneously. This was confirmed by contrast esophagography and patients were allowed orally only after complete healing at anastomotic site was documented. Severe pneumonitis and septicemia were other causes of mortality contributed by major associated anomalies.

**Conclusions:** Preservation of azygos vein in primary repair of EA with TEF reduces the incidence of mortality and postoperative complications. Although the difference in complication rates was not statistically significant because of smaller sample sizes of the three study groups, yet the esophageal anastomosis medial to the preserved azygos vein restores the normal mediastinal anatomy and helps a tension free esophageal anastomosis. The method is neither technically challenging nor more time consuming. A multi-center study with larger sample sizes is needed for a statistically significant comparison of the results.

**34**

**Mandatory postoperative mechanical ventilation after primary anastomosis in esophageal atresia: A prospective study**

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**Aim:** To evaluate if mandatory post-operative mechanical ventilation to stabilize the primary anastomosis would prevent anastomotic leak.

**Method:** All neonates with esophageal atresia presenting to our hospital between January 2004 and June 2009 were included in the study. Twenty-six patients presented with esophageal atresia in this period. All patients underwent detailed clinical examination, chest x-ray, and echocardiography and ultrasound abdomen to look for associated anomalies. All these patients were divided into three groups as per Waterston’s classification. The patients underwent right thoracotomy, ligation of fistula and primary anastomosis. The measurement of the gap between the two esophageal ends, using a silk thread, was done before mobilization. The anastomosis was done with 60 prolene. Mechanical ventilation for minimum period of forty-eight hours was assured for all the patients who underwent primary anastomosis. The patients were heavily sedated and muscle relaxants were given where indicated during the period of mechanical ventilation.

**Results:** Antenatal ultrasound could not diagnose esophageal atresia in any of the patients although four of the mothers had polyhydramnios. The birth weights ranged from 1.2 kg to 2.8 kg with an average weight of 2.3 kg. 58% of patients were male and rest females. 57% patients had associated anomalies, which included congenital heart defects, rib and vertebral anomalies, high arched palate, micrognathia, polydactyl, microtia and cleft lip. The gap between the ends ranged from 0.5 cms to 4.5 cms. Two patients developed anastomotic leaks (16%) in our study. Nine patients required minimal lower pouch mobilization of less than 1 centimeter, off them one patient developed anastomotic leak. Using Waterston’s criterion, seven patients were in group A, nine in group B and ten in group C. Three patients expired. Two of them had major congenital anomalies and the third weighed 1800 grams. All three who expired were in Waterston’s group C.

**Conclusion:** Mechanical ventilation aids in prevention of anastomotic leaks even in patients with long gaps between the two esophageal pouches. Thus it improves the outcome in patients with esophageal atresia and tracheo-esophageal fistula.

**35**

**Single stage combined repair of exstrophy bladder—preliminary results**

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**Aims:** To study the feasibility of single stage repair in exstrophy
bladder as a primary procedure and as a secondary salvage procedure for failed exstrophy bladder. The present study also aims to assess the short term results of the same.

**Patient and Methods:** During march 2008- June 2009, 8 patients of exstrophy bladder were operated in the Department of Pediatric Surgery [6 males and 2 females]. They were divided into 2 groups of 4 patients each. Group1 [age ranging from 7 months – 60 months] had single stage primary combined repair, with bladder turn in, modified cantwell ransley repair with umbilicoplasty, bilateral herniotomy and bladder neck tightening. Group II [age ranging from 14 months – 66 months] had previously failed repairs. Preoperative renal functions, ultrasonography, bladder capacity, presence of polyps, elasticity/compliance of the bladder and complications were recorded. Assessments of the dry period was done at the 3rd, 6, 9, 12, 15th postoperative months.

**Results:** The follow up ranged from 3 months – 15 months [median -13 months]. The preoperative RFT and USG were normal in all patients. Bladder capacity was 30-35 ml and 25-30 ml in groupI& II respectively, hyperplastic mucosal polyps were seen in 3/4 patients each in group1 and II. Fibrotic, inelastic bladder was seen in one patient each in the 2 groups. None of the patients had urethral fistulae or hypospadias while 2 patients in group II had urinary leak from abdominal wound which healed on 2 weeks of urethral drainage. The dry period in group 1 was 60-80 minutes at last follow up while it varied from 20-45 minutes in groupII.

**Conclusion:** Single stage combined repair is feasible both as a primary and secondary procedure. The early results are promising and better in the primary group.

### 36 Fetal Brain Maturation evaluation by morphological examination

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**Introduction:** Gyration is a phenomenon occurring late during fetal development. Goes on to the end of pregnancy and even later after birth. Sulci appear as grooves on the surface of brain. Gyration proceeds with the formation of side branches of sulci. Timing of appearance of different sulci is so precise that gyration is considered to be reliable estimate of fetal age and brain maturation. It guides us regarding morphological and functional changes of developing brain in terms of treatment and protection of vital structures.

**Aims and Objectives:** To relate the fetal age and the appearance of sulci and gyri on fetal brain.

**Materials and Methods:** Fetuses studied—SIX(6), aborted(KIMS). Fetal age was estimated by Crown -rump length, Crown-heel length, Biparietal diameter, Head circumference, Abdominal circumference, Weight. Brain was removed by sagittal and coronal incision on the scalp and two parasagittal incisions on vault. Sulci and gyri on brain were documented.

**Results:** Normal anatomical appearance of sulci and gyri.

<table>
<thead>
<tr>
<th>Week</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before 16th week</td>
<td>Brain is smooth with hippocampal sulcus and lateral cerebral fossa</td>
</tr>
<tr>
<td>16th week</td>
<td>Lateral sulcus, parieto occipital sulcus, calcare sulcus</td>
</tr>
<tr>
<td>18th week</td>
<td>Parieto occipital sulcus</td>
</tr>
<tr>
<td>20 weeks</td>
<td>Cingulate sulcus</td>
</tr>
<tr>
<td>24 weeks</td>
<td>Inferior and superolateral sulci</td>
</tr>
<tr>
<td>32 weeks</td>
<td>All important sulci</td>
</tr>
</tbody>
</table>

**Conclusions:** Corelation between fetal age and appearance of sulci and gyri helps in knowing brain maturation there by helps in knowing abnormality of fetal sulcation and gyrational abnormality.

### 37 Biological sealants (fibrin glue) In Paediatric Surgery

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**Aim and Introduction:** To report our experience with 10 cases where fibrin glue was used for different indications. To highlight its usefulness in selected cases.

**Methods:** Biological sealants were used for 10 cases: congenital chylothorax (1), bilateral perirenal lymphatic collection (1), hypospadias (3), massive lymphatic cyst (1), wilms tumor (1), precious urinary anastomosis (3). The purpose was to ensure leakproof anastomosis or prevention of post operative lymphatic leaks or hemostasis or promotion of wound healing. Commercially available sealant (Tisseal – Baxter) 1ml-2ml was used in all. Reconstitution was done as per product literature either in a water bath or specifically designed machine. The case with congenital chylothorax was initially treated medically and with chest tube drainage.

**Result:** No untoward reaction occurred in any case. Chylothorax and peri renal lymphatic collections resolved with one application. The cases with hypospadias (all re do cases) healed without complications except one which dehisced. All the precious urinary anastomosis – appendix transplantation for ureteric replacement, Monti ileal replacement of urethra, and traumatic urethrovaginal fistula – healed without complications.

**Conclusion:** Fibrin sealants are good adjunct to surgery for haemostasis, promotion of wound healing. Selected cases benefit from its use although the cost is prohibitive.

### 38 Chemical sphicterotomy for anal fissure- clinical and manometric assessment

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Fissure-in-ano is a very common condition that causes suffering out of proportion to the size of the lesion. Pathogenesis is
internal anal sphincter hypertonia, anodermal ischemia, and chronic constipation. Chemical sphincterotomy with various compounds has been suggested and studied for the last 15 years in adults and more recently in children. NTG 0.2% had been used in few studies with conflicting results in pediatric patients. This clinical trial was planned to study the impact of 0.2% NTG on clinical and manometric profile in pediatric patients with acute anal fissure.

**Patients and Methods:** All children who presented to OPD and diagnosed to have acute anal fissure were included and advised oral lactulose, sitz bath and local xylcoaine jelly. After detailed consent and description of process, anal manometry was done. After initial manometry, 0.2% GTN paste was advised to all patients for six weeks for local application twice daily in addition to sitz bath and oral lactulose. After that oral lactulose was continued for sixteen weeks (if constipation). Manometry was repeated after six weeks and sixteen weeks. Main outcome measure was time for painless defaecation. Adverse effects and failure of therapy were also noted.

**Results:** Twenty five children were included in this study. Average age of the patients was 4.65 years with fourteen female and eleven males. Painful defecation was the most common presenting symptom with associated bleeding in sixty percent of children. Pre nitroglycerine anal canal manometric pressure was in range of 20 to 90 cm H2O (average 55Cm H2O). Treatment was effective in 19 of these 25 patients with average time of painless defecation of ten days. Anal manometry at 6 weeks showed average pressure of 25cmH2O. At sixteen week the symptomatic relief was in 22 of the 25 patients but recurrence was seen in 4 patients. Mean anal canal pressure was 30CmH2O.

**Conclusion:** Local application of 0.2% NTG had been associated with improvement in symptoms in acute anal fissure in children along with decrease in anal canal pressure.

**Gall bladder perforation presenting as acute abdomen: A report of three cases**

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Gall bladder perforation presenting as acute abdomen is rare in pediatric population, only few cases has been reported in the literature. Here we are presenting three boys with a median age of 8 yrs who has been explored with a clinical diagnosis of perforative peritonitis & found to have perforation in the gall bladder in last two years. Clinical features, operative findings, blood investigations, histopathological findings & outcome were studied in detail.

**Hepatoblastoma: Successful management and review of literature**

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**Aim:** Hepatoblastoma is a rare paediatric solid tumor afflicting the liver. We successfully managed two cases of Hepatoblastoma in our institution in the recent past utilizing multimodal therapy.

**Method:** Case one – Fourteen month old boy presented in Aug 2006 with lump right hypochondrium. On examination the patient had hepatomegaly & X-Ray showed calcification in the region of the lump. USS and CECT gave evidence of a 94 by 92 mm hyperechoic heterogenous mass in segment VI and VII of liver. The patient was managed with neo adjuvant chemotherapy, right hepatectomy followed by adjuvant chemotherapy. On follow up for two and half patient is doing well. Case two – Eleven month female child presented with fever and lump right upper abdomen. Patient had hepatomegaly. USG & CECT suggested hepatoblastoma. AFP was raised. The patient was again managed with neo adjuvant chemotherapy, right hepatectomy followed by adjuvant chemotherapy. On follow up for two years there is no recurrence.

**Result:** Both children are on regular follow up with no
recurrence.

**Conclusion:** Hepatoblastoma is a rare malignancy of the liver in children. Successful management involves optimum implementation of multimodal therapy which was affected in these patients.

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**42 Impact of waiting time in hernia surgery**

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**Introduction:** Prolonged surgical wait times are a problem in many health care systems because of large number of cases attending public sector hospitals. We studied data from our hospital to determine if increased waiting period was related to complications and adverse outcomes in children of congenital hernia.

**Methods:** All congenital hernias operated from January 2009 in the department of pediatric surgery were included in study. A questionnaire was prepared and attendants were contacted either personally or by telephone. The information collected included the demographic profile of our patients, average waiting time, and complications encountered during this waiting period (pain, obstruction, incarceration, emergency visits, and emergency surgery). Parental satisfaction was also assessed by a questionnaire.

**Results:** Total of 30 patients with inguinal hernia was operated during this period, 22 (73%) male and 8 (27%) female. The average waiting time was 121 days. Patients with waiting time of more than ninety days had to repeat investigations. There were complications in 10 (33%) children who were waiting for surgery [pain in 7 patients (23%), incarceration in 3 patients (10%)].

**Conclusion:** Pain was the commonest symptom children had while awaiting surgery. There was a high rate of 10% incarceration in children with prolonged waiting period. There were fortunately no incidences of strangulation and obstruction. We conclude by saying that prolonged waiting period for surgery for hernia may be associated with lot of complications like pain and incarceration. Long waiting period is inevitable in government hospitals, yet efforts in the form of day care surgery, should be introduced to reduce complications resulting from long waiting period.

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**43 Role of hyperbaric oxygen therapy in management of severe paediatric head injury patients**

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**Aim:** A brain injury results in a temporary or permanent impairment of cognitive, emotional, and/or physical function. Predicting the outcome of pediatric brain injury is difficult. Prognostic instruments are not precise enough to reliably predict individual patient's mortality and long-term functional status. The purpose of this article is to provide a guide to the strengths and limitations about the use of Hyperbaric Oxygen Therapy (HBOT) in treating pediatric patients with severe brain injury.

**Patients and Methods:** We studied total 56 patients of head injury. Out of them 28 received HBOT. Only cases with severe head injury [Glasgow Coma Scale (GCS) <8] with no other associated injury were included in the study group. After an initial period of resuscitation & conservative management (10-12 days), all were subjected to three sessions of HBOT at 1 week interval. This study group was compared with a control group of similar severity of head injury (GCS<8).

**Results:** The study and control groups were compared in terms of duration of hospitalization, GCS, disability reduction and social behavior. Patients who received HBOT were significantly better than the control group on all the parameters with decreased hospital stay, better GCS and drastic reduction in disability.

**Conclusion:** In children with traumatic brain injury, the addition of HBOT significantly improved outcome and quality of life and reduced the risk of complications.

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**44 A new technique of neourethral coverage to minimise urethrocuteaneous fistula in proximal hypospadias**

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**Aims:** Urethrocuteaneous fistula constitutes the most common complication after hypospadias repair. We report a new technique for neourethral coverage using scrotal septal darts in patients with proximal hypospadias with the aim to minimise the possibility of urethrocuteaneous fistula.

**Methods:** In last one year total 11 patients, 4 penoscrotal hypospadias earlier grafted with Bracka technique and 7 proximal penile hypospadias repaired with tubularised incised plate urethroplasty, were treated with this technique. With a needle tip cautery, scrotal median raphe was incised exactly in mid line from hypospadiac meatus to neutral point between anterior and posterior surface of scrotum. Then it was bisected upto the bulbospongious muscle in almost avascular plane sparing the visible vessels on incised surface of scrotal septum. A long trapezoid shaped vascularised flap, based on posterior scrotal vessels, was harvested from scrotal septal darts in continuation with anteriorinferior scrotal darts so that it could easily reach upto glans. After completion of urethroplasty, the neourethra was covered with the well vascularised scrotal septal darts as a continuous sheet from hypospadiac meatus to the tip of glans. Urethral repair was completed with glansplasty and midline skin repair.
Results: Scrotal dartos flap provided adequate soft tissue for neourethral coverage. Mild transient scrotal oedema occurred in all patients and transient scrotal erythema occurred in one patient relieved on conservative treatment. One patient developed subcoronal fistula. Skin cover of penis was symmetrical and shape of penis after reconstruction is near normal in all patients except in one patient having mild penile rotation. There was no scrotal skin necrosis. Cremasteric reflex was normal in all patients. There was no recurrent or residual chordee.

Conclusion: Scrotal septal dartos flap based on posterior scrotal artery is an effective alternative for neourethral coverage in cases of proximal penile hypospadias and penoscrotal hypospadias.

45 Immunohistochemistry in PUJ obstruction – correlation with morphology
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Introduction: Attempts to know the cause and pathomechanism of PUJ obstruction have been unsuccessful. Many studies gross histology to neural staining have been done with little light on patho-mechanism of PUJ obstruction. NSE was earlier studied in India. To confirm or negate the popular concept of myoneural abnormality continues to baffle the researchers.

Aims and Objective: To present our study of PUJ with GDNF, NSE, MMP2, MMP 9 AND ICC

Materials and Methods: 22 paraffin blocks pf PUJ in cases of PUJO with hydronephrosis were studied using immunohistochemistry for expression of ICC WITH c-KIT, MMP2, MMP9, NSE and GDNF. 1O PUJ of fetal kidneys were also stained as controls. The protocol supplied with the narker was followed.

Results: There was increased expression of MMP2, MMP 9 consistently in most of PUJO with hydronephrosis. NSE Expression was inconsistent as compared with GDNF. ICC expression was consistently less as compared to that of fetal PUJ specimens.

Conclusion: The last word in the patho mechanism of PUJ obstruction is yet to be discovered.

46 Gluteus maximus for fecal incontinence in high anorectal a nomalies: A detailed technique
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Introduction: PSARP is almost accepted as the standard surgical procedure for all high anorectal anomalies. Continence has not improved significantly. Pediatric Surgeons are some how reluctant in using surgical procedures for improving fecal incontinence. Gracilis sling is a popular continence procedure. Gluteus maximus is slowly getting into confidence of surgeons.

Aims and Objectives: To present our experience with seven cases of incontinence treated using Gluteus Maximus flap. And to present detailed technique.

Materials and Methods: 111 cases of high anorectal anomalies were followed up for more than 6 years. Forty four of these had imaging evaluated and the correct position of rectum in relation to levator was confirmed. 7 children with gross fecal incontinence were treated using Gluteus Maximus. 4 had bilateral Gluteus Maximus and 3 unilateral Maximus to wrap round the neoanus. Detailed post operative management would be discussed. Pre and post procedure continence was graded primarily based on patient and parents input rather than digital examination.

Results: Results and follow up would presented. Four out of seven could be trained effectively to prevent soiling in school and the patient and the parents were satisfied. Continence scores too improved. Faradic stimulation and expert physiotherapist’s help were used to make the child learn the tricks of contracting gluteus to keep the neoanus closed. Three patients continue to be incontinent although score show improvement. They are being trained. The last case was done 5 months ago.

Conclusions: Gluteus Maximus can be used a muscle flap to improve continence in High anorectal Anomalies.

47 Interventional study on perioperative fluid in children
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Introduction: The traditional guidelines for peri-operative fluid therapy has undergone a change and according to NPSA [National patient safety alert, NHS] and the current pediatric anesthetic practice isotonic fluid with low sugar or no sugar solution should be administered in the perioperative period because of the concerns of dangerous hyponatremia and hyperglycemia with use of 5% sugar containing hypotonic fluids.

Aim: To compare the post operative sugar after 4 hours in two group of patients when they received either 5% sugar or no sugar fluid in the perioperative period.

Methodology: Patients who underwent surgery in the Department of Pediatric surgery, PSG Hospitals. Fasting was per ASA guidelines. Group A: N=29. This group received 5% sugar containing fluid as either Isolyte P, Half DNS or DNS in the intraoperative and immediate postoperative period. Group B: N=39. This group received no sugar containing isotonic fluids such as normal saline or Ringer lactate in the perioperative period.

Inclusion criteria: 1. Age more than 1month and less than 15 years, 2. Patients undergoing surgery more than 20 minutes.

Exclusion criteria: 1. Patients who had received preoperative fluids, 2. Unstable patients, 3. Patients with liver or renal failure. Group A: Blood sugar was estimated after 4 hours of surgery. Group B: Blood sugar was estimated immediately after surgery.

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and again after 4 hours. The sodium was also estimated in this group after 4 hours of surgery.

**Results:** Both groups developed hyperglycemia (15%-27.5%) after 4 hrs. In group A: The mean sugar level for all patients was higher and the severity was more with the mean of 166.88±32.53 mgm/dl. In group B there was mild hyperglycemia with the mean of 135.16 ± 5.07 mgms/dl and the p value was < 0.001. In group B in spite of fasting for more than 6 hours and 30 minutes on an average there was no hypoglycemia in the immediate and 4 hours post operative period and the sodium level was within normal limits with a mean value of 137± 1.4 meq/l.

**Conclusion:** The hyperglycemia associated with 5% sugar solution causes osmotic diuresis and in addition it has been noted that in the presence of hyperglycemia the cerebral insult is more if there is hypoxia. In spite of the increased sodium content of NS and RL the sodium levels were within normal limits. This increased requirement of sodium can be explained by post operative ADH secretion. Hence we conclude that isotonic no sugar fluid is safer than fluid containing 5% sugar in the peri-operative period as it causes only mild hyperglycemia and no hypoglycemia.

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**Intra-renal neuroblastoma: A diagnostic dilemma**

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**Case Report:** We present a 7-year-old girl who came with hematuria, fever and abdominal lump for 2½ months. On examination, she had a large mass in the left lumbar region, hard in consistency. Ultrasound and CT abdomen revealed it to be a large malignant tumor arising from the left kidney displacing the great vessels to the opposite side with no calcifications consistent with Wilms’ tumor. The left renal vein was obscured and there was loss of planes with the left psoas muscle. Opposite kidney was normal. A trucut biopsy from the renal angle was reported as small round cell tumor with rose formation and calcification suggestive of neuroblastoma. 24-hour urinary VMA was normal; bone scan and bone marrow were negative. While awaiting immuno-histochemistry (IHC) report; she was started on weekly chemotherapy for Wilms’ tumor with Vincristine and Actinomycin-D. She received 2 weeks of chemotherapy with definite response to therapy. However, the IHC of the trucut biopsy showed tumor cells to be positive for NSE. As there was a major discrepancy between the radiological and histopathological diagnosis; it was decided to go ahead with surgical excision. At surgery, we found a huge tumor replacing the entire left kidney but sparing the upper pole. There were few hilar and intra-hilar lymph nodes which were sampled separately. Left nephroureterectomy was done. Final HPE confirmed Grade – I Neuroblastoma, nodes negative. The chemotherapy was changed to OPEC regime. She is still undergoing chemotherapy and has completed 3 cycles. She is quite well preserved and is tolerating chemotherapy well.

**Discussion:** Intrarenal neuroblastoma is a rare entity that clinically and radiographically may mimick Wilms’ tumor. A thorough literature search revealed less than 25 cases reported till date. It is an aggressive malignancy, and long-term survival is rare [only 1 survival (13 years) has been reported]. Majority have a poorly differentiated histopathology and downhill clinical course. This case is presented to highlight the diagnostic dilemma. Moreover the tumor in this child is different from those reported in literature as it is low grade with no metastasis and the child is quite well preserved.

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**Simultaneous occurrence of jejuno-jejunal and ileo-ileo intussusception in a child: A rare occurrence**

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**Aim:** To present an unusual type of simultaneous occurrence of jejuno-jejunal and ileo-ileo intussusception

**Materials and Methods:** A 10 year old boy presented to the department with complaint of pain in abdomen and no passage of flatus and feces for last eight days. There was a lump in the umbilical and the left lumbar segment. He was planned for emergency laparotomy.

**Result:** On exploratory laparotomy, a large jejuno-jejunal intussusception, about 10 cm from the duodeno-jejunal junction and an ileo-ileo intussusception which was about 10 cm from the ileo-cecal junction. Jejuno-jejunal resection and anastomosis was done for the proximal intussusception and the ileal intussusception was reduced manually. Postoperative period was uneventful.

**Conclusion:** Simultaneous small bowel intussusceptions are an uncommon entity which may present in an unusual way, hence, the operating surgeon must be ready to encounter this type of unusual presentation. If managed carefully, the results are excellent.

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**Ureteral cyst associated with crossed fused ectopia and ipsilateral duplication: A rare anomaly**

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A five year old girl presented with large abdominal cyst. She was referred to the department with complaint of pain in abdomen and no passage of feces for last 8 days. There was a lump in the umbilical and the left lumbar segments. On investigations had crossed fused left ectopic kidney with suspected Pelviureteric obstruction. On exploration ureteral cyst associated with crossed fused ectopia and ipsilateral duplication was found. The cyst was drained by its two afferent ureters and one efferent ureter opening normally in to the bladder. The patient’s surgical management and literature search of this rare anomaly is discussed.

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**A series of 9 cases of cloaca with uterine didelphys**

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9 cases presented with cloaca and were diagnosed to have uterine didelphys on USG, MRI, endoscopy. Six of these patients underwent composite reconstruction, two being single staged without diversion. The pictorial demonstration of the anomaly and points in reconstruction are discussed.

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Jejunal proplase: An unusual complication of feeding jejunostomy

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Post-operative feeding is a key issue which needs to be addressed for a successful outcome in surgical patients. Enteral nutrition is usually preferred over parenteral nutrition for a number of reasons. Feeding gastrostomy and jejunoscopy are commonly performed surgical procedures to provide long term enteral feeding. Witzel's and Roux-en-Y techniques are the preferred methods for jejunoscopy. Even though these are simple techniques, they are associated with several major and minor complications. We report a rare complication of massive jejunal prolapse, in a malnourished child with Down's syndrome, following Witzel's jejunostomy. Jejunal prolapse as a complication have been reported in few cases of Roux-en-Y jejunoscopy but none have been reported following Witzel's jejunostomy.

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Primary acquired gastric outlet obstruction during infancy and childhood (Jodhpur disease): Is it spreading?

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Primary acquired gastric outlet obstruction during infancy and childhood is reported first from northern part of India namely Jodhpur. We report our experience with this disease.

Aim: To study clinical and pathological profile of children with primary acquired gastric outlet obstruction during infancy and childhood.

Materials and Patients: All patients with gastric outlet obstruction were included in the study. The patients with diagnosis by primary acquired gastric outlet obstruction during infancy and childhood were included. Demographic profile (age,sex, address etc.) along with clinical history, examination and management data were reviewed.

Result: Six patients with gastric outlet obstruction were included in study. Two were diagnosed as duodenal web and rest four had primary acquired gastric outlet obstruction during infancy and childhood. The age group was one to seven years. There were three males and one female. All had non bilious vomiting, left to right peristalsis and malnutrition. UGI contrast was diagnostic in retrospect. All patients improved with Heineke and Mikulicz Pyloroplasty. On average follow up of one year all are doing well with growth and improved and have nutritional status.

Conclusion: Primary acquired gastric outlet obstruction during infancy and childhood (Jodhpur disease) is not confined to a geographical area. Studies are needed to assess the etiological factors for this rare disease.

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Lap. Appendicectomy (Personal experience)

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Lap Appendicectomy done in 467 cases in between; 2000-2009. Age ranging from 2 yrs to 18 yrs. Among 467-32 cases had appendicular perforation and 21 cases had appendicular abscess without perforation, 6 cases had appendicular lump, mesenteric adenitis in 12 cases, ruptured graffian follicle - 4 cases, endometriosis in 16 cases, Meckel's diverticulum in 4 cases (One had perforation, histologically normal appendix in 32 cases). In our series 6 had conversion to open surgery. All uncomplicated cases were discharged after 48 hours, complicated cases were discharged within 7-14 days. 3 patients had re-exploration for residual abscess, 6 patients had port infection. Average operative time was 20 minutes for uncomplicated cases was but in complicated cases operative time within 1-11/2 hrs. Advantages and disadvantages of Lap. Appendicectomy to be discussed.

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Laparoscopic hernia repair: An emerging gold standard

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Aim and Introduction: Through an experience of over 130 laparoscopic hernia repairs in children, the authors highlight different advantages over the traditional open repair and discuss how laparoscopic hernia repair is poised to be the future gold standard in hernia surgery.

Method: 130 hernia units in 114 patients (47 days to 14 years; 94 boys, 20 girls) underwent laparoscopic repair by simple circumferential incision of the peritoneum at the deep ring (32 cases), incision and suture closure of the peritoneum (55 cases) or incision and partial excision of the distal sac and suture closure of the peritoneum (27 cases). Three port technique was used in all. They were followed up for recurrence, testicular position and size, other complications.

Results: All operations were performed successfully with no conversion. Hernia recurred in three cases. All recurrences were in the initial 40 cases. There was no injury to the vas or
vessels in any case. The testes remained in scrotum in all with no testicular atrophy in any case. There were 3 minor port site infections requiring topical antibiotics. 15 cases had additional findings that were dealt with in the same sitting. In 21% an asymptomatic contralateral hernia was found and was repaired in the same sitting. No hernia was found in three.

**Conclusion:** By laparoscopic techniques the chances of injury to the vas and vessels, testicular ascent or fixation to the scar etc are nearly completely eliminated. Additional findings can be addressed in the same sitting and the issue of bilaterality is dealt with most effectively. When no hernia is found the procedure is terminated thereby avoiding a possible blind inguinal exploration. Considering these advantages, the laparoscopic repair is likely to become a gold standard in hernia care. Technically incision of the peritoneum at the deep ring is essential.

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**Laparoscopic assisted trans-anal pull through in Hirschsprung’s disease**

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**Aim and Introduction:** This is a report of our first five cases of lap assisted trans-anal pull through operations. The aim is to demonstrate the technique of laparoscopic bowel and rectum mobilization and its application in HD.

**Method:** Five patients (52 days to 6 years; 4 boys and 1 girl) were selected for laparoscopic assisted trans-anal pull through. Contrast enema was performed in all to identify the transition zone. Initial management was with bowel wash outs. Pull through was performed within 12 weeks in three and after 3 years in two. Four port technique with open insertion of primary canula was used in all. Harmonic scalpel or Ligasure was used for dissection / hemostasis. Frozen section biopsy was done in all to identify the ganglionic bowel at pull through. Laparoscopic mobilization of the colon and rectum was performed to ensure that the pulled through bowel would reach the anal canal without tension. Rectum was mobilized staying close to its wall until about 2 cm from the anal verge. Subsequent dissection and anastomosis was performed trans-anally. No covering colostomy was done.

**Results:** In 4 cases the operation could be performed successfully with lap assistance. One case (6 yr boy) required conversion owing to gross dilatation and hypertrophy of the colon and large vessels. In the four cases, the dissection was performed with precision staying close to bowel wall in the deep pelvis so that the trans-anal dissection could be minimized. There were three long segment HD and two rectosigmoid transition HD. Time taken was 3.5 hrs (median). No blood transfusion was required in any. Post operative recovery was uneventful. Feeding could be started within 24 hrs in two and 48 hrs in 2. No patient is incontinent.

**Conclusion:** Laparoscopic assisted pull through is a logical alternative to trans-anal pull through. It can be performed even in long segment HD. Infants are better suited for this operation. The cosmetic results are superb and functional results are comparable to standard trans-anal repair.

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**Technique of laparoscopic hernia repair simulating open repair**

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**Aim:** To present a technique of laparoscopic surgery that simulates open repair. It incorporates all the key steps in hernia repair i.e. division of the sac, partial excision and ligation of the sac.

**Methods:** In one year period, 25 cases were operated by this technique. Age range was 6 months to 13 years. The technique has special significance in boys. Three port technique was used. Peritoneum over the vas and vessels was carefully incised without using energy source. Circumferential incision was completed. About 5 mm of the distal sac was excised. The ring was closed with Vicryl suture. Opposite side was also dealt in the same way if a hernia was found.

**Result:** No conversion, no complications. Time taken was 39 minutes per hernia unit. Follow up is 1 month to one year.

**Conclusion:** A technique of lap hernia repair is presented with all the steps of the open operation.

**Note:** Video is meant to show the technical details.

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**Laparoscopic hernia repair in children: Does partial excision of sac make a difference in outcome?**

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**Aim:** Division of the sac, ligation at the neck and partial excision of the distal sac are essential steps in open hernia repair. Techniques of laparoscopic repair are not standardized. An ideal laparoscopic repair should incorporate all the key steps. The aim of this study was to see if partial excision of the sac makes any difference in the outcome of laparoscopic hernia repair.

**Methods:** In one year period 50 cases (42 boys, 8 girls, 6 months to 12 years) were randomized to undergo laparoscopic hernia repair by either of the two techniques: Gp I: incision of peritoneum and suture closure at the neck; GpII: incision and partial excision of the distal sac and suture closure at the neck. Standard three port technique was used with open canulation of the primary port. Outcome and complications were recorded in a pre set Proforma. Follow up (one month to one year) data was also recorded for late complications, testicular position and size.

**Results:** All operations were successfully performed, there being no conversion. Time taken was 31 minutes (median) per
hernia unit for group I and 39 minutes (median) for group II. Size of the ring varied from 5 mm to 2 cm on the symptomatic units and from 3 mm to 1 cm on contralateral incidentally detected units. There were no operative or immediate post operative complications. There were three minor port site infections requiring topical antibiotics. On follow up there was no complication in either group. The testicular position was scrotal in all and the size was equal to the contralateral testis. There was NO recurrence in either group. There was no injury to vasa or vessels in any patient.

**Conclusion:** Laparoscopic hernia repair in children can incorporate all essential steps of open repair. However, partial excision of sac does not make any difference in the outcome. It takes extra time and theoretically exposes the vas and vessels to injury along a longer length. We conclude that it is not necessary to excise the sac partially during laparoscopic hernia repair.

59 **Minimal access nephrectomy and nephroureterectomy in children: Our experience**

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**Aims:** We present our experience with minimal access nephrectomies and nephro-ureterectomies in children. Our objective was to assess feasibility and efficacy of minimal access nephrectomies and nephro-ureterectomies in infants and children.

**Patients and Methods:** Over a period of 4 years 17 nephrectomies were performed in children aged 7 months to 12 years. 7 patients having dysplastic kidney with ectopic ureteric opening and 2 patients having posterior urethral valve with nonfunctioning kidney underwent laparoscopic nephroureterectomy. 5 patients underwent laparoscopic nephrectomy and 3 patients underwent retroperitoneoscopic nephrectomy.

**Results:** 15 kidneys were removed with minimal access surgery and two patients required conversion. The average length of surgery was 130 minutes (90-200 minutes). The intra-operative blood loss was 45cc (20-70cc). None patients required blood transfusion. Average discharge time was post operative day 5. Analgesic used was minimal, all children enjoyed rapid recovery to full activity.

**Conclusion:** Minimal access nephrectomy is viable alternative to open nephrectomy in children. However, further experience with this technique is required to establish its efficacy and reduce the operating time.

60 **Laparoscopic management of ovarian cyst in neonates**

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Ovarian cysts are among most frequent intra-abdominal masses in neonates. Ovarian cysts arise from mature follicle cells. Most authors have recommended early surgery in neonates with ovarian cyst. Size of cyst and USG features of cyst are also considered as criteria for early surgical intervention. There are no characteristic features on USG and CT scan to differentiate between benign and malignant ovarian lesions. Laparoscopic management has been recently applied in management of ovarian masses in neonates as it is both diagnostic and therapeutic. We present 3 cases of ovarian cyst in 7, 10 and 21 days old neonate, which were managed laparoscopically.

61 **Laparoscopic management of persistent mullerian duct syndrome**

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Persistent Mullerian Duct Syndrome (PMDS), characterized by the presence of mullerian structures in a virilized male, frequently presents as undescended testis, either intra-abdominal or within a hernial sac. We report a 10 months old infant with PMDS successfully managed by laparoscopy. At the age of 1.5 months the patient presented with left inguinal hernia and bilateral non palpable gonads in another centre. On inguinal exploration, uterus and a gonad like structure along with the hernial sac, were found. Left inguinal herniotomy was performed after reduction of uterus and gonad like structure. The karyotype was found to be 46 XY. Magnetic Resonance Imaging (MRI) abdomen and pelvis revealed a uterus like structure posterior to urinary bladder but neither testis nor ovaries like structures could be visualized. At 10 months of age, he was referred to us for further management. A laparoscopic single stage orchiopexy was done. Both testes were brought to the scrotum by splitting the uterus in the midline and then bringing the testes with the vas and attached uterine tissue into the scrotum. The aim of placement of well-vascularised testes in the scrotum was achieved as confirmed on follow up colour doppler ultrasound at 6 months, which revealed normal vascularity. Laparoscopic surgical techniques for this condition are also discussed.

62 **Laparoscopic repair of Morgagni hernia in a case of Down’s syndrome**

Deepak Kishore Kaltari, Sandesh V Parelkar, Sanjay N Oak, Beejal Sanghvi, Rahul Gupta

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We present a case of Morgagni hernia in a 9 months old female with Down’s syndrome who was undergoing evaluation for recurrent episodes of respiratory distress and respiratory tract
Infections. Patient was also found to have deformed chest. The 2-dimensional echocardiography was normal. The diagnosis was confirmed by X-ray chest with nasogastric tube on both, antero-posterior and lateral view as well as on Computed Tomography (CT) scan chest. The patient underwent laparoscopic repair of Morgagni hernia. Postoperative X-ray chest was normal. At present patient is asymptomatic and thriving well. Only twenty cases of Morgagni hernia in association with Down’s syndrome have been reported in literature. Ours is the first case being managed laparoscopically in this rare association.

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Laparoscopic management of patent urachal fistula in a paediatric patient
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A few cases of laparoscopic surgery for urachal remnant in children has been reported in English literature. With recent developments in minimal invasive surgery, laparoscopic approach for urachal remnant in adulthood is recommended by some laparoscopic surgeons because of its technical feasibility and safety as well as cosmesis. There is very limited literature on laparoscopy in management of urachus in paediatric patient. We would be sharing our experience with complete laparoscopic management of complete patent urachus (Urachal fistula) in a 7-years-old female child. Complete patent urachal fistula is a rare entity in urachal abnormality and laparoscopic management in a 7-year old patient has not been reported.

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Lumbar hernia in children- experience with 5 cases
Anup Mohta, Mamta Sengar, Sujoy Neogi, Swarup Das, Chhavi Ranu Gupta, Shandip Kr Sinha, Vivek Manchanda
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Lumbar hernia are uncommon entity in pediatric age group. We present our experience with management of 5 cases of congenital lumbar hernia including two cases of lumbocostal hernia, an even more uncommon entity.

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Intra-splenic cystic lymphangioma: A rare entity
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Case Report: We present a 12-year-old girl who came with an abdominal lump of 2 years duration. There were no other symptoms and she was well preserved. There was no history of trauma. On examination there was a huge, irregular mass in the left hypochondrium with a bosselated surface reaching upto the left iliac fossa which was moving with respiration. Radiological evaluation with USG and CT abdomen showed massive splenomegaly with a large cystic lesion surrounded by multiple small cysts within the splenic parenchyma. Rest of the viscera were normal. Differential diagnosis of Hydatid cyst/splenic pseudocyst/splenic lymphangioma/sequestrated splenic rupture was made. Hydatid serology was negative. The child was taken up for surgical exploration after prep vaccination. At laparotomy, there was massive splenomegaly (weighing 1.5 kgs) with a bosselated surface. Splenectomy was done and a small spleniculus at the hilum was preserved. On cut section, there were multiple cysts containing straw colored fluid. Histopathology revealed cystic lymphangioma of the spleen. The child had an uneventful recovery and has been followed up for 2 months.

Discussion: The spleen is the least common intra-abdominal site for the development of cystic disease. Cystic lymphangioma is a rare non-parasitic cyst of the spleen. The utility of CT in diagnosis of splenic cyst has been proven in literature. The finding of a large splenic cyst with associated multiple small subcapsular cysts is usually seen. The recommended treatment is splenectomy. Marsupilisation alone can lead to recurrence and is best avoided. In recent years laparoscopic splenectomy for this condition has been introduced. A definite diagnosis depends on pathologic examination. Though several reports of this entity are available in adult literature, very few have been seen in children.

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Malignant germ cell tumors: Outcome analysis
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Aim: To audit the outcome of patients with Malignant Germ cell tumors (GCT) treated in a tertiary care center.
Method: A retrospective study was performed by retrieving data from records of children with Malignant GCTs who were treated from 1998 to 2009. The children with immature or mature teratomas were excluded from the study.
Results: 21 children (11F, 10M) with a mean age of 3.8 years were managed over a period of 11 years. Eleven (52%) children had gonadal malignant GCTs and 10 (48%) had GCTs in extragonadal sites. Considerable delay in presentation seen in 11/21 (between 1 month to 5 years) was noted even with a large mass. Misdiagnosis contributed to delay in 6 (28.6%) patients. Alpha-feto-protein, ultrasonography, CT-scan was done in all patients. Pre-operative histopathological diagnosis was obtained by FNAC or Trucut biopsy in 50% of patients. Eight patients had yolk sac tumors, 8 were unspecified, 2 were dysgerminomas, 2 were mixed, and 1 had embryonal germ cell tumor. Pre-operative chemotherapy was given in 7 (33%), which altered the histology from malignant to benign in 4/7 (57%). All patients underwent surgical resection, and adjunct therapy was given to 17 patients; majority received BEP protocol and none received radiotherapy. Only 1/3rd of
these children in the study completed the therapy. Three died on therapy, 5 abandoned therapy soon after induction, and 2 are still on therapy. Overall mortality was 31.25%, recurrence rate was 23.5%, thus the disease free survival for 2 years 42.8%, and for 5 years being 14.2%.

**Conclusion:** Poor results are multifactorial due to delayed presentation, non-compliance to therapy, misdiagnosis either by clinician or by histopathologist. Whether down-staging the tumor by pre-operative chemotherapy and inadequate therapy thereof is a cause for poor outcome needs to be evaluated further. The need to upgrade the surgical oncology facilities and training in our country is evident.

### 67
**Quality of care in Pediatric surgery**
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**Aim:** To study the factors at admission affecting the prognosis of neonates in surgical NICU.

**Materials and Method:** A prospective study was conducted for all patients admitted in surgical NICU. Factors at admission that may affect prognosis including gestational age, birth weight, temperature, heart rate, respiratory rate, saturation, APGAR score, mode of transport, respiratory support, duration of stabilization before surgery and outcome were recorded. The mid term data was evaluated.

**Results:** A total of 30 neonates were admitted including 8 preterm and 22 low birth weight neonates. 4(13%) babies had moderate to severe hypothermia and 4(13%) babies presented with shock. Only one baby was accompanied by doctor and was on assisted ventilation. 20(66%) babies had tachypnoea. 18(60%) neonates were operated within 24hrs of admission while 12(40%) neonates required stabilization beyond 24hrs before surgery. The overall mortality in the study group was 10(32%). The statistical analysis shows association of gestational age, birth weight, hypothermia, shock and assisted respiration at admission. No correlation was found with respect to birth order, parental age, duration of stabilization before surgery and accompanying physician and mortality.

**Conclusion:** The neonatal mortality is affected by birth weight, gestational age, stabilization before and during transfer to operating hospital. Political motivation is required to improve facility.

### 68
**Penile Ptosis in hypospadias: An ignored element of deformity**
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**Problem Background:** Penile drooping, like penile torque, is often associated with Hypospadias. It requires to be included in plans of repair so as to avoid an organ with poor angle, dangle and erection. Although important for good function and appearance, it remains a relatively less known element of anomaly.

**Method:** In a prospective study between 1982-2009, 548 consecutive cases of hypospadias were studied for existence of a drooping penis and horseshoe fold to find out incidence, understand its abnormal anatomy and a way to correct it.

**Observations:** Abnormality was found in 22% cases with out any relationship to its severity. A cleft in suspensory ligament and failure of its fusion in midline is responsible for its appearance and can be corrected by correcting the same. Determining angle of erection should be part of normal evaluation for adequate correction of the anomaly. It appears to be governed by a mechanism which is not linked with urethral tubularization.

### 69
**Perianal Rhabdomyosarcoma: A case report**
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A boy aged 2yrs 6 months presented with an large (8cmx8cm) exophytic growth in the right half of the anal margin of 6 months duration. The mass was excised completely with 1cm normal skin margin; histopathology of the excised mass was reported as Embryonal rhabdomyosarcoma, botryoid variety. Though rhabdomyosarcoma is the 3rd most common neoplasm of childhood, perianal rhabdomyosarcoma is rare & it’s often confused with perianal abscess, polyp & condyoma.

### 70
**Primitive neuroectodermal tumor of the testis**
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Primitive neuroectodermal tumors are a group of tumors that arise from pluripotent neuroectodermal cells. It is considered in differential diagnosis of round cell tumours. It is uncommon in pediatric age group and testicular origin is very uncommon. We discuss successful management of a one and half year male child who was operated upon as a testicular tumour and histopathology showed it to be Primary PNET of testis.

### 71
**Rarer variants of Congenital pouch colon**
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**Aim:** Congenital pouch colon has been described as the rare regional variant in the new international Krickenbeck classification of ano-rectal malformations. This report describes
three unusual cases of congenital pouch colon, two with Y duplication of colon and one with duplicated microcolon with distal colonic atresia.

**Discussion:** Case 1 & 2 represent Y duplication of colon with CPC. The plausible explanation to this occurrence, based on embryological development is highly speculative. It seems that there is caudal duplication of terminal end of midgut with hind gut non development due to obliteration of inferior mesenteric artery. In case 1 the Y duplication occurred at the level of ileocecal junction [midgut level] whereas in case 2 it occurred a little lower almost at the level of right one third of transverse colon with 2 limbs of Y opening into the pouch. In case 3 wherein baby had type 1 CPC with duplicated microcolon there seems to be caudal duplication of midgut at the level of ileocecal junction. The superior limb retains the blood supply [ileo colic branch of superior mesenteric artery] and differentiates into a micro colon with appendix, cecum, ascending and right one third of transverse colon. The inferior limb in absence of ileo colic branch of superior mesenteric artery and vascular insult of inferior mesenteric artery develops into a type I CPC.

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**Meconium peritonitis: A single center experience**

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**Introduction:** Meconium peritonitis is a rare cause of neonatal acute abdomen. Preoperative prediction so as to make the paediatric surgeon get mentally prepared to face the lesion is necessary.

**Aims and Objectives:** To present 21 cases of meconium peritonitis, with regards to clinical presentation, radiographic findings, operative findings and issues and post operative complications and out come.

**Materials and Methods:** The records of 21 cases of meconium peritonitis treated from 1985 were analysed. The parameters studied included clinical presentation, radiographic findings, operative findings and issues and post operative complications and out come.

**Results:** All neonates presented with bilious vomiting, abdominal distension and constipation and sepsis. All were treated as sepsis before referring to pediatric surgeon. Average time of referral was 5 days but as late as 3 weeks is not uncommon. Plain radiograph showed free air, air fluid levels, calcification, honey comb sign in 3, scrotal calcification were common. Ascites was mistaken for nephrotic syndrome in one. Operative findings showed generalized suppurative meconium peritonitis in 12, chronic adhesive type in 5 and giant cystic meconium peritonitis. 5 neonates had associated atresias. Two had meconium ileus and two later were diagnosed to have rectal aganglionosis. Laparotomy, adhesiolysis, drainage, resection and anastomosis wherever required were the procedures performed. 3 neonates developed enterocutaneous fistula, wound infection in 4, one had dehiscence with evisceration, post op NNEC in one and septicemia in 6 were the complications encountered. 8 neonates died postoperatively and 13 are alive. One child 24 years of age was treated for adhesive obstruction. 11 neonates were evaluated with SOFA, APACHE II/ III AND, CRP, PCT nad TNF polymorphism. Analysis of test would be presented.

**Conclusions:** Meconium peritonitis is a rare cause of neonatal surgical abdomen. Meconium ileus, atresias are often associated conditions. Mortality continues to be high.

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**Mediastinal masses of infancy and childhood – Experience with 61 cases**

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**Introduction:** Mediastinal tumours have not changed over years. They continue to be approached on their position on chest radiographs. Specific Symptoms and signs and specific radiographic findings are rarely seen and rarely confirmatory.

**Aims and Objectives:** To present varied presentation of mediastinal masses with analysis of 61 cases.

**Materials and Methods:** The records of 61 cases of mediastinal masses were retrieved and analysed. Age, sex, primary presentation, plain radiographic findings, imaging signs of advanced imaging, operative peculiarities, post op complications and outcome were the targeted parameters.

**Results:** there were 26 bronchogenic cysts, 9 teratoma, 4 primary lymphomas, 14 duplication cysts, 2 pericardial cysts, 3 primary intrathoracic neuroblastomas, chronic abscesses 2 and remaining were anterior meningoceles. Most of them were asymptomatic, were suspected on plain radiographs. 12 had respiratory symptoms, dysphasia in 3 cases and upper gi bleeding in one. All were operated successfully. One child had osteomyelitis and one child CSF leak through chest tube. This child had meningitis and succumbed to that. Operative details of bronchogenic cysts between aorta, esophagus and bronchus would be detailed.

**Conclusion:** Millenium has not brought any new change in the approach to mediastinal mass. Most of them are seen as imageology decided lesions and accessed keeping this in mind.

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**Management of Intravascular thrombus in Wilms tumor**

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**Aim:** To discuss the incidence, management and complication of tumor thrombi in children from 1991 to 2008.

**Method:** 76 cases of Wilms tumor were treated. 5 had bilateral tumors. Age range: newborn to 10 years. CT scan & Color Doppler US were the diagnostic tools. 14 (18.4%) had thrombus in the renal vein and/or IVC. In one it extended to the right atrium, and pulmonary artery. All received chemotherapy
after biopsy. Laparotomy was performed in 13 and median sternotomy in one. Thrombus was found in 9, IVC was slinged proximal & distal to the renal veins in 6, the supra hepatic cava in 2 and common iliac veins in one. A child pulmonary artery thrombus developed acute respiratory distress. At sternotomy the entire lung field appeared white, probably due to diffuse pulmonary micro-emboli. In three the thrombus was floating in IVC. In bilateral disease, thrombus infiltrated the IVC down to the common iliac. Cavectomy below the left renal vein was performed. A left sided tumor, the thrombus extended from the infra-hepatic cava to iliac bifurcation and into the right renal vein. Complete removal was not possible. In another, the thrombus in renal vein extended into IVC & adherent laterally for 1.5cm. Thrombus was confined to the renal vein in 3 and was excised with the tumor.

Results: Preop chemotherapy lysed the thrombus in 5/14 (35%). One died. 13 recovered. Incomplete removal was done in one.

Discussion: Preoperative chemotherapy is helpful. Cavectomy is possible in right side tumor due to good collateral circulation on the left.

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MMP 2, MMP 9 and TIMP in neuroblastoma and hepatoblastoma - correlation with clinical stage and survival
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Introduction: Matrix metalloproteases and TIMP are well studied in wound healing as primary extracellular matrix modulating cytokines. There role is being explored in tumour metastasis. Adult tumour studies are many and studies in childhood tumour are very few. Few Japanese studies are available both in neuroblastoma and brain tumours.

Aims and objectives: To present our experience with MMP2, MMP 9 and TIMP in neuroblastoma and hepatoblastoma.

Materials and Methods: Paraffin blocks 11 of neuroblastoma and 4 of hepatoblastoma were analysed regarding expression of MMP2, MMP9 and TIMP. Two pathologists were involved. They were performed using monoclonal antibodies using the protocol decribed by the manufacturer. Expression was graded subjectively into mild, moderate and extensive expression. Clinical Stage and behavior was correlated with grade of expression.

Results: Both Neuroblastoma and Hepatoblastoma showed MMP 2 ans MMP 9 expression with inconsistent variation both in the tissue and between specimens. Mostly the MMP2 and MM9 were tumour normal tissue interface and TIMP was in the tumour. The staining were compared with wound studies of our own series. Early stages showed relatively less expression as compared with advanced stages. No correlation with survival. TIMP expression was highly inconsistent to draw any conclusion. Our previous study on cytogenetics in neuroblastoma of the same cases would be compared.

Conclusion: MMP2, MMP 9 and TIMP might be future targets of prognostification if done in large numbers.

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Laparoscopic inguinal hernia repair in paediatric age group: Our recent experience
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Aim: Retrospective analysis of prospectively collected data of paediatric patient underwent laparoscopic inguinal hernia repair in this series.

Methods: A retrospective review was performed of the prospectively collected data of 125 laparoscopic internal ring closures in 61 children (aged 30 days to 11 years, median 1.9 years) from May 2008 to June 2009. The internal ring was closed with 3-0 nonabsorbable suture. Both extracorporal and intracorporal methods of knotting were used. All patients were asked to come at 1 week as well as 6 weeks postoperatively for routine follow up.

Results: The contra lateral patent processus vaginalis was present in 12 % [7/ 61] of children. Follow up range was from 1 week postoperatively to 12 months. There were total 2 recurrences (1.6 % [2/125], 1 in boy and 1 in girl) and 1 hydroceles 0.8 % (1/ 125). There was 1 metachronous hernia but no testicular atrophy. Mean operating time was 23 minutes for unilateral and 29 minutes for bilateral hernias.

Conclusion: Laparoscopic inguinal hernia repair is technically easier and there is no need of dissection of vas and vessels. The risk of metachronous hernia is definitely reduced. It is cosmetically better. Although recurrences were more common earlier, now they are much less. Thus it can be said that laparoscopic inguinal hernia repair appears to have less morbid results than open herniotomy and can be used as routine procedure in paediatric age group.

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Experience with video assisted thoracoscopic removal of pulmonary hydatid cysts in children
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Pulmonary hydatid disease is prevalent in many parts of world including India. In our small series of 5 pediatric patients, all patients were diagnosed with clinical and radiological findings on plain X –ray chest and CT (Computed Tomography) chest. All of them received oral albendazole 10 mg/kg/day soon after diagnosis except in one patient in which preoperative differential diagnosis was bronchogenic cyst and lung abscess (case 4). All underwent video assisted thoracoscopy. Simple endotracheal intubation was utilized in all cases. Complete thoracoscopic removal was successful in 3 cases, while conversion to open thoracotomy was required in 2 cases. All of them showed rapid recovery except for one patient in whom prolonged intercostal drainage was present for 2 weeks. The average duration of procedure was 150 minutes and average
length of hospital stay was 4.5 days except case 2, which was discharged on day 15 due to prolonged air leak. Histopathology in all cases was suggestive of hydatid cyst. At mean follow up of 6 months, all patients are asymptomatic and doing well.

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Isolated retroperitoneal hydatid cyst with scrotal extension masquerading as obstructed inguinal hernia in a child
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Aim: Hydatidosis affects almost every region of the body. Although adults are mostly affected, children also suffer from the disease especially in endemic area. Here we present a 9-year-old child with a retroperitoneal location of hydatid cyst with scrotal extension which presented a diagnostic dilemma vis-à-vis obstructed inguinal hernia.

Methods: A 9-year-old boy presented to our emergency with complaints of left sided scrotal swelling for one day. On examination, a mass approximately 3 × 2 cm in diameter was identified in the left groin, his testes were in the scrotum, and there was no silk sign. Ultrasonography (US) showed a thin-walled, anechoic, unilocular cystic mass in the left scrotum with a dumb-bell shaped extension of the swelling in the retroperitoneum. CECT was done which also supported the sonographic findings.

Results: Patient was explored through left transverse incision. The operative diagnosis was hydatid cyst because we identified the germinative membrane and liquor of a hydatid cyst after opening the cyst wall. Total cyst excision was performed after dissection of the cyst. Patient was discharged 10 days later without any complications.

Conclusion: There are many reports in literature of isolated retrovesical and retroperitoneal hydatid cyst in adult patients. Our case has many firsts including the scrotal extension of an isolated retroperitoneal hydatid cyst, sudden appearance of scrotal extension presented diagnostic dilemma and the age group of our patient.

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Ten years experience with window colostomy as a preliminary diversion procedure in cases of congenital short colon
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Aim: Congenital short colon (CSC) is an unusual abnormality in which a pouch like dilatation of a shortened colon is associated with ano-rectal malformation (ARM). The clinical features and anatomical features are very well described in the literature but the management remains difficult and controversial. The present paper aims to study the effectiveness of window colostomy (WC) as preliminary diversion procedure in the management of congenital short colon (CSC).

Methods: All patients of CSC admitted to our department during a period of 10 years (1997-2007) in whom the WC was performed have formed the basis of this study. Out of total 137 patients admitted with CSC in the study period, window colostomy was done in 125 patients. These patients were retrospectively studied and the data sheets were analyzed regarding complications related to WC and the management offered. 5 patients expired before the procedure was undertaken, and transverse colostomy was done in 7 cases of incomplete CSC.

Results: Eighty-six patients were followed-up after WC and underwent all stages of management (WC followed by coloplasty and ileostomy and ileostomy closure in the last stage). The procedure was associated with some distressing complications. Stenosis of the window colostomy needing dilatation was seen in 20 patients. 16 patients had minor prolapse of the pouch, while 6 of the patients had significant amount of prolapsed pouch needing revision procedures. 17 patients had significant peri-ostomy excoriation. The overall mortality related to the procedure was 9.6%.

Conclusion: Window colostomy in the cases of CSC is a simple surgery, can be done with minimum anaesthesia time in a sick neonate and provides adequate decompression. There are some problems associated with window colostomy. However the procedure is short, easy to perform, and is life-saving and provides adequate time period to allow weight gain and be fit for second stage surgery. It eventually does not affect the final outcome in these patients with congenital short colon.

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Single stage combined repair of exstrophy bladder—preliminary results
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Aims: To study the feasibility of single stage repair in exstrophy bladder as a primary procedure and as a secondary salvage procedure for failed exstrophy bladder. The present study also aims to assess the short term results of the same.

Patient and Methods: During March 2008–June 2009, 8 patients of exstrophy bladder were operated in the Department of Pediatric Surgery [6 males and 2 females]. They were divided into 2 groups of 4 patients each. Group I [age ranging from 7 months – 60 months] had single stage primary combined repair, with bladder turn in, modified cantwell ransley repair with umbilicoplasty, bilateral herniotomy and bladder neck tightening. Group II [age ranging from 14 months – 66 months] had previously failed repairs. Preoperative renal functions, ultrasonography, bladder capacity, presence of polyps, elasticity/compliance of the bladder and complications were recorded. Assessment of dry period was done at 3, 6, 9, 12, 15 months postoperatively.

Results: The follow up ranged from 3 months – 15 months
[median -13 months]. The preoperative RFT and USG were normal in all patients. Bladder capacity was 30-35 ml and 25-30 ml in group I & II respectively, hyperplastic mucosal polyps were seen in 3/4 patients each in group I and II. Fibrotic, inelastic bladder was seen in one patient each in the 2 groups. None of the patients had urethral fistulae or hypospadias while 2 patients in group II had urinary leak from abdominal wound which healed on 2 weeks of urethral drainage. The dry period in group I was 60-80 minutes at last follow up while it varied from 20-45 minutes in group II.

**Conclusion:** Single stage combined repair is feasible both as a primary and secondary procedure. The early results are promising and better in the primary group.

### 81
**Neonatal esophageal lesions presenting with dysphagia other than EA with TOF**

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**Introduction:** Swallowing difficulty is commonly seen in EA with TEF. Other surgical causes of neonatal dysphagia are rare.

**Aims and Objectives:** To present experience with 14 cases of neonatal dysphagia die causes other than EA with TEF.

**Materials and Methods:** A total of 14 neonates were treated from 1985 till 2006 for dysphagia. Clinical presentation, imaging findings and treatment and outcome were analyzed retrospectively from the case records.

**Results:** Achalasia was seen in 4, muscular hypertrophy in 3, web in 2, duplications in five cases. All presented with difficulty in swallowing but sucking well. Drooling of saliva was seen in all. Esophageal atresia was considered in all. Imaging helped to diagnose. Antenatal diagnosis was done in two cases. 8 were boys and 6 were girls. Myotomy was done in 4, esophageal substitution in 2, excision of diaphragm in 2, Excision of Duplication in 4, Endoscopic dilatation in two. 2 children died. 2 children had recalcitrant strictures finally requiring substitution. One child with achalasia required second surgery.

**Conclusion:** Neonatal esophageal lesions other than TE is uncommon. Awareness is essential to investigate and correct the anomaly.

### 82
**Neonatal neck lesions presenting with respiratory distress: A 25 years experience**

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**Introduction:** Neck lesions, massive, acutely inflamed, very close to trachea or extending to superior mediastinum often present with respiratory distress in the neonatal period. Immediate active medical and surgical intervention might be in order.

**Aims and Objectives:** To present detailed analysis of 68 neonates with various neck lesions presenting with respiratory distress.

**Materials and Methods:** The records of last 25 years were screened for neck lesions in neonatal period. 68 neonates had respiratory distress. All of them had respiratory distress with evidence of tracheal obstruction.

**Results:** Thyroid, Teratoma, Lymphangioms, hemangiomas, Teratoma, Rhabdomyosarcoma, Histiocytosis, Parapharyngeal abscess, Intratracheal hemangioma constituted list of the causes. Most of them required an urgent surgical intervention. Lymphangioma with or without acute inflammation was the commonest lesion. Para and retropharyngeal lymphangioma were the most difficult to excise and recurrence was also common. Neonatal thyroid teratoma had dramatic response to thyroidectomy.

**Conclusion:** Massive and inflammed neck lesions with respiratory distress often require urgent surgical intervention.

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**Open vs. Laparoscopic appendectomy in children: A single center experience**

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**Introduction:** Laparoscopic appendectomy has become popular by aggressive surgical marketing. Unexpected complications, conversions, cost and time continue to be problematic in lap appendectomy.

**Aims and Objectives:** To compare open conventional appendectomy and laparoscopic appendectomy in children.

**Materials and Methods:** Records of 50 consecutive laparoscopic appendectomies and age matched 100 open appendectomy were analysed for duration, complications, post pain, return to school and the cost.

**Results:** Age, sex, pre op settings did not differ much in both the groups. Average time for laparoscopic appendectomy was 1½ to 2 hours while open appendectomy was 20 min to 35 minutes. Accidental intestinal injuries were seen in 3 laparoscopic appendectomy group. While, no such injuries were encountered in open appendectomy. Appendicular artery slippage was seen in one case of laparoscopic appendectomy. Stump handling remains cumbersome in laparoscopic appendectomy. Surgeon was never comfortable and confident. Two cases were converted. Cost was one and half times more in lap group. The size of scar in open was single and three small port site scars in lap group. Pain was more in first 24 to 48 hours in laparoscopic appendectomy as assessed by three pain scoring systems. On demand analgesic requirement was almost double in lap group.

**Conclusion:** Laparoscopic appendectomy although contemporary and popular, unexpected injuries, pain, cost continue to be unfavorable factors to become universally accepted procedure.
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Ovarian masses in pediatric age group- Our experience
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Aims: Primary cyst and tumors of ovary are uncommon in pediatric age group. Majority of these masses are not malignant. Our aim was to find out the clinicopathological profile of the patients presenting to us with ovarian masses over the last three years.

Methods: Five children were operated for ovarian mass in the last five years. They had a varied presentation—abdominal distention, abdominal mass, antenatally diagnosed abdominal mass, virilization, acute abdomen. Their ages ranged from 1 month to 11 years at the time of presentation.

Conclusions: Ovarian masses have a varied presentation. Though ovarian masses are less common in childhood than other pathologies, they should be kept in mind when managing a female child.

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Papillary carcinoma of thyroid in childhood
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Four and a half year male child was referred with a history of a lump in the right side of the middle of neck of six months duration. A biopsy of the lesion was done by the referring Pediatrician and the report stated ‘thyroid tissue’ in the lymph gland. Further investigations like Doppler study of the thyroid and neck glands showed multiple lesions in the thyroid and neck glands suggestive of multiple centric papillary carcinoma of thyroid. A para-thyroid sparing total thyroidectomy and radical right neck dissection done. Child is awaiting whole body Radio iodine scanning and further treatment. The child will require life-long Thyroxine medication.

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Pediatric liver transplantation-an experience of 19 cases
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Introduction: Liver transplantation is an established and perhaps the only modality of treatment for patients with end stage liver failure. High costs, absence of a cadaveric donation program and general apathy amongst the medical community has contributed to poor penetration of Liver Transplant in India. The few established program in existence are all predominantly adult programs, pediatric transplants remain infrequent. A program of pediatric liver transplantation was initiated at our hospital in end 2005. This report summarizes out experience with 19 pediatric liver transplants carried out during this time.

Material and Methods: Data of children referred for liver transplantation and those that undergo the procedure are maintained in the centre. This study is a retrospective study of this cohort of 19 patients who have undergone liver transplantation procedure. The same core group also performed 2 more LTxs at another institution earlier-these too have been included in the study. Those that were on the waiting list and succumbed have also been looked at separately.

Results: Nineteen children underwent LTx. The age ranged from 8 months to 7 years (median 20 months). Weights ranged from 3.5kg to 21kg. There were 5 girls. Cause of liver disease was biliary atresia in 11, metabolic disease in 5, choledochal cyst, fulminant hepatic failure and cryptogenic cirrhosis in 1 each. One child received a cadaveric organ while the rest received live donor grafts-from mothers in 15, 2nd degree relatives 2 and altruistic 1. The cadaveric graft was a whole liver graft. 17 children received left lateral segment grafts while 1 received a full left lobe. All children received a tacrolimus based immunosuppression. Overall, there were 4 early post-op deaths (with in 28 days of grafting)-all these in the early part of the series. 3 more children died later (severe pulmonary hypertension and shunting 6 weeks post op, cyclosporin toxicity 8 moths post LTx and Burkitt’s lymphoma 3 years post LTx). Overall, survival is 70%. However, 9 of the last 10 cases (follow up of 11/2 years to 3 months) are alive and well-suggesting that the team is over the learning curve. The oldest survivor is now into his 11th year post LTx. He is well, goes to normal school and is like any other child of his age. All the remaining 11 children are well and have no major problems. They are at age appropriate stages of development and schooling. There has been no major donor morbidity. One donor require re-exploration on post op day 1 for bleeding (no source was found) and one had a bile leak that responded to 3 weeks to external drainage.

Conclusions: This study demonstrates that LTx is an effective and feasible option for children with end stage liver disease. Improving outcomes suggest a maturing of the protocols. For the large pool of children with biliary atresia and other end stage liver disease, LTx offers an excellent chance of recovery and a good quality of life. Increasing numbers will also force down costs and make the procedure and aftercare more affordable.

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Paediatric surgery teaching for undergraduate-medical students: An institutional experience
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Aims: To assess the efficacy of paediatric surgery teaching for medical students in a medical institution over a period of 10 years.

Methods: One semester was allotted for teaching paediatric surgery to medical students. Objectives were drawn up...
and course content decided. Teaching learning methods were didactic classes with multimedia as well as practical demonstrations. An evaluation was done at the end of the course. The process of evaluation kept changing depending on the experience. An attempt was made to correlate individual student attendance with the performance in the evaluation.

**Results:** The attendance for paediatric surgery classes exceeded 80 percent on an average. Each batch had an initial period of apathy followed by regular attendance. The attendance of individual students correlated well with their performance in the examination at the end of the course. The system of evaluation started as short notes type followed by multiple choice questions. At present the evaluations done by single word or single line answer type of questions. There were several problems in conducting the course which will be brought out at the time of presentation.

**Conclusions:** Paediatric surgery classes are fairly well attended. Paediatric surgery teachers need to be trained in undergraduate teaching. A uniform curriculum needs to be adopted by the paediatric surgery fraternity.

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**Predictibility of different parameters in childhood appendicitis**

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This is a retrospective study of 117 appendicectomies in children done over a period of 17 years from 1992 to 2008 by a single surgeon in combined institutional and private practice. In all a-leucocute count with differential counts, a comment on peripheral blood film for toxic granules and band cells, C-reactive protein estimation (if needed on two serial occasions) was done. Along with this, a targeted ultrasound of abdomen to detect appendicitis and to exclude other pathologies was done. In selected cases urine microscopy was also done. Postoperatively all the appendices were subjected to histopathological examination to corroborate with clinical and other parameters. This study will discuss and try to elaborate whether these parameters were at all helpful or not to diagnose appendicitis in children.

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**PUJ obstruction in poorly functioning renal units: Is nephrectomy really indicated?**

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**Aim and Introduction:** Radionuclide renography showing <15% function is often taken as an indicator for nephrectomy in PUJ obstruction. The authors refute this assumption by presenting 11 cases. In 8 the function improved following nephrostomy leading to successful pyeloplasty. In three cases function did not improve – leading to nephrectomy.

**Method:** 11 cases of poorly functioning (<15% on DTPA) kidneys with PUJ obstruction were subjected to nephrostomy to see if functional recovery takes place. Minimum duration of nephrostomy was 4 weeks and maximum 12 weeks.

**Results:** Eight out of 11 renal units showed functional recovery following nephrostomy. Following pyeloplasty further recovery was demonstrated by follow up DTPA scans in 6 of them. No complications were noted. Hypertension was seen in 5 (controlled by medication in all). In 3 of them it improved after surgery.

**Conclusion:** Poorly functioning kidneys with PUJ obstructions have potential for functional recovery. It can be assessed by a nephrostomy before pyeloplasty.
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Prognostic factors of esophageal atresia and tracheoesophageal fistula with special reference to histopathological study

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Aims and Objective: To study the histopathological finding of the both upper esophageal pouch and lower tracheoesophageal fistula tract in respect of lining epithelium, muscle arrangement glands, presence of nerve tissue (nerve bundle and ganglion cells) and presence of tracheobronchial remnants to the other reported series. To correlate the histopathological finding to the late complications in the follow up.

Material and Methods: The study was carried out in 53 patients from May 2007 to June 2009. A circumferencial tissue of 1 mm to 2 mm thickness cut from the both lower esophageal and upper pouch were taken for biopsy. In histopathology we looked for type of epithelial lining, muscle arrangement, mucous gland and neural tissue (ganglion and nerve bundle) and presence of any tracheobronchial remnant i.e. respiratory epithelium and cartilage. The muscle arrangement were divided into 3 categories i.e. normal, poorly oriented completely disorganized according to the degree of disorganization. Patients were followed properly and grouped according to Desjardin classification

Result: In the histopathological finding, the epithelial lining of both upper and lower esophagus were predominately squamous epithelium except in 1 case of upper pouch where gastric type epithelium was found in focal areas. Arrangement of muscle coat was poorly or completely disorganized more in lower fistulous tract than the upper pouch. More mucous gland found in the fistulous tract than upper pouch. Nerve bundles found more in upper pouch than the fistula. Few ganglion cells also seen in histopathological finding of fistula. No tracheobronchial remnant was found in fistulous portion in our study.

Conclusion: Patients with poorly or completely disorganized muscle coat presented with features of esophageal dysmotility (in Desjardin’s group of good and fair) in the follow up. A good numbers of patients presenting with late complications like GER, dysphagia, stenosis or dysmotility had abnormal histopathology at the site of anastomosis in the form of abnormal musculature neural tissues.

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Post operative MRI evaluation of Anorectal malformation with clinical correlation

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Aims and Objective: The aim of study was to correlate the long term clinical outcome of single stage surgery for high and intermediate anorectal malformations with that of MRI finding and to compare it form traditional staged procedure.

Material and Method: Forty postoperative patients of anorectal malformation were evaluated by MRI during March 2007-July 2009. Age of patients was ranging from 3 yr to 25 yrs. Patients were distributed into three groups. Good (Group 1, n=14), fair (Group 2, n=12), poor (Group 3, n=14) - on the basis of Kelly’s clinical score of incontinence. These patients were correlated with MRI finding in terms of - the degree of development of puborectalis, external sphincter, levator hammock muscle, anorectal angle, eccentric position of rectum and rectal diameter and were compared with normal.

Result: The proportions of fair or poor development of the muscles were 21%in Group 1, 29% in Group 2 and 48.27% in Group 3. Development of sphincteric muscle was found to be significant factor in study. The difference in the anorectal angle measured on sagittal MRI images between patients in group 1 and group 2 or group 3 was significant. Patient with single stage operation were 70% in group1, 20% in group2, 10% in group 3, while 40% in group 2 and 60% in group 3 patients were undergone three stage operation in study.

Conclusion: Our study concluded that the results of single stage procedure seem to be better than staged operation in terms of anal continence and which has been proved clinically and also supported by MRI findings.

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Comparative study of Color Doppler & Laparoscopy in diagnosis of non palpable testis

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Objective: Non palpable testis in children is common diagnostic problem. Color Doppler has more or less equivalent results with that of CT scan or MRI scan. In present study we compared the sensitivity and specificity of color Doppler with that of laparoscopy.

Material and Method: This is a prospective study conducted in the Dept of Pediatric surgery, IMS, BHU, Varanasi between 2007 to 2009. A total of 40 cases were included in study, aged between 1 to 14 yrs of which 26 were unilateral and rest 14 was bilateral non palpable testis. Colour Doppler was performed in all cases in supine position. Intra-abdominal, inguinal retro-abdominal areas were seen carefully. Subsequently Laparoscopy was performed for confirmation and treatment.

Result: Colour Doppler detected 24 out of 28 bilateral undescended testes (Sensitivity 85%) and 19 out of 26 unilateral non-palpable testes (Sensitivity73%). Laparoscopic evaluation of bilateral non-palpable testes detected all 25 testes of 14 patients (sensitivity 89%). All are found proximal to deep ring within 3 cm from deep ring. In unilateral non-palpable testis laparoscopy detected 20 out of 26 situated proximal to deep ring(Sensitivity 92%).In 4 cases testes were not found inside abdomen (vanishing testes) which was confirmed by
Success and complication rates of endoscopic third ventriculostomy for hydrocephalus: A series of 10 patients
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Aims and objective: Conventional treatment of hydrocephalus is drainage of excess C.S.F. by different types of shunting, Now non communicating hydrocephalus is increasingly treated by endoscopic third ventriculostomy. The procedure of ETV has gained popularity over the last 2 decades in large part because of improved endoscope optics, high intensity lighting systems, and miniaturized CCD cameras. To assess the success and complication rate for hydrocephalus treated by ETV.

Material and Methods: ETV procedures were performed in 10 patients (mean age 1 yrs) over 1 year. All the cases were idiopathic aqueductal stenosis. It was explained to the patient that ETV procedure was being performed in lieu of replacement of a shunt. Each patient understood that a shunt procedure would be recommended in advent of clinical failure. The determination of anatomical eligibility for ETV was based on CT scan.

Results: 8 pts. (80%) continued to be shunt free after the primary ETV operation (mean follow up 8 months). 1(10%) patient with clinically failed primary ETV procedure have persistent CSF leak from stitched line and managed conservatively with close follow up. One patient (10%) who ultimately failed ETV, requiring a CSF shunt procedure in <1 month.

Conclusion: Endoscopic third ventriculostomy for non communicating hydrocephalus is a well tolerated procedure that has a high likelihood of achieving shunt free existence. All patients undergoing ETV should be followed for at least 1 year period in the advent of delayed failure.

Effect of tumor spill on recurrence rate and outcome in patients with Wilms’ tumor: Results of AIIMS-WT 99 study
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Background/Purpose: Tumor spill is a known factor for recurrence and overall poorer outcome in patients with Wilms’ tumor (WT). This study was undertaken to evaluate the effect of spill on recurrence rate, overall survival (OS) and recurrence free survival (RFS).

Methods: Prospective cohort study from June 1999 through
December 2006. Treatment was according to the AIIMS-WT 99 protocol. Any spill was classified as stage 3 and treated accordingly with three drugs (Actinomycin D, Vincristine and Doxorubicin) and radiotherapy. Statistical analysis was done applying appropriate tests of significance.

**Results:** Hundred WT patients, in the age range 4 months to 96 months (median 24m) were enrolled. There were 97 favorable histology tumors and 3 anaplastic tumors. There were 21%, 6%, 52%, 12% and 9% patients in stage I-V respectively. Preoperative chemotherapy was given to 54 patients of whom 8 (14.8%) had tumor spill while upfront resection was done in 46 patients of whom 12 had spill (26.1%). Overall tumor spill occurred in 20% of patients. Four of these 20 (20%) developed recurrence while 9 of 80 (11.3%) without spill developed recurrence. This difference was not significant (p = 0.29). Three of the 20 with spill and 12 of 80 without spill died. The OS and RFS for those with spill was 85% (Mean survival time [MST] 63.2m; 95CI 56.3-69.8) and 80% (MST 65.5m; 95CI 48.7-82.2) respectively. The OS and RFS for those without spill was 85% (MST 70.4m; 95CT 55.3-85.6) and 88.6% (MST 55.9m; 95CI 49.9-61.9) respectively.

**Conclusions:** Preoperative chemotherapy does decrease the risk of spill. Tumor spill does not lead to significantly increased risk of recurrence (p = 0.29) and it does not significantly effect the OS (p = 0.91) or RFS (p = 0.28) in children with wilms’ tumor. Spill should still be avoided as it will upstage the patient, increasing the cost, duration and morbidity of treatment.

### 97 Long term outcome of children with Wilms tumor having intravascular thrombus

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**Aims:** To evaluate the prevalence of inferior venacaval thrombus (IVT) in Wilms tumor(WT) and determine their long-term outcomes. Methods: Prospective case control study of all children of WT with IVT from June 1999-December 2008. Preoperative Ultrasound(US)-Doppler was done in all patients. All patients with IVT received 4-6 weeks of preoperative chemotherapy and were then operated upon. The 5-year overall survival(OS) and 3-year recurrence-free survival(RFS) of all patients and according to stage and recurrence status were analyzed using Kaplan-Meier survival analysis and appropriate tests of significance applied using SPSS. Log Rank test of significance with value < 0.05 was considered significant.

**Results:** Eighteen of 133 patients of WT had IVT on preoperative US-Doppler study(prevalence of 13.5%). The age range of these patients with IVT was 8m-84m(mean 44.9). In 14/18(77.8%) thrombectomy was required, while in 4 it had resolved completely by the time of nephrectomy (as confirmed pre-operative Doppler and operatively). Overall 12/18 survived (OS 42.9%; mean survival time [MST] 44.4; 95CI 27.6-61.2). Three of 18(16.7%) developed recurrence and all these died while 12/15 without recurrence survived (OS 83.3%; MST 55.9; 95CI 39.3-71.7). This difference was significant (p = 0.04). There were 12 patients (66.7%) in stage-3 disease of whom none developed recurrence and only one died(OS 91.7%;MST 67m; 95CI 55.7-78.3). Of the 6(33.3%) stage-4 disease, 3(50%) developed recurrence and all these 3 died(OS 16.7%;MST 22.3m; 95CI 8.4-36.3)(RFS 50%; MST 14.3m;95CI 9.7-18.9). This difference in the 5-year OS(p = 0.018) and 3-year RFS(p = 0.02) between stage-3 and stage-4 patients was significant.

**Conclusion:** The prevalence of IVT was 13.5% and most of them(77.8%) required thrombectomy despite pre-operative chemotherapy. The 5-year OS in patients with IVT was poor(42.9%). The OS was significantly (p = 0.04) lower for those developing recurrence. The 5-year OS and 3-year RFS was significantly lower (p = 0.018 and 0.02 respectively) for patients with stage 4 disease as compared to stage-3 in patients with IVT.

### 98 Telomerase activity in Wilms’ tumor


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**Background and Purpose:** Telomerase expression has been proposed as a tumor marker associated with poor outcome in a number of adult and pediatric malignancies. This study was undertaken to examine the telomerase activity in wilms’ tumor.

**Material and Methods:** Telomerase activity was studied on the tumor tissue obtained from cases of Wilms’ tumors registered and treated at the hospital from February 2006 through February 2007. Telomerase activity was done using the PCR ELISA kit. Statistical analysis was carried out using STATA 9.0. Data were presented as number (%) and median (range) as appropriate. The difference in proportions were compared using chi-square / Fisher exact test. The differences in medians were compared using Wilcoxon Ranksum test. Overall survival was calculated using Kaplan-Meier method and it was reported as survival rate (95% CI). The p value <0.05 is considered statistically significant.

**Results:** Twenty-four specimens from 22 cases (2 were bilateral) were studied. Using 0.2 as cut-off for positive telomerase activity, 19 of 24 samples were positive (79.2%) and 5 of 24 (20.83%) were negative. Four of these 5 negative samples were from patients who had received pre-operative chemotherapy. The median telomerase activity in the tumor tissue was 0.649(range of 0.031-2.382). Telomerase activity in adjacent normal kidney tissue was 0.265(range of 0.012-0.714). Telomerase activity in the tumor tissue obtained from cases of Wilms’ tumors was found positive in 79% cases of wilms’ tumor. Telomerase activity was significantly
more in the tumor tissue as compared to adjoining normal tissue \((p = 0.0001)\), it could not be significantly correlated with stage of tumor, response to pre-operative chemotherapy, tumor histology, recurrence and overall survival.

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**Pulmonary metastasectomy: Is it a safe and viable option in children?**


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**Background:** Most pulmonary metastases in children with solid tumors resolve with chemotherapy with or without radiation therapy. Indications for pulmonary metastasectomy are very few and in them there is always the question of usefulness with regards to complications and ultimate outcome.

**Aims:** To evaluate the surgical management, complications and the outcome of patients who underwent thoracotomy for pulmonary metastasectomy.

**Materials and methods:** Case records of solid tumor patients who underwent pulmonary metastasectomy in the period September 2001 to April 2009 were reviewed to evaluate the disease distribution, number of thoracotomies, type of resection, complications and ultimate outcomes in terms of recurrences and event free survival.

**Results:** During this time period, 23 patients (8 Wilms [WT], 6 Osteosarcoma [OSa], 4 hepatoblastoma[HB], 2 malignant germ cell tumors[MGCT], 1 each of malignant mesenchymal tumor[MMT], Ewing’s sarcoma[EW] and rhabdomyosarcoma[RMS]) underwent a total of 33 thoracotomies (14 unilateral, 8 bilateral and 3 re-thoracotomy) for the removal of 120 pulmonary metastases (ranging from 1 to 20 metastases /patient). Of these 33 thoracotomies, 1 was negative and 1 unresectable. While one patient underwent pneumonectomy, there were 10 lobectomies, 6 wedge resections and the remaining sub-pleural resections of metastases. Repeat thoracotomy for recurrence of pulmonary metastases was done in 3 patients (2 WT and 1 Osa). All patients of WT, MGCT, RMS, EW and MMT underwent unilateral thoracotomies. Five of 6 (83%) of Osteo Sa and 3/4 (75%) HB underwent bilateral metastasectomies. Post-operatively there was one pneumothorax and one wound infection among the 33 thoracotomies. There were 7 recurrences among the 22 (31.8%) patients excluding the one unresectable patient. Recurrences were observed in 2/8 (25%) WT, 2/6 (33%) Osa and 3/4(75%) HB. Off these 23 patients there were 6 deaths giving an overall survival rate of 74%. The mean event free survival was 33.8 months (range 9m – 132 m).

**Conclusion:** Thoracotomy and pulmonary metastasectomy is a safe and viable option in indicated patients, even when done bilaterally. It results in acceptable event free survival rate in these patients who are otherwise doomed to progressive disease and death.

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**Sacrococcygeal malignant germ cell tumor with intra-spinal extension**


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**Background:** Neurological involvement due to intra-spinal extension in SC-MGCT has rarely been reported.

**Aim:** To evaluate the incidence, presentation, management and the outcome of patients of sacrococcygeal malignant germ cell tumor (SC-MGCT) with intra-spinal extension.

**Material and Methods:** Case records of all cases of SC-MGCT treated by us, from 2001 to 2008, were reviewed to identify cases with vertebral involvement and intra-spinal extension.

They were evaluated in terms of their presentation, response to therapy, extent of surgical resection, recovery of neurological symptoms and outcome. All received chemotherapy (PEB regime) pre-operatively with surgical resection and completion post-operative chemotherapy.

**Results:** Of the 31 cases of SC-MGCT, 5 (16%) had intra-spinal extension, age ranged from 12 – 84 months (median 24 m). Four patients had Altman 3 and one Altman 2 disease. Four of the 5 (80%) had stage 4 disease with bilateral pulmonary metastases while 1 had stage 3 disease. The intra-spinal extension in all patients was detected on contrast CT scan and was noted to extend into the sacral canal through the vertebral foramina or vertebral erosion. The tumor then extended cranially into the lumbar canal. While one patient had no neurological symptoms, the other 4 (80%) had bilateral lower limb weakness and 1 (20%) had urinary and fecal incontinence as well. All the tumors responded to pre-operative chemotherapy with the intra-spinal tumor and the pulmonary metastases resolving completely and the primary shrinking in size. Gross complete local resection could be achieved in 4 (80%) while in one there was minimal residue left adherent to the sacrum. Partial sacral excision of S-3,4,5 was done in one. All were histologically endodermal sinus tumors. Neurologic recovery was complete in all, except for persisting neurogenic bladder in one. This patient is dry on CIC. In the follow-up of 3 – 32 m, all were alive with no recurrence.

**Conclusions:** SC-MGCT presenting with neurologic defects due to intra-spinal extension is usually advanced disease. These patients respond well to chemotherapy and surgical resection and most recover completely from their neurologic involvement.

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**Role of a refluxing lower ureteral stump in preserving the contralateral solitary functioning kidney**

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Aim: To review the efficacy of the refluxing lower ureteral stump as a cutaneous stoma in preserving function of contralateral solitary renal units in children with various uropathologies.

Material and Method: Nephrectomy with the ipsilateral ureteric stump brought out as a cutaneous stoma was performed in 12 males for various uropathologies resulting in a contralateral solitary functioning renal unit between 2006 - 2009. The mean age was 32.7 months (8 mos. - 8 yrs.); the primary pathology included PUV (6), neurogenic bladder(3) and primary VUR(3).10/12 presented with recurrent UTI ; 8 had associated acute renal failure of which 2 required dialysis. 2 were hypertensive, one presented with an encephalopathy. Bilateral VUR was seen in 3/6 with PUV, 3/3 with neurogenic bladders and 2/3 with primary VUR. One child with PUV had no VUR. Renal function tests, USG, MCU, DMSA and diagnostic cystoscopy were used to document the renal pathology and lower urinary tract. Other interventions included vesicostomy/fulguration of PUV/ureteric reimplantation/CIC as deemed necessary. Nephrectomy (Lt.-7, Rt.-5) was done for non-functioning kidney with recurrent UTI/hypertension. The distal ureteral stumps were retained as refluxing cutaneous ureterostomies to serve as a pop off mechanism during bladder contraction. All patients were followed up at the dedicated paediatric nephrourology clinic with serial clinical, biochemical and radiological monitoring.

Results: At an average f/u of 12 mos (3 – 36 mos), 11/12 are asymptomatic with no breakthrough UTIs; one is lost to follow-up. They have occasional wetting per stoma but are socially continent. Of the 8 who had presented with ARF, the S.Creat is normal in 4, mildly elevated in 1 and 2 have progressed to CRF and await renal transplant. The serial DMSA scans confirm preserved renal function in all the renal units. None had significant stomal complications; they were managed by both the parents and older children with minimal discomfort and good social acceptance.

Conclusions: Retaining the refluxing lower ureteral stump as a cutaneous stoma effectively protects a solitary functioning contralateral kidney. It provides a low-pressure pop off mechanism during bladder contraction and reduces the frequency of recurrent UTI. The procedure is simple and the stoma is well tolerated.

102 Central venous access device in neonates: A prospective audit
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Aim: Central Venous Access is a vital component of critical care in sick neonates. This study aimed to audit the use of central venous access devices (CVAD) in neonates from 2007-09 at a tertiary health care centre.

Methods: CVAD were placed in neonates for various indications through a sapheno femoral venesection under general/ local anaesthesia. A 22 G silastic (Vygon –Lederflex) catheter was inserted over a guide wire and anchored with fine silk sutures. Catheter care and usage were as per CDC guidelines and the nursing and resident staff were instructed regarding the same. The lines were prospectively followed up from placement to removal / death of patient with interval clinical and targeted laboratory surveillance as indicated. The case records were reviewed to tabulate the following details – demographic data (age, sex, maturity), primary diagnosis, indication, operator designation, surveillance, catheter change, complications, indwelling line days and patient outcome.

Results: There were 56 neonates (39 males, 17 females), 16 of whom were preterm (mean GA-32 wks). The mean birth wt. was 2.05 kg (775-3100 gms ). Primary diagnosis included index medical(NEC, RDS, sepsis etc in 24) and surgical(TEF, CDH, abd wall defects, ARM, etc. in 32) states while the indication for access was for difficult/prolonged IV access(38) or for TPN(18).31 were placed electively; they were performed by the resident trainee in 40 and the consultant in 16. The procedure was done in the OR in 47 and in the ICU in 9. In 2 neonates weighing below 1 kg, the device was directly inserted into the femoral vein. The total no of line days were 721, the average indwelling time was 12.9 days (1-20 days) Catheter change over a guidewire was never employed; instead, 4 had sequential bilateral line placements. The catheter associated blood stream infection (CABSI) rate was 9.7/1000 line days. Other events included initial transient limb oedema (5), recurrent catheter blocks (5) and catheter displacement (7).

Conclusion: Sapheno femoral venesection and CVAD placements in term and preterm neonates is a technically sound procedure in trained hands with minimal risk of nosocomial infection and morbidity. Strict adherence to stringent CDC guidelines is mandatory for optimal outcome.

103 Outcome of primary vesicoureteric reflux in children beyond the age of 5 years
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Aim: This prospective study aimed to analyse the clinical course and outcome of primary vesicoureteric reflux (VUR) beyond five-years of age.

Material and Methods: 22 patients with primary VUR who were managed conservatively beyond 5 years of age were identified and prospectively followed up at a dedicated Paediatric Nephrourology Clinic. Their charts were reviewed and demographic, clinical, radiological, laboratory, surgical details and follow up data were recorded. The data was analyzed using descriptive analysis.

Results: 22 children were recruited in this study. 12 males and 10 females. 10 had unilateral while 12 had bilateral VUR yielding 33 refluxing renal units. The breakup by IRS grading of VUR was as follows: Gr. I – 3, Gr. II - 6, Gr. III – 8, Gr. IV – 9 and Gr. V – 7 renal units. The average age at diagnosis was
supervision and strict follow up conservative management with uroprophylaxis under close and preserved renal function may be safely given a trial of surgical therapy. Children diagnosed late with primary VUR the higher grades of reflux are more likely to eventually require surgical reimplantation for recurrent breakthrough UTI and progression of scars (3/11). 10/33 renal units in 8 children showed complete resolution of reflux (Gr. I – 2, Gr. II – 4, Gr. III – 3, Gr. IV – 1) with conservative measures. One child with bilateral Gr. V VUR, who had presented with ARF and diffusely scarred kidneys has developed chronic renal failure. All the rest have been asymptomatic; have normal creatinine levels and no progression of renal scars.

Conclusion: Spontaneous resolution of primary VUR is still possible in a significant number beyond 5 years of age though the higher grades of reflux are more likely to eventually require surgical therapy. Children diagnosed late with primary VUR and preserved renal function may be safely given a trial of conservative management with uroprophylaxis under close supervision and strict follow up.

104 Left-sided strangulated Amyand’s hernia presenting as testicular torsion in an infant
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Aim: The finding of an appendix in the hernial sac, termed as Amyand’s hernia, is a rare presentation with a reported incidence of 1% of cases of inguinal hernia repair. We report an extremely rare case of a left-sided inguinal hernial sac containing perforated appendix mimicking testicular torsion.

Methods: A ten-month-old male baby presented with complaints of enlarged and reddened left testis for past 10 hours. The onset was sudden with no history of previous such swelling. The cord in the inguinal regions also appeared thickened. Based on the history of sudden onset and presence of symptoms for 10 hrs, inguinal exploration was planned thinking it as a case of left testicular torsion. The cord structures appeared a little bulky and on little handling pus came out from torn hernial sac. There was no evidence of torsion of the cord or the testis. The appendix was markedly thickened and inflamed and its tip was adhered to the apex of the hernial sac and a floppy eecum.

Results: Appendectomy, herniotomy, thorough lavage and cecopexy was done and incisions were closed. In the postoperative period the baby recovered well except for superficial wound infection.

Conclusion: Left sided complicated Amyand’s hernia in an infant is a very rare clinical entity. We stress, through this report, that it should also be considered in the differential diagnosis in babies with clinical signs of torsion of left testis and obstructed or strangulated inguinal hernia as well.

105 An unusual case of transabdominal impalement injury in a child
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Aim: Abdominal impalement injuries in children are often rare, but when they do occur they are associated with serious injuries. Prehospital management and transportation is quite a challenge. Here we present a 7-year-old child who sustained impalement injury to his abdomen by a hooked rod.

Methods: A 7-year-old boy presented to our emergency with complaints of impaled hooked rod in his right upper abdomen when he fell from a tree. Patient remained hanging from the hooked rod which was ultimately disengaged off the tree trunk. At presentation he was hemodynamically stable.

Results: Patient was explored through right upper transverse incision which revealed no visceral or vascular injury. The hooked rod was removed. Patient went home after 5 days.

Conclusion: The possibility of escaping intra-abdominal injury is very rare after impalement injury. In our case the mechanism of injury prevented such a rare occurrence. Operative intervention is required in all cases for a decisive and safe management.

106 A controlled study for evaluating a non-invasive modality for detection of contra-lateral patent processes vaginalis in children with unilateral inguinal hernia
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Aim: Congenital inguinal hernia is one of the commonest condition for which patients in the paediatric age group are subjected to the knife. It has been observed that 10% of patients of unilateral inguinal hernia go on to develop metachronous hernia necessitating a second anaesthesia and surgery. The gold standard for detecting Congenital Patent Processes Vaginalis (CPPV) is laparoscopic evaluation. Various authors have also described non-invasive method as ultrasonography as a mode for diagnosing CPPV. This study compared laparoscopic visualization of CPPV with Ultrasound diagnosis of CPPV.

Method: All the children up to 12 years of age and presenting with unilateral inguinal hernia at our institute between July 2006 and June 2008 were included in the study. The ultrasonography was done using a linear array probe of 7.5 MHz on Siemens machine. After the entire inguinal canal from the external ring to the internal ring was visualized, the diameter of the internal ring was measured. All the children were taken up for the diagnostic laparoscopy and simultaneous
laparoscopic repair of the hernia.

Results: A total of 108 children presenting with unilateral inguinal hernia were included in the study. The sensitivity, specificity, positive predictive value, negative predictive value and the accuracy of the ultrasonography for detecting the contra lateral patent processes were calculated against the laparoscopy. Most of the children, 70 (64.8 %), were between 2 and 6 years of age. In 62 (57.4 %) cases the width of the processes at the internal ring was measured at 4 mm or less. In only 6 (9.7 %) of these patients the processes was found patent at laparoscopy whereas in 56 (90.3 %) of them the processes was closed at the internal ring. Thus the internal ring of 4 mm or less had a high negative predictive value. If the internal ring was less than 4 mm, patent processes was unlikely and hence contra lateral exploration was not indicated.

Conclusion: Ultrasonography had a high negative predictive value in detection of CPPV. If on high resolution ultrasonography the internal ring diameter in less than 4 mm, the CPPV does not exist on that contra lateral side and child is unlikely to ever develop hernia on the contra lateral side. Hence contra lateral exploration is not indicated in children with internal ring of less than 4 mm on the contra lateral side.

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Unusual variants of cloaca- Six cases
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Cloaca is the most complex deformity in female anorectal, vaginal and urogenital malformations. It is defined as a defect in which the rectum, one or two vagina and urinary tract converge in one common channel. We present rare variants of cloaca. Case 1, presented at 1 year, had pouch colon for which ileostomy was done. Cystogenitoscopy revealed a common channel with urethra and rectal opening anteriorly, with two separate vaginae opening on either side of midline posteriorly. Case 2, underwent right transverse colostomy at three months age. Cystogenitoscopy revealed 2 cm common channel, two vaginae and two cervix, and rectal opening on the septum on medial side of left vagina. Both patients underwent posterior sagittal anorecto-vagino-urethroplasty both the patients are on rectal washouts and dry for 10-12 hours. Case 3 is 1 day child with ambiguous genitalia with posteriorly placed anus and ambiguous external genitalia. On ultrasonography uterus, ovaries and bladder could not be visualized. Karyotyping was 46-XX. Cystogenitoscopy revealed absent bladder and absent vagina. Patient is awaiting definitive procedure. Case 4 and 5 were monozygotic twins born at 32 week of gestation, one of which was still born. Both twin A and B had smooth perineum, absent urethral, vaginal and anal opening with abnormal phallic development. It is a lethal malformation. Twin A succumbed on day 2 postnatally. Case 6 was having single opening present well posterior to the site of normal anal opening with abnormal phallic like structure anteriorly with urethral opening in it. Karyotype was 46-XX. 17-OH levels were normal. Cystogenitoscopy revealed bladder with cervical opening was seen communicating with rectum. This anomaly is classified as Type-B posterior cloaca. Right now patient underwent right PCN for right pyonephrosis and awaiting definitive management of cloaca.

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Wilms’ tumor: An audit
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Aim: To audit the outcome in patients with Wilms’ tumor treated in our hospital.

Method: A retrospective study was performed in the department of pediatric surgery by retrieving data from files of operated children with Wilms’ tumor over a decade (1998 to 2007). Management protocols were changed from NWTS for the first 8 years to UKCCC (akin to SIOP) in 2007.

Results: Twenty seven patients (22 boys, 5 girls), with a mean age at presentation of 34 months, had unilateral Wilms’ tumor in 26 (96.3 %) and bilateral in 1 (3.7 %). Twenty-three (85 %) children were treated as per NWTS protocol and 4 (15 %) as per SIOP protocol. Stage wise distribution revealed Stage I n=15, Stage II n=5, Stage III n=4, Stage IV n=2, Stage V n=1. Primary nephrectomy (PN) was done in 23 children of whom 2 had concurrent IVC phlebotomy to remove thrombus/ part of infiltrated vessel. In the PN group, gross total resection was done in all except 2 patients (92.6 %). Primary chemotherapy (PC) was given to 4 patients, of which one had Stage V Wilms’ tumor. Only 2 (7.4 %) patients in this series received post-operative radiotherapy. Major intra-operative tumor spill was seen in 3 (13 %) and major hemorrhage leading to death on table in 1 (4 %). Local recurrence occurred in 2 (8.7 %), distant metastases in 3 (13 %), 5-year disease-free-survival was seen in 12 (44 %). No intra-operative complications occurred in the PC group. Non-compliance to treatment was seen in 6 (22 %) patients overall.

Conclusion: Poor results reflect overenthusiastic surgical excision in large tumors that resulted in macro/micro spillage. Other reasons included delay in starting post-operative chemotherapy from delay in histo-pathological reporting, erratic chemotherapy/ non-compliance, non-availability/non-affordability of drugs, and delay in radiotherapy due to apathy of radiotherapists & anesthetists. Primary chemotherapy to all patients is recommended.

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Spontaneous pre-operative rupture of upper esophageal pouch in a neonate with Type C esophageal atresia
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Aim and Introduction: A hitherto undescribed spontaneous
pre-operative rupture of the upper esophageal pouch in a neonate with type C esophageal atresia is being described.

**Case Report:** A two days old neonate referred from another hospital with diagnosis of esophageal atresia with distal esophageal fistula on plain chest radiograph was admitted in our nursery with severe respiratory distress. An urgent radiograph at our centre detected large pneumothorax which was decompressed using chest drain. Following its stabilization over next 4 hours, the baby was taken up for thoracotomy. At exploration, no obvious source of air leak was detected and in view of consolidated upper lobe, the pneumothorax was attributed to the spontaneous rupture of a lung bulla. Primary esophageal repair after ligation and division of tracheo-esophageal fistula was relatively easy as both pouches were almost overlying each other. Postoperative recovery was fine for first 24 hours following which salivary leak was noticed through the chest drain that grew in magnitude relatively rapidly. Re-thoracotomy was performed 48 hours post-operatively and surprisingly, the anastomotic suture line was found to be intact. On further exploration a full thickness longitudinal rent of about 1 cm in length was detected on the posterior aspect of the upper esophageal pouch near the thoracic inlet, which was probably missed at the first surgery on account of its high posterior location. Esophagostomy and gastrostomy was done following dismantling of the anastomosis. However, the neonate succumbed to sepsis within 48 hours of surgery.

**Discussion:** No case of this type has been reported in the English literature. The case highlights the need for a good pre-operative evaluation of neonates with esophageal atresia and application of gentle pre-operative suction pressures to prevent such complications.

**110**

**Vascular arch anomalies and tracheo-esophageal compression in children**


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**Introduction:** The pathology, management & outcome of children with symptomatic vascular ring over a 20 year period was analysed.

**Method:** 12 children (7 males, 5 females) were analysed retrospectively. The median age was 6 months (3-36 months). Four patients had double aortic arch, 3 had right-side descent with left ligamentum, one aberrant right subclavian artery, three pulmonary artery slings and one had right aortic arch with retro-esophageal descent. 10 children presented with respiratory symptoms and 2 with dysphagia. The associated conditions were cleft lip and palate (1), right bronchial stenosis (1), Tracheal stenosis with trifurcation (2), evagination of diaphragm (1) and Di George syndrome (1). The associated cardiac anomalies were bicuspid aortic valve, ventricular septal defect and aorto pulmonary window. Chest radiography, barium swallow, 2-dimensional echocardiography and a computerised tomograph (CT) scan were performed in all patients. Nine patients had a division of the vascular ring, in which 3 had aortopexy and one had reimplantation of the pulmonary artery & correction of bronchial stenosis elsewhere. Two had correction of pulmonary artery sling & tracheoplasty.

**Results:** Three infants died - Septicemia post surgery 1, hemorrhage during laser ablation of granulation 1 & during surgery for correction of aorto-pulmonary window 1. Six patients had rapid improvement in symptoms within 1-2 weeks after surgery with the remaining patients improving over a 3-6 months period. One had dysphagia for 9 months.

**Conclusion:** Vascular arch anomalies are rare and needs a high degree of suspicion for diagnosis. Barium swallow proved to be the most reliable investigation to detect the presence of a vascular ring with a consistent feature of either anterior and/or posterior indentation of the esophagus.

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**Thoracoscopic repair of congenital diaphragmatic hernia in newborn: Lessons learnt**

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**Aims:** We attempted thoracoscopic repair in a case of left sided congenital diaphragmatic hernia (Bochdalek) in a 2day baby. We attempt to share our experience in this presentation.

**Methods:** Thoracoscopic reduction of hernial contents was done, followed by primary repair of the diaphragmatic hiatus with 3-0 silk interrupted endosutures. The baby was doing well post-operatively for 2 days following which there was a partial recurrence. A part of the stomach herniated back into the thorax, associated with loosening of two of the sutures of the diaphragmatic repair. Laparotomy revealed a hugely distended stomach with total obstruction at the duodenal level by Ladd’s bands. Ladd’s procedure was done, accompanied with repair of the diaphragmatic rent.

**Results:** The baby had an uneventful recovery thereafter.

**Conclusion:** Symptomatic Ladd’s bands requiring formal Ladd’s procedure concomitant with repair of congenital diaphragmatic hernia is not very common. When we repair the diaphragmatic rent thoracoscopically, it is difficult for us to assess the extent of organic obstruction to the intestinal tract. But in a slightly older child this element can be ruled out from history.

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**Thoraco- abdomino Spinal (multi compartment) Fetus in Fetu with A phased presentation - ? First Case Report**

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**Introduction:** Fetus in Fetu, although, a rare condition is quite
familiar to pediatric Surgeons. But a phased presentation and multi compartment presentation is never published. [Google Search]

Aims and Objectives: To present A multi compartment, fetus in fetu presenting in phases from neonatal period to 3 years

Case Report: A neonate was diagnosed to have intrathoracic mass lesion antenatally. Post natal evaluation revealed intra thoracic fetus in fetus. No intra abdominal component was seen at that time. Intrathoracic mass removed in toto. The child was asymptomatic till 3 years of age when he developed progressive weakness in lower limb. This was diagnosed as Polio myelitis. An adult neurologist diagnosed intra spinal space occupying lesion. MR evaluation revealed an intra spinal extradural mass from T12 to L5-S1. There was a huge retroperitoneal mass with calcification. The intra spinal mass was removed via L1 TO L5 laminectomy and a day lateral Itraabdominal component was excised. The mass had finger, brain like material, Fat and a small spine like process. The child recovered 90 % function. Follow up for 6 years no recurrence nad the child is running and active.

Conclusion: Multi compartment, Fetus in fetus with phased presentation is being reported.

113 Todani’s classification re-visited: Type I fusiform vs. type IV-A choledochal cyst
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Introduction: The distinction between type I-fusiform and type IV-A choledochal cyst (CDC) is unclear in the Todani’s classification and often creates confusion. This prospective study addresses this debate on the basis of pre and post operative cholangiograms.

Material and Method: Twenty eight patients (age<18 years) with CDC and intrahepatic ductal (IHD) dilatation were prospectively studied by pre and post operative cholangiograms. The preoperative configuration of extrahepatic and IHD dilatation was classified into 2 major groups: (1) Contiguous upstream dilatation (n=18), (2) Upper tract dilatation associated with hilar stenoses (n=10). Contiguous upstream dilatation in group 1 was further sub-classified as: a) Fusiform extrahepatic dilatation contiguous with fusiform intrahepatic dilatation (n=14) and, b) Cystic extrahepatic dilatation contiguous with fusiform intrahepatic dilatation (n=4). A wide biliary-enteric anastomosis (B-EA) at the confluence was performed for group 1 anatomy. For group 2 anatomy, the anastomosis was extended proximal to the confluence and site of stenosis onto the extrahepatic left and right duct.

Results: All patients have been clinically asymptomatic (follow up duration: 6 months~8 years). On post operative MRCP, 78% patients in group 1 showed significant reduction in IHD dilatation (>50% of preoperative diameter) while all patients in group 2 had persistent upper tract ectasia. One patient in group 2 developed hepaticolithiasis on follow up despite a well functioning B-EA.

Conclusions: 1. In the management of CDC with IHD dilatation, it is more important to identify sites of ductal stenosis around the hilum and extend the B-E A proximal to these sites of stenoses. 2. Contiguous fusiform IHD dilatation (Group-1) frequently resolves following wide B-E A at the confluence. 3. However, significant cystic IHD ectasia persists in group 2 despite being clinically asymptomatic following a wide hilar B-E A. Long term follow-up is mandatory for delayed complications related to stasis within these cysts. 4. The understanding of this concept is more important than classifying anatomy according to Todani’s classification scheme.

114 A potentially life threatening complication following esophageal exclusion and bypass for corrosive injury-presentation, management and prevention
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Aim: Surgical exclusion of the esophagus with substernal bypass for corrosive injuries is indicated in select situations wherein excision of the native esophagus is technically unsafe because of prior perforation, mediastinitis, dense adhesions at carina or trachea-esophageal fistula. This case illustrates an unusual and a potentially life threatening complication of surgical exclusion of the retained native esophagus. Its clinical presentation, surgical management and prevention is discussed in the light of available literature.

Methods: A 3 year old baby boy underwent emergency end cervical esophagostomy, decompressive gastrostomy & feeding jejunostomy following esophageal perforation sustained during esophageal dilatation for corrosive stricture. Three months later, a substernal gastric pull up was performed, the native esophagus being retained in situ with both ends divided and suture closed. One year following the gastric pull up, the boy presented with 4 weeks history of repeated episodes of fever, tachypnea and an expiratory stridor on exertion or crying. An upper GI endoscopy and Barium swallow did not reveal any anastomotic stricture or delayed gastric emptying which could predispose to recurrent pulmonary aspiration. Subsequent contrast enhanced CECT scan of the chest revealed a size 6 cms X 11cms. posterior mediastinal cystic structure causing anterior and lateral displacement of the trachea with lumen compromise. A diagnosis of mediastinal mucocoe of the retained native esophagus was made. The mucocoe was excised by a right posterolateral thoracotomy. At surgery, the mucocoe was found to contain frankly purulent fluid and an ulcerated mucosa with significant adhesions to the mediastinal structures.

Results: The early postoperative course was marked with features characteristic of tracheomalacia which gradually
resolved. At 9 months post surgery, the patient is doing satisfactorily.

**Conclusion:** 1. Though it is conventionally believed that prior mucosal destruction in corrosive injuries prevents mucocele formation, this case illustrates that a mucocele may form following esophageal bypass for corrosive injuries. 2. Esophagectomy rather than esophageal bypass should be the preferred operation especially for benign diseases. 3. Should a bypass be necessitated in select situations, the lower end of retained native esophagus may be drained into a roux-en-y loop of jejunum to prevent mucocele related complications. 4. The retained native esophagus should be periodically screened with imaging following esophageal bypass.

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**Stridor but no tracheobronchial foreign body – tracheostomy is saving grace**

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**Objective:** To study the clinical course, treatment and outcome in a set of patients with stridor but with no foreign body in tracheobronchial tree.

**Methods:** In a set of patients with stridor; the history and findings are suspicious of a tracheobronchial foreign body. Unlike typical foreign body aspiration(FBA), these patients behave differently. During anaesthesia, while holding a mask to oxygenate they continue to have stridor and their saturation doesn't rise to 100%. Since there is a possibility of FB, a bronchoscope is inserted. With the scope in situ, they drop their saturation rapidly. As the picture is confusing the scope is usually withdrawn and the patient kept on mask ventilation. The saturation never picks up. Therefore more attempts at scopy are made leading to similar results. Usually the patient's condition deteriorates and they arrest or have a near arrest. The saving grace then is a tracheostomy. In the past 10 years, we have dealt with 7 such patients. Tracheostomy was performed with an appropriate size tube. All needed ventilation post procedure. They had a prolonged post operative course and needed steroids and strong antibiotics. When stable a re-post procedure. They had a prolonged post operative course

**Results:** Following right middle lobectomy, the baby did very well and ventilatory requirements rapidly improved and was extubated within 48 hours.

**Conclusion:** CLE of isolated right middle lobe is a rare entity. The CT pictures were also apparently suggestive of entire right pulmonary involvement which was also not quite usual.

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**Renal tuberculosis in infancy presenting as life threatening hematuria**

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**Aim and Introduction:** To report a case of renal tuberculosis in infancy that presented as life threatening hematuria.

**Case Report:** We present an infant aged 40 days with acute onset painless severe hematuria, which initiated a week earlier. Radiological investigations (USG & CT) revealed a mass in left renal pelvis. The right kidney was normal. Possibilities of a vascular lesion or a clot were entertained. Urine culture was sterile. Coagulation profile was normal. Hematuria subsided for two days but recurred again and this time it was massive with passage of clots per urethra. The child required blood transfusion. As a life saving measure the left kidney was surgically explored. Grossly the kidney was enlarged and tense with some areas of haemorrhage. The pelvis was full of clots. On opening the pelvis clots came out and fresh uncontrollable bleeding started from within. Packing was tried but failed. No definitive lesion responsible for bleeding could be found. Nephrectomy was performed as a life saving measure. The hematuria stopped and the child made an uneventful recovery. Histopathology revealed granulomatous lesion with caseation suggestive of renal TB. Patient is now on 6-month treatment course according to the WHO protocol (2HRZE/4HR). He is well on 6 weeks follow up. A family survey was done to see if there is an index case in the family. However, no case was found.

**Discussion:** Tuberculosis of the genitourinary tract is one of the late reactivation or complications of pulmonary tuberculosis which is most prevalent in young adults and middle aged. According to the reports from the world, renal tuberculosis is
Re-do PSARP in Anorectal malformation: A report of six cases. Single surgeon’s experience
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Aims and Objective: Two common complications after surgery for Anorectal malformation are stenosis and incontinence. Majority of incontinence are due to wrong placement of the gut. Stenosis is mainly due to loss of vascularity of the gut.

Materials and Method: From 2000-09, 6 cases were included in the study. 2 had stenosis and 4 had incontinence. In 3 cases patients had colostomy. In other 3 cases colostomy was closed in 1 patient and in 2 patients definitive operation was tried earlier without colostomy. In 2 cases the primary operation was a complete failure.

Result: All six cases had good outcome. The first and the last patient had a tampered perineum due to an attempt for anoplasty outside without colostomy. Though the perineal musculature could be identified, some muscles were replaced by fibrous tissue. 1 case had mild constipation and required weekly enema and the last patient has only 2 months follow up and has very minimal leak.

Conclusion: 1) colostomy has a definite protective role for the anastomosis, 2) one stage operation must be done with adequate preoperative assessment 3) assessment should be done regarding outcome before colostomy closure. 4) re-do surgery should be done as early as possible.

Prognostic assessment in patients of with posterior urethral valve and its correlation with age at presentation
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Aims and Objective: We all know that in PUV early the presentation worse the prognosis. But it is always not true. Because early diagnosis (mainly the antenatal diagnosis), has completely changed the picture. Neonatal management has better chance of bladder compliance.

Materials and Method: From 2003-09, 22 cases were included in the study. Cases were divided into two groups: neonatal and others. The patients in the neonatal group include antenatal diagnosis and neonatal presentation with voiding difficulty. Other group includes patients with varied presentation.

Result: Antenatally diagnosed patients had good outcome regarding bladder function, compliance. The patients having vesicostomy had poor bladder function.

Conclusion: 1) Antenatal diagnosis has a definite role in the management 2) vesicostomy diminishes the chance of functional recovery of bladder. 3) upper tract damage can be divided in two groups primary, and secondary due to late management.

Intra-renal neuroblastoma: A diagnostic dilemma
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Case Report: We present a 7-year-old girl who came with hematuria, fever and abdominal lump for 2½ months. On examination, she had a large mass in the left lumbar region, hard in consistency. Ultrasound and CT abdomen revealed it to be a large malignant tumor arising from the left kidney displacing the great vessels to the opposite side with no calcifications consistent with Wilms’ tumor. The left renal vein was obscured and there was loss of planes with the left psoas muscle. Opposite kidney was normal. A trucut biopsy from the renal angle was reported as small round cell tumor with rosette formation and calcification suggestive of neuroblastoma. 24-hour urinary VMA was normal; bone scan and bone marrow were negative. While awaiting immuno-histochemistry (IHC) report; she was started on weekly chemotherapy for Wilms’ tumor with Vincristine and Actinomycin-D. She received 2 weeks of chemotherapy with definite response to therapy. However, the IHC of the trucut biopsy showed tumor cells to be positive for NSE. As there was a major discrepancy between the radiological and histopathological diagnosis; it was decided to go ahead with surgical excision. At surgery, we found a huge tumor replacing the entire left kidney but sparing the upper pole. There were few hilar and infra-hilar lymph nodes which were sampled separately. Left nephroureterectomy was done. Final HPE confirmed Grade – I Neuroblastoma, nodes negative. The chemotherapy was changed to OPEC regime. She is still undergoing chemotherapy and has completed 3 cycles. She is quite well preserved and is tolerating chemotherapy well.

Discussion: Intrarenal neuroblastoma is a rare entity that clinically and radiographically may mimic Wilms’ tumor. A thorough literature search revealed less than 25 cases reported till date. It is an aggressive malignancy, and long-term survival is rare [only 1 survival (13 years) has been reported]. Majority have a poorly differentiated histopathology and downhill clinical course. This case is presented to highlight the diagnostic dilemma. Moreover the tumor in this child is different from those reported in literature as it is low grade with no metastasis and the child is quite well preserved.

Anorectal malformation with genital ambiguity
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IAPCON 2009
Aim: To present a rare case of anorectal malformation with genital duplication and ambiguity.

Method: A 12 hour old baby with ARM presented with ambiguous genitalia and duplication of female genitalia. The passage of urine and meconium per patent common channel suggests persistent cloaca. A high sigmoid colostomy was done, the baby was investigated for other congenital anomalies and evaluated for future management.

Results: Uneventful recovery from emergency colostomy. Awaiting further management.

Conclusion: This case represents a rare variant of persistent cloaca with genital ambiguity and duplication.

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Bilateral congenital diaphragmatic hernia- bilateral central defect: A case report
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Aim: Bilateral congenital diaphragmatic hernia is a rare entity with poor prognosis. We present a case of bilateral congenital diaphragmatic hernia managed successfully.

Methods: One and half years male presented with history of cough and fever on and off since birth. Chest-X-ray revealed obliterated bilateral cardio-phrenic angles, with rounded opacities on either sides.USG and C.T.Scan chest revealed right and left lobe of malformed liver herniated through anterior diaphragmatic defect. Diagnostic laparoscopy revealed bilateral diaphragmatic bilateral central defects’ through which the right and left lobes of liver were herniated.Both the diaphragmatic defects were repaired by abdominal approach.

Results: Patient had uneventful recovery, and is doing well on follow up.

Conclusion: Bilateral congenital diaphragmatic hernia is a rare entity and bilateral central defect is rarest. Such cases can be managed successfully with favourable outcome.

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Congenital diaphragmatic hernia: A rare presentation with torn sac and intestinal obstruction
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Aim: To present a rare presentation of Left sided CDH.

Method: A month old male presented with recent onset of breathlessness. Chest X ray revealed a Lt. sided CDH. On exploration, there was an anterolateral defect containing left lobe of liver, stomach and bowel loops. The small bowel loops herniated through the torn sac had constricting adhesions around them, causing incomplete obstruction. The Lt. CDH was repaired.

Results: The patient recovered and is doing well at 6 months follow up.

Conclusion: One has to be aware of unusual findings while operating for CDH.

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Right congenital diaphragmatic hernia associated with ano-rectal malformation– 1st case in Paediatric-Surgery literature
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Aim: Right sided congenital diaphragmatic hernia associated with Anorectal malformation is unknown. We present our experience in management of 1st such case.

Methods: One and half hours hours male baby presented to us with history of absent anus. X ray chest and abdomen and later on invertogram were done. X-ray chest revealed right sided congenital diaphragmatic hernia. Invertogram revealed intermediate type ARM. Baby was completely asymptomatic in relation to CDH, did not have respiratory distress or cyanosis etc. Loop sigmoid colostomy for ARM was then done. At age of 4 weeks right CDH repair was done, by thoracic approach. at age of 7 weeks Posterior Sagittal Ano-Rectoplasty was done. At age of 12 weeks colostomy closure was done.

Results: Baby had uneventful recovery after surgeries for both the anomalies and is doing well on 7 months follow-up till date.

Conclusion: Right Congenital diaphragmatic hernia associated with Ano-rectal malformation–This is the 1st case in Paediatric-Surgery literature.

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Congenital prepubic sinus
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Aim: To study the nature of midline prepubic sinus.

Method: An 8 year old male child presented with a midline prepubic sinus since birth. It had no discharge from it. The sinus was explored, found to end blindly and was excised. Histopathology revealed a lining of transitional epithelium.

Results: Complete cure.

Conclusion: Abortive dorsal duplication of urethra.

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Cystic lymphatic malformation of left gluteal area: A case report
Jui Mandke, V. Sarode, A. Raut, S. Jadhav, S. Patil, I. Meiserhi
SJKC Trust’s Paed. Surg. P.G. Institute, SANGLI (Maharashtra), India
Aim: To present a case of cystic lymphatic malformation at a rare site.

Method: A 2 ½ year old male child presented with a large swelling in his Lt. Gluteal area since birth which had suddenly increased in size after a trivial trauma. Doppler USG of the swelling revealed a low flow rate of the fluid contained in the swelling with multiple loculi. Complete excision was done. The histopathology report revealed it to be a cystic lymphatic malformation.

Results: No recurrence was seen at 4 months of follow up.

Conclusion: A cystic hygroma in the gluteal region has no embryological basis and this case is a definite exception to the rule.

127 Detailed surgical technique of LDLT
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Kamineni Hospitals, KIMS Narketpally Hyderabad, India

Introduction: Liver transplantation is confined a few centers. Detailed surgical technique is rarely seen at a time.

Aims and objective: To present all components of Live Donor Liver Transplantation. Graft harvesting, Recipient hepatectomy graft placement and hepatic venous, portal vein HA and biliary reconstruction.

Materials and Methods: Our institute is into Liver transplantation. Detailed surgical technique would presented. All LDLT are alive. All grafts were thoroughly evaluated for volume, vascular anatomy, biliary ductal system. Graft was harvested using CUSA and back table prep was done to prepare the graft for vascular and biliary anastomosis. Recipient hepatectomy rarely needed blood transfusion. Anhepatic phase and cold ischemia were kept to the minimum. Graft was palced using standard protocol. All received post op Pangraf as the immunosuppressant. Post op evaluation of the graft was done by serial LFTs and Colour Doppler. CBD was stented routinely for 3 weeks. Infections were carefully looked for and preventive measures were taken for CMV, Pneumocytis.

Results: All recipients of LDLT are alive. One required ERCP post operatively.

Conclusion: LDLT is a viable option for ESLD. Technique is presented in detail.

128 Diffuse perineal hemangioma: A case report
Jui Mandke, V. Sarode, A. Raut, S. Patil, S. Jadhav, R.Vora, I. Meisheri
SJKC Trust’s Paed. Surg. P.G. Institute, SANGLI (Maharashtra), India

Aim: A rare case of diffuse perineal hemangioma.

Method: A case of 2 month old female child presented with lesion over perineal region and Rt. Lower limb since birth. On examination, there was diffuse capillary hemangioma over perineum and rt. Lower limb which had got infected with extensive areas of necrosis, haemorrhage with loss of local tissue causing anorectal stenosis and retraction of anus. To avoid fecal contamination of the wound, diverting loop sigmoid colostomy was done and blood transfusion was given to correct anaemia.

Results: Awaiting control of perineal infection, then will require management of the hemangioma as well as colonic pull through.

Conclusion: A rare presentation of diffuse capillary hemangioma over perineal region with extensive loss of local tissue which may lead to anal stenosis.

129 Hirschprung disease with anorectal junction stenosis: An extremely rare association of functional and partial mechanical bowel obstruction
Kumar Abdul Rashid, Tanvir Roshan Khan, Madhukar Maletha, Shiv Narain Kureel, Nuzhat Husain
Department of Pediatric Surgery, King George Medical University, Lucknow, India

Hirschprung disease with anorectal malformation is very rare and anorectal junction stenosis is a super-rare anorectal anomaly. We describe the case of a 4 day old neonate referred with diagnosis of rectal atresia. Clinical examination, instead, was suggestive of anorectal junction stenosis. Contrast enema radiography revealed a long narrow segment of sigmoid between dilated distal rectosigmoid and grossly dilated proximal colon with a transition zone at descending- sigmoid junction. Radiographic findings were confirmed on exploratory laparotomy and biopsy proved ganglion cells only in proximal colon. No ganglion cells were found either in the narrow segment or in the dilated rectosigmoid. Therefore, Hirschprung disease was proved histopathologically in a case of clinically diagnosed anorectal junction stenosis. To the best knowledge of the authors, no case of this association has been reported previously in the literature. We present a case of this extremely rare combination of functional and partial mechanical bowel obstruction with interpretation of clinico-radiological findings.

130 Ileal foreign body with unusual presentation—3 cases
Jui Mandke, A. Raut, S. Jadhav, R. Vora, D. Kittur, I. MeisherI
SJKC Trust’s Paed. Surg. P.G. Institute, SANGLI (Maharashtra), India

Aim: To study 3 cases of foreign body in ileum with complication.

Method: Three cases were studied.—1. Four year old male presented with peritonitis and on exploration was found to have an ileal perforation due to a long wooden splinter which he might have swallowed. 2. Five year old female, a known case
of operated ileal atresia, presented with a 50p coin impacted at the anastomotic site with intestinal obstruction. 3. Four year old with migration of needle from ileum into the peritoneal cavity.

**Results:** All three patients had to be explored and necessary surgical procedure was carried out.

**Conclusion:** Ileal symptomatic foreign bodies requiring exploration are rare.

### 131 Jodhpur disease: Our experience of five cases

Amit Raut, J. Mandke, V. Sarode, S. Patil, D. Kittur, S. Jadhav, Vora, Ila Meisheri

**S.J.K.C. Trust’s, Paed-Surgery, P.G. Institute, SANGLI (Maharashtra), India**

**Aim:** To present five cases of Jodhpur disease - A variety of gastric outlet obstruction, first reported at Jodhpur in 1997.

**Methods:** Five cases presented, at ages between 2 years and 10 years as gastric outlet obstruction, predominantly male sex. Presenting symptoms and signs were non bilious vomiting, constipation, dehydration, epigastric fullness, visible peristalsis etc. Upper gastro-intestinal contrast studies showed large stomach and increased gastric emptying time. On exploration, it was interesting to note that there was no pyloric muscle hypertrophy, no extra-luminal or intra-luminal obstruction, no scarring. All patients were cured by Heineke-Mikulicz pyloroplasty.

**Results:** All patients had uneventful recovery and symptom free follow-up.

**Conclusion:** In cases presenting as Gastric outlet obstruction in childhood, there has to be a high index of suspicion for Jodhpur disease- a primary acquired condition.

### 132 Incidental mini-valves; Do these valves really need treatment?

Amit Raut, J. Mandke, S. Jadhav, D. Kittur, Ila Meisheri

**S.J. K.C Trust’s, Paed-Surgery, P.G. Institute, Sangli (Maharashtra), India**

**Aim:** To study the cases of urinary anomalies with incidental mini-valves and whether these valves really need treatment.

**Methods:** We studied cases in which mini-valves were incidentally detected in 7 urological cases which actually presented / diagnosed as other urological conditions as PUJ obstruction- unilateral / bilateral, VUJ obstruction, etc. MCU done previously in these cases did not reveal dilated post –urethra, but follow-up cystoscopy during stent removal revealed post urethral mini valves. These were cystoscopically fulgurated successfully. Cystoscopy videos attached.

**Results:** All 7 patients had uneventful recovery, and are doing well on follow-up.

**Conclusion:** 1) Cystoscopy has a definitive, diagnostic as well as therapeutic role in managing post urethral mini-valves, even those which are not diagnosed on MCU. 2) However question remains whether incidentally detected mini-valves really need treatment?

### 133 Paraspinal dermoid cyst mimicking as lateral meningocele

Amit Raut, J. Mandke, V. Sarode, S. Patil, S. Jadhav, R. Vora, Ila Meisheri

**S.J.K.C.Trust’s, Paed-Surgery, P.G. Institute, Sangli (Maharashtra), India**

**Aim:** Dermoid cyst usually presents as midline swelling. Here we present a case of para-spinal Dermoid cyst.

**Methods:** Eight years old male presented with a swelling over right lumbar para-spinal region, 2 cms lateral to midline, 5x4x3 cms, tender, soft, cystic, and non reducible. Tuft of hair present over lumbar spine and also scanty hair over swelling seen. Bony spur palpable in L-4 region, Spina-bifida occulta-L-4 region. There was no neurodeficit. MRI-spine-no intraspinal pathology. On exploration, it turned out to be infected Dermoid cyst containing hair. Histopathiological examination confirmed the diagnosis of Dermoid cyst.

**Results:** Patient had uneventful recovery and is doing well on follow up.

**Conclusion:** 1) Para-spinal Dermoid cyst is a rare entity. 2) It may mimic as lateral meningocele, specifically when spina-bifida is present.

### 134 Extrahepatic portal hypertension in children: A new technique of selective shunt in cases with cavernomatous transformation of portal and splenic vein

Archika, Kureel Shiv Narain, Madhukar Maletha, Tanvir Roshan Khan

**Department of Pediatric Surgery, C.S.M. Medical University, Lucknow, Uttar Pradesh, India**

**Aims:** We reported a new surgical alternative of preserving terminal tributaries of splenic vein and its anastomosis with left adrenal vein or left renal vein in cases where endoscopic sclerotherapy was not feasible and extension of cavernomatous malformation up to splenic vein obviated mobilisation of splenic vein for a conventional splenorenal shunt.

**Methods:** Six patients from 7 years to 11 years of age were selected for surgery. Preoperative CT Angio demonstrated cavernomatous extension of portal vein up to splenic vein and the pattern of terminal tributaries of splenic vein at splenic hilum. Splenectomy was done with premeditated plan of preservation of terminal tributaries of splenic vein, which were of adequate calibre. Short middle tributary was cannulated for measurement of preoperative portal venous pressure before and after the shunt procedure while longer upper and lower tributaries were utilised for creation of end to end splenoaortal anastomosis and end to side splenoportal anastomosis obviating the need of mobilization of cavernomatous splenic vein off the pancreatic bed.
**Results**: To achieve more than 50% reduction in portal venous pressure, end to end splenoadrenal anastomosis was enough in 4 patients while combined end to end splenoadrenal anastomosis and end to side splenoportal anastomosis was needed in two patients. Size of splenic tributaries and left adrenal vein for anastomosis ranged from 5 to 7 mm. Intraoperative shunt patency could be checked by flushing the heparinised saline through cannula in middle tributary of splenic vein. Shunt patency was demonstrated in all patients on follow up at 6 month and 1 year interval with color Doppler study. Recurrent mild hematemesis occurred in one patient after six month due to drug induced ulcer as seen on endoscopy.

**Conclusion**: Premeditated preservation of tributaries of splenic vein and its anastomosis with adrenal vein can obviate the need of splenic vein mobilization off the pancreatic bed.

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**135**

**Congenital diaphragmatic hernia with jejunal atresia**  
VK Gopi  
PVS Hospital, Calicut, India

New born presented with respiratory distress since birth and had to ventilate for stabilisation. Further evaluation suggested proximal jejunal atresia associated with congenital diaphragmatic hernia. Surgical correction was successful and baby went home.

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**136**

**H2 receptor dependent ilial peptic ulcer in intestinal duplication**  
VK Gopi  
PVS Hospital, Calicut, India

Sven year old chil was treated for recurrent attacks of abdominal pain bleeding per rectum and failure to thrive. For the th last two years. He was dependent on h2 receptor antagonist and he can't spent even twelve hours with out medication.he was investigated and operated for ilial tubular diverticulum with large ileal peptic ulcer. Histology of resected segment showed gastric epithelium.post operatively child is doing well.

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**VP Shunt related intraperitoneal complications**  
VK Gopi  
PVS Hospital, Calicut, India

Author encountered three types of intraperitoneal complications: 1. Shunt as inguinal hernial content, 2. ileal penetration and intestinal obstruction, 3. Shunt induced intussusception.

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**138**

**Long intestinal tubing for recurrent adhesive obstructions in the immediate post operative period**  
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Dept. of Paediatric Surgery, Coimbatore Medical College Hospital, Coimbatore, India

Three children who had recurrent adhesive obstructions in the immediate post operative period were surgically corrected by long intestinal tubing. The cases were duplication cyst, Meckel’s perforation and Duhamel surgery for Hirschsprung’s disease. Two of these three had long intestinal tube threaded form the base of the appendix after appendicectomy upto the jejenum and the tube brought out of the abdominal wall. The third child had the tube inserted through jejunostomy and threaded into the caecum. These tubes were removed on the tenth day. A fourth child with meconium peritonitis with dense post operative adhesions was also corrected with tube inserted through the appendicular base. Intestinal tubing has been done earlier and most have been inserted through the oral route for minor adhesions. This surgical procedure is done for dense adhesions on the operation table to prevent recurrence.

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**139**

**Recto-Urethral fistula in Anorectal malformation, is it mandatory to close?: A study of 20 cases**  
Amit Raut, J Mandke, S Jadhav, R Vora, D Kittur, Ila Miesheri  
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**Aim**: To study whether recto-urethral fistula ligation is mandatory in cases of recto-urethral fistula in Anorectal malformations.

**Methods**: We studied 20 patients of high and intermediate Ano-rectal malformations with recto-urethral fistula. In all these cases recto-urethral fistula was not ligated after its division from rectum, as usually done in PSARP. There was no urinary leakage nor any other complications in immediate post-operative period. We further evaluated our patients post-operatively by symptoms, micturating cysto-urethrography and by cystoscopy. The parameters studied were stream of urine, urethral caliber, urethral diverticum and stricture if any.

**Results**: All patients had uneventful recovery. None of the patients had any symptoms related to urinary system nor had any evidence of diverticulum or stricture urethra during follow-up.

**Conclusion**: It is not mandatory to close the recto-urethral fistula during management of Anorectal malformations, moreover it avoids urethral complications.

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**Recto vestibular H fistula**  
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Dept. of Paediatric Surgery, Coimbatore Medical College Hospital, Coimbatore, India

8 cases of rectovestibular fistula were seen. Three were in the neonatal period and the rest were in older children. All the
neonatal cases needed surgical excision and reconstruction of perineal body and the rectum and vagina. Two of the older children the fistula healed on conservative treatment. The other three in the older children group needed surgical excision of the fistulous tract. These tracts were lined by granulation tissue. The principles were applied to help the obstetrician to close the acquired post partum recto vaginal fistula in three women. The technical details of excision and reconstruction of the vagina and rectum is high lightened. All the above surgeries were done without covering colostomy.

Short bowel syndrome: Current trends in management
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Short Bowel Syndrome (SBS) commonly results from massive resection (> 50%) of small intestine. Intestinal atresia, necrotising enterocolitis, midgut volvulus, volvulus with meconium ileus and gastroschisis in infants and trauma, mesenteric ischaemia and Crohn’s disease in older children. The immediate effects of massive intestinal resection include fluid and electrolyte loss, malabsorption, diarrhoea, nutritional deficiencies, malabsorption of Vitamin A, D, K and E, fats, carbohydrates, calcium and magnesium. Hypergastrinemia, hyperoxaluria, nephrolithiasis, cholelithiasis, liver failure and D-lactose acidosis develop. Intestinal adaptation begins with hyperplasia and hypertrophy of intestinal mucosa with elongation of villi, deepening of crypts, thickening of wall of bowel and dilatation of remnant of intestine. Growth factors, peptides, long chain fatty acids, bile, pancreatic secretion and humoral factors promote adaptation. Citrulline levels are best marker of adoption. Short chain fatty acids and long chain triglycerides, proteins and sugars are essential trophic nutrients. Glutamine, circulating peptides, enteroglucagon, epidermal growth factors, neurotensin, insulin like growth factors, interleukin-II and transforming growth factor – alpha are trophic agents. Medical management includes intravenous fluids, oral fluids, total parenteral nutrition (TPN) and gastrostomy for continuous enteral feeding, growth hormones, glutacan like peptide (GLP-2) derived from L-cells of remnant of small intestine, and hypoallergenic formula (Nutramigen, Pregestimil, Alimentum) and Neocate amino acid formula. Pharmacologic agents like codeine, diphenoxylate, loperamide and octreotide are used to slow intestinal transit. Cholestyramine is used for choleretic diarrhoea. Cephalexin, metronidazole, trimethoprim and gentamycine are used to control infection. H2 receptor antagonists and proton pump inhibitors are used to reduce gastric hyper-secretion.

Adjuvant Surgical Procedures: Normal size of small intestine of an infant is 200 – 250 cm. and it keeps growing till the size of the infant is 100 cm. If the size of the intestinal remnant is 25 cm. TPN dependence develops presence of ileocecal valve and colon improve survival. Therefore, surgical management as early as feasible offers good prognosis. Reversed intestinal segment, recirculating loops and construction of intestinal valves have been reported to slow down the transit and improve absorption. Isoperistaltic colon interposition using 8-15 cm segment of colon with 50% success is found to be a better procedure. Tapering enteroplasty in intestinal remnant of 30 cm. length improves both peristalsis and absorption. Recently intestinal lengthening procedures have found favour in the management of SBS. In Bianchi procedure two longitudinal tubes are constructed by G.I. Stapler and anastamosed in isoperistaltic manner. However, Serial Transverse Enteroplasty (STEP) procedure by using G.I. Stapler produces a zigzag channel and thus doubling the length of bowel. At present both Bianchi and STEP procedures are in vogue with 91% to 95% survival. Tissue engineering techniques to create neointestine have been described in experimental animals. Small bowel transplantation is the procedure of choice in the treatment of intestinal failure. 15% – 20% of patients survival rate in one year and 55% survival in 5 years following transplantation is reported. Today, intestinal transplantation is a viable surgical option in patients on chronic TPN.

Intestinal Loop Lengthening: An Experimental Study- The aim of the present work was to study the feasibility of loop lengthening procedure in canine model.

Materials and Method: The present study was carried out on 15 adult mongrel dogs weighing 10 – 15 kg and from both sexes. The procedure of loop lengthening was done in 2 stages.

First Stage: A segment of 10 cm of mid jejunum was isolated by applying two intestinal occlusion clamps up to the level of most distal arterial arcade. The segment of jejunum was divided including the mesentery up to the point just short of distal most arterial arcade. The two halves of the mesentery were dissected by blunt dissection using long straight artery forceps. Thus the 2 leaves of mesentery along with their blood vessels fell apart. The isolated segment of the jejunum was then divided longitudinally. Each half of the bowel was converted into a tube using 3 – 0 prolene sutures over a rubber catheter. The two tubes thus formed were joined together by end-to-end anastomosis in isoperistaltic fashion. Intestinal continuity of the bowel was restored by end-to-end anastamosis of the proximal and distal ends of bowel where the clamps were applied at the time of resection of the segment for lengthening. One end of the lengthened loop was brought out of the abdomen as mucous fistula and the other end was closed.

Second Stage: After 8 – 10 weeks of first stage procedure abdomen was re-opened and the lengthened segment was dissected free of the mucous fistula. The lengthened loop was then anastomosed to small bowel by end to side anastomosis by continuous single layer suture with 3 – 0 chromic catgut. After 2 weeks of second stage procedure, the animals were sacrificed. Patency of anastamoses, gross appearance of operated small bowel and mesentery were noted. Biopsy specimens were taken from the lengthened loop for light and electron microscopic studies.

Observations: Post operative recovery was uneventful. The stoma of mucous fistula was healthy in the first stage. No features of intestinal obstructions or sealed perforations
were observed following the second stage. There were no ischaemic changes in the lengthened loop. No narrowing due to fibrosis was observed at the sites of anastomoses. Mesentery was thickened and oedematous. Mesenteric vessels of the lengthened loops were normal in appearance. The length of lengthened loop was 20 cm.

Results: The procedure of loop lengthening was without morbidity and mortality. The jejunal loop was lengthened from 10 cm to 20 cm. It was fully patent and functional. There was no stricture formation. The luminal diameter of the lengthened loop increased by 1.5 times. Histology of the lengthened loop showed normal intestinal mucosa. There was no evidence of mucosal disruption, fibrosis, myonecrosis or autolysis of intestinal segments. Electron microscopic examination of lengthened segment showed normal ultrastructure. Normal structure of villi and all layers of bowel were present.

Conclusion: All the lengthened loops were viable both macroscopically and light and electron microscopically. Loop lengthening procedure is a feasible procedure to increase the length of small bowel.

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Sigmoid colon neo vaginoplasty in vaginal agenesis: Experience with 8 cases.
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Aim: Vaginal agenesis is a challenging problem for the pediatric surgeon. Outcomes are measured not only by cosmetic and functional results but also by the patient’s psychosocial development. Congenital syndromes such as mullerian agenesis (Mayer-Rokitansky- Kuster-Hauser syndrome), intersex conditions (congenital adrenal hyperplasia, androgen insensitivity), and cloacal anomalies are the most frequent etiologies. Reconstruction has involved the use of skin grafts and non-operative methods with less than ideal results. Theoretically, a vascularised intestinal transplant would be superior in that there would be a tube of adequate length, lined with mucus membrane with a negligible tendency to stricture. Authors have preference to use sigmoid colon for creating the neovagina and herein review their experience with this procedure.

Methods: The study was undertaken in the department of Pediatric surgery, CSMMU (Upgraded KGMC). Over a 5 year interval, from March 2003 to March 2008, ten patients underwent sigmoid colon neo vaginoplasty. These patients were retrospectively reviewed and data sheets were evaluated for etiology, operative procedure and operative and postoperative complications if any were recorded.

Results: Age ranged between 11 to 26 years and all patients had vaginal atresia of various etiologies, (MRKH-7, Cloaca-3). A 15-20 cm segment of sigmoid colon was pulled through the retro vesical tunnel. The proximal end was closed in two layers and distal anastomosis was carried out to the opening made on the vaginal plate. The neovagina was examined and calibrated under anesthesia. All but one patient had an uneventful postoperative course and were discharged within 7 to 8 days. All patients had excellent cosmetic results with appropriate vaginal length. One patient developed late stenosis of the introitus, which responded to dilatations. Mucus discharge was not a significant problem.

Conclusion: Sigmoid colon vaginoplasty is an appropriate method for the construction of a neovagina in children, meeting all necessary criteria after vaginoplasty. Furthermore, we believe that colon segments, in particular sigmoid, are preferable to small bowel for the creation of a neovagina. They have the advantage of not requiring prolonged vaginal molding and self-dilation and Stenosis is unusual. The sigmoid colon is thick-walled, large in diameter and does not traumatise easily; mucosal secretions, although sufficient to provide adequate lubrication, are not excessive or irritating.

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A follow up study of ten cases of solitary kidney with other urological anomalies
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Aim: To study the varieties of other urological anomalies, their investigations and management in ten cases of ‘solitary kidney’.

Method: Other associated urological anomalies in solitary kidney cases pose a challenge in management. Ten cases of solitary kidney with associated urological anomalies were studied and investigated. Blood investigations, MCU, Renal nuclear scans were obtained. After necessary management of the other associated anomalies like VUR, obstructive megaureter and ectopic ureter, the patients were followed up.

Results: Although the other urological anomalies were treated on their merits, we had a mixed bag of results.

Conclusion: In cases of solitary kidney, it is important to make an early diagnosis and prompt treatment of other urological anomalies to prevent damage to the precious kidney.

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Tethered Cord syndrome – A follow up of 10 cases
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Aim: To follow up 10 cases of Tethered Cord Syndrome (TCS) with spinal dysraphism.

Method: Ten cases of spinal dysraphism were suspected to have TCS on clinical symptomatology and confirmed by MRI spine. All were operated upon and detethering of spinal cord was done. They were followed up with respect to the degree of improvement in symptoms, radiological comparisons and recurrence of symptoms if any.

Results: We were successful in detethering the cord without further neural injury. There was significant clinical improvement postoperatively.
Conclusion: In cases of spinal dysraphism where we suspect TCS, specially due to late onset of neurological symptoms, MRI is a must and early exploration for detethering yields good results.

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Our early experience of USG guided aspiration of liver abscess
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Aim: Our early experience of USG guided aspiration of liver abscess.
Method: In this study we reviewed 5 cases of liver abscess. All patients were in age group of 5 yrs to 15 yrs. They presented with tender hepatomegaly with fever. USG confirmed diagnosis of liver abscess in all. In all cases we did USG guided needle aspiration of liver abscess under local anaesthesia along with intravenous antibiotics and amoebicidal drugs.
Results: Out of 5 cases, 3 cases required repeat USG guided needle aspiration at interval of 7 days. All cases were treated successfully with this technique.
Conclusion: USG guided needle aspiration is an easy, rapid, safe and effective method of treatment of all cases of liver abscess, especially in amoebic ones. Surgical intervention is not necessary and can be avoided.

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Antenatally diagnosed abdominal cysts and their proposed postnatal outcome. A proposed classification for easier antenatal diagnosis
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Aim: Intrabdominal fetal cystic lesions are amongst the commonest antenatal malformations seen during fetal anomaly scans. A whole myriad of conditions can present as an antenatal abdominal cyst. Though these cysts may appear similar in the antenatal period their postnatal outcome may be different. Hence a simple classification of these cysts is required to aid antenatal differential diagnosis.
Materials and Methods: We present a series of four cases of fetal abdominal cysts and their antenatal, perinatal and postnatal course, and also their treatment.
Results: All four patients had lower abdominal paravesical cystic lesions which were followed up from second trimester to term and postnatally. Two patients had ovarian cystic lesions. Out of these, one patient required bilateral ovarian cystectomy due to torsion and hemorrhage. Now the patient is being followed up for 18 months. In our presentation issues related to hormonal replacement are discussed. The other patient had bilateral multisepate ovarian cysts which significantly reduced in size postnatally. Third patient had paravesical cyst in early second trimester which completely disappeared on further antenatal scans. On postnatal scan left kidney was absent. Fourth patient had enteric duplication cyst on postnatal scan which was removed during neonatal period. Though the presentations of these cysts are similar antenatally postnatal management and outcome was different. Hence, we propose a classification which will aid the sonologist as well as the pediatric surgeon in differential diagnosis and planning the management.
Conclusion: Common causes of antenatal abdominal cystic lesions are cystic masses of renal origin, ovarian cysts, enteral duplication cysts, mesenteric cyst, chylolymphatic cysts, and choledochal cysts. These cysts may give similar sonological appearance and pose difficulty in diagnosis antenatally. Hence we propose a classification of antenatal abdominal cysts based on sonological appearance which will guide the sonologist and the specialist in differential diagnosis and planning further management.

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Augmentation colocystoplasty and incontinence surgery- our ongoing experience
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Aim: Successful management of urinary incontinence is a cornerstone in endowing patients of neurogenic incontinence with a good quality of life. In recent times introduction of clean intermittent catheterization and anticholinergics at an early age is thought to avoid future incontinence surgery. Over the last few years, we have a growing experience in the management of urinary incontinence in spina bifida. In this paper we present, a cohort of 9 consecutive cases of colocystoplasty and/or bladder neck repair and Mitrofanoff and/or MACE procedures. A thorough preoperative work up, proper selection of cases, protocol based intraoperative and postoperative management is required for obtaining good results. These aspects are discussed in this paper.
Materials and Methods: We present 9 of our patients in the age group of 4yrs-19yrs, out of which 5 were boys and 4 girls. Augmentation colocystoplasty was done for all of them,7 underwent Mitrofanoff,5 underwent MACE,4 patients had a wide bladder neck and DEFLUX was injected in 2 of these patients,1 underwent Young-Dee-LeadBetter repair and a bladder neck ventrisuspension was done for 1 patient. Preoperative preparation extending over six months to one year included careful evaluation of each patient, thorough investigations, CIC training, anticholinergic medication, parental counseling and meticulous documentation.
Results: The dry interval of our patients preoperatively ranged from <10mins to 120 mins(mean of 45 mins) which improved to a mean dry interval of 4 hours(range of 3 to 7 hrs) postoperatively.Young-Dee-LeadBetter and bladder neck hitch showed good results, whereas results of periurethral injection of DEFLUX were not encouraging. The Mitrofanoff and MACE stomas functioned well. There were no major complications in
any of our patients postoperatively. Our surgical techniques will be discussed.

**Conclusion:** With careful preoperative evaluation and urinary work up beginning 6months to 1 year prior to the proposed date of surgery, proper CIC training, anticholinergic medication and meticulous augmentation technique, most patients with neurogenic incontinence stand to benefit significantly by augmentation colocolostomy. Easy access continent channels such as a Mitrofanoff makes CIC a simpler task. We recommend augmentation colocolostomy with adjunct procedures to achieve social continence in patients with neurogenic incontinence.

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**BCG adenitis: To treat or not to treat?**

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**Aim:** Suppurative lymphadenitis is the common complication of BCG vaccination. The optimum treatment for this complication is debated.

**Methods:** All cases of BCG lymphadenitis presenting to pediatric surgical service over a 2year study period were reviewed to determine the optimum treatment for this problem.

**Results:** 22 children were referred for the management of BCG lymphadenitis during the study period. Children were healthy and received BCG first 2 months of life. Initially all the patients received medical treatment with anti-tuberculous drugs for one to nine months. 13 children who presented with large (approximately 3cm) fluctuant lymph nodes, required a surgical procedure to avoid spontaneous rapture and sinus formation, whereas medical treatment (with antituberculous drugs and aspiration) was effective in five out of the 9 patients presenting with small (approximately 1 cm) nodes.

**Conclusions:** Medical treatment with antituberculous drugs is not effective to treat BCG lymphadenitis, when the involved lymph nodes are around 3.0 cm and have developed fluctuation and inflammation of over lying skin.

**149**

**Bladder haemangiolymphangioma: A case report**

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Kanchi Kamakoti CHILDS Trust Hospital, Chennai, India

**Aim:** A case extensive bladder haemangioma was investigated and put on high dose steroid therapy. There was good resolution of the lesion.

**Methods:** Twelve year old boy with recurrent H/O haematuria since the age of 1 year was found to have a scrotal hamartoama. Doppler ultrasound, CT pelvis and cystoscopy showed an extensive bladder haemangioma and scrotal haemangioma. Following high dose prednisolone therapy there is significant resolution. There is residual lymphangiomatous component.

**Results:** Extensive bladder haemangioma has responded to high dose steroid therapy.

**Conclusion:** This is a case of extensive Haemangilymphangioma of bladder and scrotum and has responded to a significant extent to high dose prednisolone therapy.

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**Choledocal cysts managed with Lilly’s procedure and Raffensperger’s conduit: A retrospective analysis and long term follow-up**

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**Aim:** A retrospective analysis and long term follow-up of the case of Choledocal cyst with Lilly’s procedure and Raffensperger’s conduit is presented in this paper.

**Methods:** Age, sex, investigatory modalities, Types pre and post-op cholangitis, immediate and delayed complications of the choledocal cysts manged with Lilly’s procedure and Raffensperger’s conduit were analysed.

**Results:** There is no mortality in this series. The incidence of immediate and long term complications and post-op cholangitis are not significant.

**Conclusion:** Lilly’s procedure to avoid injury to pancreatic duct and anomalous vessels and Raffensperger’s conduit to reduce post-op cholangitis and peptic ulcer is justified for the operative procedure involving more number of anastomosis and prolonged operating time.

**151**

**Case of congenital chylothorax**

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**Aim:** To depict pictorial course, management and outcome of child detected to have hydrops fetalis due to congenital chylothorax (which was diagnosed postnatally).

**Background:** Accumulation of chylous fluid in pleural space (chylothorax) can be congenital or acquired. Congenital chylothorax may be associated with hydrops and can have a fatal outcome perinatally. The optimal method of treating this condition remains controversial.

**Material and Methods:** Herein we present a case of antenatally detected hydrops at 33.3 weeks of gestation, which was due to congenital chylothorax detected postnatally. The treatment course is discussed and depicted.

**Results:** The child recovered well with our conservative approach over period of one month without any sequelae. Presently child is three years old and thriving well.

**Conclusion:** We would like to stress the importance of conservative treatment, close monitoring, multidisciplinary
care and patience on the part of treating physician in managing such babies.

152
Conservative treatment of hemangiomas and lymphangiomas

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Aim: To study the efficacy of various non-operative modalities in the treatment of hemangiomas and lymphangiomas.
Methods: Patients with these problems were given oral steroids, propranolol, intralesional bleomycin, and compression bandage in different patients.
Results: All patients showed good objective response.
Conclusion: conservative methods are very effective in the management of these lesions. Surgery may be needed when these methods have not worked in the occasional patient.

153
Contralateral oopheropexy for ovarian torsion: A salvage strategy – our experience

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Aim: Paediatric patients with ovarian torsion are at increased risk for a repeat event, and after unilateral ovarian loss, the contralateral ovary is at risk for future torsion. Oopheropexy has not been emphasized enough in contrast with testicular torsion in the literature. We present our experiences with laparoscopic oopheropexy in children.
Methods: The medical records of 12 patients with ovarian torsion, who underwent oopherectomy and contralateral oopheropexy between June 2004 - June 2009, were reviewed retrospectively and prospectively.
Results: The ages of patients ranged from 3 years to 12 years, with a mean age of 10 years in our series no torted ovary was salvageable. So after ipsilateral oopherectomy contralateral orchiopexy were carried out.
Conclusions: Failure to protect ovaries from subsequent torsions results in infertility, and we performed oopheropexy in contralateral ovaries without any postoperative complication. Oopheropexy is a simple procedure, and should be done in all cases of ovarian torsion.

154
Duplicate bladder extrophy: A rare variant of exstrophy bladder

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A two month male child presented with what appeared to be a classic bladder extrophy and the condition was not recognized until the time of surgical exploration when it was diagnosed to be case of duplicate bladder extrophy. Inability to identify the ureteral orifice during surgical repair led to the discovery of closed bladder posterior to extrophied bladder mucosa and a hypospadiac urethral opening through which even a smallest feeding tube (4fr) could not be passed in to the bladder. We report a case of duplicate bladder extrophy in association with hypospadiac urethral opening and to our knowledge this is the first case report of such an association of hypospadias with duplicate bladder extrophy. Postoperatively, the child has normal urinary control with acceptable cosmetic results. Though duplicate bladder extrophy is a rare extrophy variant it should be ruled out when the ureteral orifices are not identified at exploration and the overall prognosis of these patients are far better than the classic bladder extrophy.

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Early thoracoscopy for empyema thorax: How useful is it?

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Aim: To evaluate the results of thoracoscopy for the treatment of pleural empyema in pediatric patients.
Methods: A prospective study of 15 patients who underwent video-assisted thoracoscopic for pleural empyema treatment. General anesthesia and single-lumen oral intubation were used. Surgery was indicated when there was pleural effusion and no clinical and radiological response to clinical treatment (antibiotics, physiotherapy and thoracocentesis) or severe sepsis, together with loculated pleural effusion (confirmed through ultrasound or computed tomography of the chest).
Results: Between August 2008 and June 2009 15 thoracoscopies were performed in patients ranging in age from 5 months to 11 years (mean, 4 years). Mean time for thoracic drainage was 5 days (range, 2-33 days), and mean period of hospitalization was 7 days (range, 4 to 49 days). One patient underwent open decortication due to the nature of the empyema. All patients showed good lung expansion on postoperative chest xray. All patients were discharged early with oral antibiotic course.
Conclusions: Management of pleural empyema in this age bracket is still controversial, and surgical indication is often delayed, particularly when there are multiple loculations or severe sepsis. We advocate early thoracoscopy instead of primary ICD placement as it yields a better clinical outcome for pediatric patients with pleural empyema, with apparent decreased morbidity and mortality, earlier chest tube removal, earlier hospital discharge and improved response to antibiotic therapy. We also suggest the use of Clarithromycin a macrolide as empirical therapy for empyema.
156
Foregut duplication cyst masquerading as loculated empyema
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Foregut duplication cysts are an important differential diagnosis of posterior mediastinal masses apart from neurogenic tumors. Their presentation may be protean and therefore these may be overlooked unless a high index of suspicion is entertained. These may or may not communicate with alimentary tract, and may be found in the neck, thorax and abdomen, and may manifest accordingly. We present a case of esophageal duplication cyst in a child who presented with chronic respiratory symptoms and failure to thrive.

157
Single stage Fowler-Stephen orchiopexy: Retrospective analysis and follow-up
Kirthy Pramod, Anoop, Rajiv Padankatti, Namasivayam S
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Aim: Retrospective analysis of the cases of arrested descent of testis managed by Single stage Fowler-Stephen orchiopexy during the last 10 years is presented. The results and follow-up are shown.

Methods: Single stage Fowler-Stephen orchiopexy was carried out in these children. These procedures were carried out as Inguinal exploration and open Single stage Fowler-Stephen orchiopexy or as Diagnostic laparoscopy and open Single Stage Fowler-Stephen orchiopexy. Intra-operative measurement of testicular size was carried out. Post-op assessment of testicular sensation and status of testicular size were carried out on follow-up.

Results: Overall success rate with preservation of testicular sensation and maintenance or increase in testicular size is 88.2%. The rate of post-op atrophy is 11.2%.

Conclusion: There are few papers on long term follow up and results of one stage Fowler-Stephen orchiopexy. The results of this series are comparable to the results in the other few available studies. This study may be useful for comparing the Lap Fowler Stephen orchiopexy in future.

158
Haemothorax in Beta Thalassemia: An unusual cause
Kirthy Pramod, Amit Gupta, Anoop, Rajiv Padakatti, Sarala Rajajee, Senthil Ganesh, Namasivayam S
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Aim: A Beta Thalassemic child presented with massive haemothorax. The cause was investigated to be an uncommon Extra-medullary Haemopoiesis.

Methods: A 11 year-old girl with Beta Thalassemia presented with massive haemothorax. Peripheral smear showed Normoblasts. Extramedullary haemopoiesis was suspected. Haemothorax was managed with ICD and transfusions. Imaging for Extramedullary haemopoiesis was negative. Splenectomy specimen showed foci of Extramedullary Haemopoesis.

Results: Child is doing well after the management of Haemothorax and subsequent splenectomy.

Conclusion: Uncommon Extramedullary haemopoiesis should be kept in mind while dealing with haemothorax in hematological conditions so that other possible sites of extramedullary haemopoiesis and the complications can be investigated.

159
An unusual presentation of Hiatus hernia
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Two children presented with persistent anemia requiring multiple transfusions. On extensive evaluation for the anemia, they were found to have esophageal hiatal hernia. They had no previous signs or symptoms of gastroesophageal reflux. Their anemia resolved after correction of hiatus hernia and fundoplication. This is associated with Herbst triad of GERD with anemia, finger clubbing and hypoproteinemia. Association if anemia with GERD and paraesophageal hernia is well established. Hiatal hernia presenting only with severe anemia is rare. There are 2 reported cases in literature.

160
Laparoscopic pyloromyotomy in infants: A study
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Introduction: Laparoscopic Pyloromyotomy (LP) has become the standard recommendation in the west, and is being increasingly done in many Indian centers with good results. There are not many Indian studies about LP.

Aim: To study the feasibility and effectiveness of laparoscopic pyloromyotomy (LP).

Materials and Methods: This was a prospective study of 39 babies who underwent LP over 2 years at our centre. We used the standard 3 port technique 1 with an arthrotome knife & pyloric spreader. The outcome was evaluated with regard to the total operating time, complications, hospital stay and time to full feeds.

Results: Of the 39 babies, 23 were males and 16 female. The age ranged from 16 to 76 days (mean age: 28 days). The children were operated by various surgeons including resident trainees. In 35 patients, the procedure was uneventful; 2 required conversion due to mucosal breech and 2 had incomplete
pyloromyotomy, all of them early in the series. The mean operative time was 25 minutes (range: 15 to 75 min), the mean time to full feeds was 23 hours (range: 36 to 96 hrs), the mean hospital stay was 41 hrs (Range: 26 to 130 hrs). There were no operative or post-operative complications. And all the children did well on follow-up (Mean 6 months)

**Conclusion:** Laparoscopic pyloromyotomy is safe and effective in infants, and can be learnt easily even by beginners and provides better cosmesis.

### 161
**Laparoscopic gastropexy in infants**

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**Aim:** Gastric volvulus in infants is not an uncommon condition. However surgeons are reluctant to undertake a major exploration at this age for a relatively minor procedure. Laparoscopic gastropexy provides simpler alternative in such situations. We present our experience of laparoscopic gastropexy as a definitive treatment for gastric volvulus in two infants.

**Material and Methods:** We present two cases aged 3 months and 7 months diagnosed to have gastric volvulus clinically and radiologically. Second case had suspected association of Peter Plus syndrome. Both the infants were treated by planned laparoscopic gastropexy. In this paper we will discuss the instrumentation, technique, problems encountered during the procedure and outcome.

**Results:** Both of our patients had uneventful post operative recovery. Both patients have been followed up for 2 years and 6 months respectively and are thriving well.

**Conclusion:** We recommend that laparoscopic gastropexy in infants with gastric volvulus is a safe, simple and effective procedure and avoids a major abdominal operation for a relatively minor procedure.

### 162
**Case of laryngotracehoesophageal cleft**

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**Aim:** To depict pictorial course, management and outcome of a female child with laryngotracehoesophageal cleft.

**Background:** Congenital laryngotracehoesophageal cleft is a rare condition that is characterised by a posterior midline deficiency in separation of the larynx and trachea from the hypopharynx and esophagus. Various approaches in the form of anterior or anterolateral and open or endoscopic have been mentioned. As this is a rare condition, optimal method of treating remains controversial.

**Material and Methods:** Here we present a case of female child with laryngotracehoesophageal cleft treated at our institution. This child had cyanotic episodes associated with feeding, inspiratory stridor and recurrent pulmonary infections since birth. As a result child also had tracheostomy and feeding gastrostomy in first month of life. She also had undergone multiple laser surgeries for suspected web before presenting to us. We were able to treat this child successfully by open surgical anterior approach.

**Results:** Child recovered well after this anterior approach open surgery and was feeding well orally after closing gastrostomy and going to school.

**Conclusion:** We would like to stress the importance careful evaluation before deciding on surgical approach and discourage overzealous use of modern endoscopic and laser approach without giving a thought. A proper planned anterior translaryngeal approach gives good exposure for repair of upper laryngotracehoesophageal.

### 163
**Lymphoma vs intussusception: A retrospective study of related cases**

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**Aim:** Cases of bowel lymphoma presenting as intussusception or like intussusception and intussusception presenting like lymphoma causing mismanagement or delay in management. Retrospective analysis of such cases managed during the last 10 years to form a treatment protocol.

**Methods:** All cases of abdominal lymphomas presented as intussusception and cases presented like intussusception and cases of intussusception presented like lymphoma are analysed. Data is presented.

**Results:** Analysis of the presentation, age incidence and results of treatment lead on to a safe protocol of management of such cases.

**Conclusion:** This retrospective analysis of bowel lymphomas and intussusception with atypical presentation is used to form a safe management protocol to avoid delay in management and mismanagement of such cases.

### 164
**MACE and Mitrofanoff-techniques and complications**

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**Aim:** Continent abdominal stomas for bowel and bladder emptying are being commonly performed the world over. The acceptance by patients and families for such abdominal wall stomas can be improved by creating cosmetically and functionally acceptable stoma. This depends on proper planning, operative technique and post operative care of stoma.
Material and Methods: In 8 patients (cases of spinal dysraphism with bowel and bladder incontinence who also had undergone colostomyoplasty) we have performed MACE in 5 patients and Mitrafonoff procedure in 7. Appendix was used for creating cathetisable channel for Mitrafonoff in 7 patients and for MACE 2. In one patient appendix was divided and used for both the stomas.

Results and Conclusion: In this paper surgical technique of Appendiceovesicostomy and MACE along with problems encountered will be presented. Also surgical technique of Caecostomy is discussed. Regimen of regular post operative dilatation of stoma (especially of MACE) is necessary to prevent stomal stenosis. Our patients (and their families) are highly satisfied with the stomas and with simple modifications, such as indwelling catheter during school or college or working hours, are leading better and more independent life styles.

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Megalourethra: A case report
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Background and Aim: Megalourethra is a rare congenital anomaly characterized by a congenital deficiency of the mesodermal tissues of the phallus, leading to enlargement of the penis urethra. We present a pictorial presentation of a case of scaphoid type of megalourethra.

Material and Methods: A 3 year old boy presented to us with the isolated scaphoid megalourethra. Other associated anomalies were ruled out. Reduction urethroplasty was done.

Results: Post operatively the child started passing urine in good stream from the tip. Cosmetic outcome too was satisfactory at a follow up of two years post op.

Conclusion: Megalourethra has been classified into scaphoid and fusiform types and sometimes associated with additional urinary tract and other system anomalies. In the scaphoid type, there is complete or partial deficiency of the corpus spongiosum, whereas in the fusiform type, both the corpora cavernosa and the corpus spongiosum are deficient. Meticulous surgical correction as described and depicted will provide a good functional and cosmetic result, as in our case.

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Penopubic sinus: A case report
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Aim: A case of Penopubic sinus since birth was investigated for Dermoid Urethral duplication and was excised. HPE showed it to be dorsal urethral duplication.

Methods: Two year boy presented with a penopubic sinus. Sinogram did not reveal any communication to urethra or bladder. Sinus was extending to the under surface of the symphysis and was excised. HPE showed the sinus lining to be urothelium.

Results: Asymptomatic for the last 6 months since excision.

Conclusion: Literature search revealed it to be Abortive type of Incomplete dorsal urethral duplication which presents as blind ending sinus.

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Two rare cases of perineal extrophy
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We present two rare cases of perineal ectopic intestinal mucosa. 2 new born, male children presented with a large moist red mass between the scrotum and the anterior margin of the anus. These children also had severe penoscrotal hypospadias with chordee and penoscrotal transposition. They were initially suspected to have perineal extrophy. To divert the fecal stream they have undergone sigmoid loop colostomy in the newborn period. At the age of 6 months they were completely evaluated. MCUG showed normal bladder with good stream from the penoscrotal meatus. A barium enema showed normal rectal colon, rectum and anus. MRI study done showed no communication between the perineal mucosal tissue and the bowel. They have undergone excision of this ectopic perineal bowel mucosa with reconstruction of the perineum. One child has undergone colostomy closure and is continent for stools. Both of the children await hypospadias repair. There have been no reports of similar cases in an extensive search of the English literature.

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Light at the end of the tunnel: Biliary atresia: A long term follow up of 10 patients after kasai and liver transplantation
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Aim: Biliary Atresia and Kasai Portoenterostomy are increasingly seen as entities with an eventually poor outcome. However our experience has been otherwise – a careful long term follow-up, endoscopic management of varices and timely organization and performance of Liver transplantation in these patients has shown us the bright “light at the end of the tunnel”. We present this long term follow-up of 10 patients after Kasai and liver transplantation.

Materials and Methods and Results: In this paper we present the long term outcome in a cohort of 10 patients, who were diagnosed to have Biliary Atresia in infancy and underwent the Kasai Operation between the ages of 2 -7mths. They are under our regular follow up since their portoenterostomies for
the past 3 to 12 years. All 10 patients are presently anicteric and with normal Liver functions and are thriving well (doing well in school). Of these, 7 are normal without requiring a LT while 3 patients who gradually deteriorated over the years underwent successful live related Liver transplants at three different centres and are now normal. The follow up and monitoring after a Kasai operation and the interim management including the role of OGD scopy (done in two patients) is discussed in the paper.

Conclusions: BA is not a disease with a bleak outcome. The tunnel through which the patient, the family and the surgeon has to pass, is long and dark, but there is light at the end of the tunnel. We recommend active follow up of Post Kasai patients and active counseling for timely LT wherever necessary.

169 Primary pull-through for Hirschsprung’s disease in newborn and early infancy
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Introduction: Primary endorectal pull-through (ERPT) for Hirschsprung’s disease has become immensely popular due to the simplified approach and reduction in number of stages. However there are limited studies evaluating functional outcome of EPRT done in early infancy.

Objective: To study the safety and effectiveness of primary ERPT in early infancy.

Material and Methods: We retrospectively analyzed 30 infants (age < 3months) who underwent primary EPRT between 2004 -2009 at a single centre. Patient data, intra-operative events, early and late complications were recorded. The stooling record examined the frequency of stooling, the incidence of enterocolitis, and the functional outcome was analyzed.

Results: Mean age at operation was 42 days. Operative time varied between 90 minutes to 150 minutes. There were no complications, except for one neonate who had intra-abdominal serous collection. Though an increased frequency of stooling was seen in the early postoperative period in most of the infants, the stool frequency settled down to 3-6/day over the next 3 months in all. During the follow-up of 2-4 years the functional outcome assessed was encouraging with a stool frequency of 2-4 per day.

Conclusion: EPRT can be safely performed in neonatal period. Early functional outcome is encouraging except for increased frequency of stools. Long term functional outcome needs further evaluation.

170 Splenic cyst: A case report
Kirthi Promod, Anoop, Rajiv Padankatti, Senthil Ganesh, Namasivayam S
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Aim: A case of large splenic cyst which was managed by laparotomy deroofing and marsupialisation. HPE showed it be an epithelial cyst.

Methods: Eight year-old boy presented with a Rt upper abdominal mass. Imaging showed it to be a large splenic cyst with sediments and a rind of splenic tissue all around. Laparotomy, excision of large area of the cyst wall where the thinning of splenic tissue was more prominent and marsupialisation with omental plugging was carried out.

Results: Child is recurrence free 8 months after the surgery.

Conclusion: Laparotomy, partial excision of the cyst wall and marsupialisation was opted as 1. more common hydatid cyst could not be ruled out, 2. splenic salvage is preferred and 3. recurrence is common.

171 Sternal cleft: A case report
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Aim: A rare case of Sternal cleft in a neonate is presented.

Methods: A male neonate presented with sternal cleft with the thinned out skin at the summit of the swelling exposing pericardium and was associated with ASD. Repair was carried out at the age of 9 days successfully.

Results: Doing well 1 year postoperatively.

Conclusion: Presented for rarity, uncommon exposure of pericardium, association of ASD and to advise surgery as early as possible during neonatal period so as to do a simple repair rather than doing late complicated orthopaedic procedures and their long term complications.

172 Anterior urethral valve / Diverticulum: A case report
Kirthy Promod, Anoop, Rajiv Padankatti, Amit Gupta, Senthil Ganesh, Namasivayam S
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Aim: Child with anterior urethral valve / Diverticulum was investigated and treated like valve. Latter repeat cystoscopy showed it to be a diverticulum.

Methods: Eleven months male child with dribbling showed anterior urethral valve in MCU. Cystoscopy and fulguration of anterior urethral valve was carried out. Repeat cystoscopy for persistent symptoms showed a posterior lip of a posteriorly projecting anterior urethral diverticulum.

Results: Following fulguration of both anterior and posterior lips of the diverticulum child is asymptomatic for the last 3 months.

Conclusion: Common diagnosis of anterior urethral valve and attempted fulguration of anterior lip of the diverticular opening resulted in persistent symptoms. Repeat scopy reveals the diagnosis of diverticulum.
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Video-bronchoscopy in H-tracheo-oesophageal fistula: Our experience
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Aim: Role of video-bronchoscopy in diagnosing H-TOF, otherwise undetected.

Methods: Three cases who had recurrent lower respiratory tract infections were investigated by routine methods. Although H-TOF was suspected in these cases, it was not detected on Ba-swallow, however video-bronchoscopy demonstrated H-TOF conclusively. One of the three cases was a complication of operated tracheo-oesophageal fistula. repair done elsewhere. Here Cystoscope was used as a tool for video-bronchoscopy in all three cases and it has given excellent view of H-TOF, and it could be cannulated easily before surgery. Videos attached herewith.

Results: Following Video-Bronchoscopic diagnosis usual surgical management of H-TOF was carried out successfully. All patients had uneventful recovery.

Conclusion: Video-bronchoscopy is the important diagnostic tool for diagnosis of H-TOF which is not detected by usual radiological investigations.

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Suprahepatic placement of ventriculoperitoneal shunt: A safe haven in cases of recurrent abdominal end blockage
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Aim: Hydrocephalus is a common problem encountered in the pediatric age group and in most cases, requires the placement of a ventriculoperitoneal shunt for its treatment. These shunts are associated with its own complications; out of which blockage of the abdominal end of the shunt is a worrisome problem, owing to multiple adhesions and pseudocyst formation.

Materials and Methods: We present three cases of hydrocephalus with VP shunt in situ, two years, six years and fourteen years of age. All three of them had recurrent blockage of the peritoneal end of the shunt due to multiple adhesions in one and pseudocyst formation in the other two. In the first patient who presented with adhesio-obstruction, the peritoneal end was placed in the suprahepatic space on finding a plastered general peritoneal cavity on exploration. In the other two patients, two attempts were made at repositioning the shunt at different sites in the general peritoneal cavity, which were unsuccessful. The third time, we repositioned the shunts in the suprahepatic space.

Results: In all the three patients the shunts functioned well postoperatively after placement in the suprahepatic space.

There were no recurrences of blockage of the peritoneal end.

Conclusion: In such situations where we find the abdominal cavity inaccessible for shunt placement, many surgeons would consider a ventriculopleural or ventriculoatrial shunt, which can have their own additional complications. In our experience of these three cases suprahepatic placement of the shunt in such cases has shown encouraging results. We suggest, suprahepatic space can be a safe haven for the placement of peritoneal end of the shunt, in cases with peritoneal end blockage.

175
Stage-IV Burkit’s Lymphoma
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12 yr old male referred as acute abdomen followed by history of acute gastroenteritis. He was well before this episode, but started to have recurrent vomiting and abdominal distension. Admitted and initially managed as sub acute obstruction and investigated. Clinically greenish aspirates form NG, afebrile, RR 38/Min, distended abdomen with visible veins with flow below upwards. Abdomen was nontender, with present bowel sounds. Basic investigations were normal. USG abdomen single loop in epigastrium and right hypochondria showed edematous? Gangrenous with low blood flow in that loop. Mesentery of bowel and colon was edematous and thickened (12 and 20mm). There was minimal Ascitis in pelvis Either suprarenal area had echogenic lesions. CT abdomen had correlative findings as in USG. He did not settle with conservative management, Underwent laparoscopy findings were mass obliterating whole lumen in jejunum, thickened, shortened, mass at base of small and large bowel mesentery. Omentum studded with mass and friable. Milky ascitis. The epiloiecae were nodular throughout the colon. Mass in pelvis. Pleural effusion left chest. Mass could not be resected so side to side jejunal anastomosis was done. Biopsy sent from jejunal mass and omentum, along with fluid for cytology. Biopsy was suggestive of Burkit’ Lymphoma. Bone marrow biopsy and trephine bone Biopsy had evidence of non Hodgkin’s lymphoma. Child receiving chemotherapy for stage 4 Burkit’s lymphoma. This case presented for acute presentation of disease without any other symptoms. This child had very typical findings of colonic involvement.

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Acute abdomen due to volvulus and gangrene of a huge tubular colonic duplication of the hepatic flexure: A case report
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Introduction: Colon is the second most common site of enteric duplications and about 15-20% of all duplications of the alimentary tract involve the colon.

Case Report: A 3- year- old, male child presented with acute abdominal pain, massive abdominal distension, fever and
constipation for one and a half days. There was history of two episodes of bilious vomittings initially. There was past history of intermittent colicky pain associated with appearance of visible peristalsis. The patient was taking antitubercular treatment for the above symptoms for the past three months. On examination the patient was critically ill, febrile, had a feeble pulse and had a hugely distended and diffusely tender abdomen. After a plain X Ray of the abdomen and initial resuscitation, the patient was explored. A huge tubular duplication of the hepatic flexure of the Colon measuring more than 18 inches was found which undergone complete volvulus and gangrene. After derotation, the duplication was excised and the colon repaired primarily. The postoperative recovery was uneventful. This case is being reported for its rarity. It also highlights the importance of early diagnosis and treatment of enteric duplications since they can have varied clinical presentations that may often be misleading.

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Complicated duodenal ulcer in an infant: A case report
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Duodenal ulcer disease is a rare clinical condition managed by clinicians in infancy and childhood. Because of its rarity and low index of suspicion on part of the physicians, it usually presents with serious complications like perforation or gastrointestinal hemorrhage. In earlier times, the mortality for duodenal ulcer hemorrhage and perforation in childhood was very high. However in recent years improvement in pre and postoperative care of children, refinement of parenteral nutrition and advancement in life support systems an improved outcome has been noted worldwide. There are isolated reports of successful management of serious sequelae of duodenal ulcer in children. The present report adds a case of successful surgical management of bleeding duodenal ulcer in a 10 month old girl who developed the same following surgery for a cerebral astrocytoma. In the postoperative period she developed primary peritonitis, which was managed along side the bleeding ulcer. The successful management of the child along with review of literature about the incidence and management of complicated duodenal ulcer disease in children discussed.

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Conservative management of lymphatic malformations
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Aims: 1) To study the role of non-operative treatment modality (sclerotherapy) in the management of lymphatic malformation. 2) To establish the efficacy of bleomycin as a sclerosant and its safety and effectiveness.

Materials and Methods: A prospective study was conducted in Department of Pediatric Surgery between Nov 2006 and June 2009. Indications of treatment were defined, all age groups were included. Bleomycin was chosen as sclerosant and injected intraleionally when indicated in the dose of 0.66 to 1 units/kg/ dose diluted in 1:1 normal saline. Complications, if any and response following each session were recorded. The data was analysed in terms of age, sex, site, size of lesion, number of sessions and response following sclerotherapy. Response was categorised as complete, significant, partial and no response.

Results: 9 patients, with 10 lesions of cystic hygromas were included in the study ranging from 10 days to 10 years of which 33% were females. Most common site of the lesion was found to be on the face and neck (80%). Other sites included axilla and extremity. Number of sessions ranged from 1-6. Outcome was assessed and we found that 60% had complete response, 10% had significant response and 10% had poor response and 20% had no response, of which one patient underwent surgical excision. Minor, correctible local complications were encountered in 3 patients. Surgical excision following a course of sclerotherapy provided easier dissection, less bleeding and more complete excision.

Conclusions: Although surgical excision was one of the mainstays of treatment of lymphatic malformation, but with high chances of recurrence and increased morbidity following surgical excision, sclerotherapy has emerged as an effective and safer alternative. Many drugs have been used as sclerosant, of which Bleomycin is the one used in our study. This study proves the efficacy and effectiveness of Bleomycin as a primary modality of treatment in lymphatic malformations with excellent cosmetic results and absence of any untoward complications.

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Cystoscopic incision of ureterocele: Our experience
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Introduction: Ureterocele is dilatation of terminal part of ureter. It may be associated with single or duplex renal system. It can be diagnosed antenatally. It may present as urinary tract infection or urinary retension. We are presenting our experience of 4 cases of ureterocele of different clinical presentation. One case was diagnosed antenatally; one case presented to us with urinary retension another case as urinary tract infection and in one case it was as incidental finding.

Materials and Method: The age group of child was between 7 months to 7 years. sonography was done in all cases. Micturating cystourethrogram under IITV was done in 3 cases. Filling defect was clearly seen in early filling phase of Micturating cystourethrogram in all cases. In one case intravenous pyelogram was done. Cystoscopic incision was
done at the base of ureterocele and above the bladder neck. 
3 Fr bug bee electrodes with cutting current were used. All 
patients were kept on antibiotic prophylaxis and repeat 
sonography and Micturating cystourethrogram was done 
after 3 months. 

Results: There was no reflux or persistent filling defect in two 
cases. Reflux was present in one case and persistent filling 
defect was present in one cases. We are presenting the technical 
details of diagnosis and Cystoscopic incision of ureterocele.

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Duplication of urethra
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Background: Duplication of urethra is a rare congenital 
anomaly in children. Saggital duplications are commoner 
among them. Our aim is to highlight unusual association of 
duplication of urethra with ectopic ureters. 

Case Report: 1 year male child presented with history of 
passing urine from perineal opening, was also passing drop 
of urine from tip of penis. Child didn’t have incontinence. On 
investigation child was found to have bilateral ectopic ureters 
with left sided vesico-ureteric reflux. child initially underwent 
bilateral extravesical ureteric reimplantation followed by 
Urethroplasty 3 months later. 

Result: Child is now passing urine with good stream from 
tip of penis. 

Conclusion: Although duplication is a well defined entity in 
pediatric urology, its association with bilateral ectopic ureter 
is unique one.

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Our experience with management of esophageal 
atresia with tracheo esophageal fistula from 2007 to 2009
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College, Cuttack, India.

Aim: To study the short term outcome of surgery for 
Esophageal atresia with Tracheo esophageal fistula (EATEF) 
operated during 2007 -2009 in our institution. 

Methods: Repair of EATEF using a thoracotomy incision is the 
standard approach in our institution. P.cri-operative mortality 
though very uncommon it is associated with significant 
morbidity in some cases. 

Results: With approximately 20% mortality the significant 
associated morbidities are anastomotic stricture requiring 
dilatation are approximately 40%. Gastroesophageal reflux 
requiring anti reflux procedure was quite low at about 5%. 
Anastomotic leak was present in approximately 25% of cases 
which was associated with mortality in 50% of cases. Few 
complications like winging of scapula and scoliosis also 
occurred in few cases. 

Conclusion: Thoracotomy with primary repair of the 
esophagus by single layer anastomosis after ligation of the 
fistula is the standard approach. This has a good postoperative 
result with regard to morbidity and mortality.

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H-type of tracheo esophageal fistula: Our experience
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Grant Medical College and Sir J J Group of Hospitals, Mumbai, India.

Aim: H type of tracheoesophageal fistula is a very rare anomaly. 
Aim of this presentation is to highlight the difficulties in 
diagnosis of H Fistula and refistula in operated case of TOF. 

Material And Methods: We present three cases of Primary 
H-type of tracheoesophageal fistula and two patients of 
operated TOF with re-fistula. Age of patients was ranging from 
30 days to 2 months. We describe the presentation; diagnosis 
and surgical treatment. We describe a novel approach of doing ronchoscopy by using 10 French pediatric cystoscope with 
30 degree telescope for the visualization of fistula and its 
cannulation. 

Results: All Five patients did well in postoperative period and 
are on regular follow up. 

Conclusion: High index of suspicion of H fistula is needed for 
the timely diagnosis. Bronchoscopy is mainstay of diagnosis 
for primary cases while in cases of redo H Type of fistula use of 
betadine solution through gastric tube and compression over 
stomach with subsequent visualization on bronchoscopy gives 
better delineation of fistula.

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Unusual presentation of hemolymphoid 
malignancies
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The typical presentation of hemolymphoid. Malignancies is 
commonly painless. Lymphadenopathy as in lymphomas or 
with clinical picture pertaining to bone marrow changes as in 
hematoid malignancies. Herewith presenting three children 
with unusual clinical presentations causing difficulty and delay 
in diagnosis of the disease. 1) 1.5 Yrs of age presenting with 
a suspected abscess cheek, drained elsewhere, subsequently 
developed a second swelling in the inguinal region, suspected 
To be an obstructed hernia, finally diagnosed to suffer 
from granulocytic sarcoma 2)8 month old infant initially 
managed as empyema thoracic/purulent pericarditis and 
later diagnosed to have T cell lymphoblastic lymphoma with 
pericardial secondaries 3)single cystic neck swelling in a 2.5 
Year old, initially suspected to be a cystic hygroma/mixed 
malformation and diagnosed to have a large cell lymphoma.
A case report
Pyloromyotomy for the same and is presently thriving well.

Investigations. The patient subsequently underwent associated with TEF repair viz. gastroesophageal reflux (GER) and stricture of the anastomotic site. We report an infant who underwent primary repair of TEF on day 2 of life, was discharged on the 8th postoperative day and subsequently developed nonbilious vomitings on day 28 of life. After ruling out the possibility of anastomotic stricture and GER, and thoroughly examining the patient, a provisional clinical diagnosis of hypertrophic pyloric stenosis was made which was confirmed by radiological investigations. The patient subsequently underwent pyloromyotomy for the same and is presently thriving well at 14 months of follow up.

**184**
**Rare association of idiopathic hypertrophic pyloric stenosis in a case of tracheoesophageal fistula: A case report**
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**Introduction:** Patients with Tracheoesophageal fistula (TEF) are known to have other associated anomalies.

**Case Report:** Association of TEF with hypertrophic pyloric stenosis (HPS) is rare; and adequate management requires timely clinical suspicion since the cardinal symptom of HPS viz. nonbilious vomiting mimicks the common complications associated with TEF repair viz. gastroesophageal reflux (GER) and stricture of the anastomotic site. We report an infant who underwent primary repair of TEF on day 2 of life, was discharged on the 8th postoperative day and subsequently developed nonbilious vomitings on day 28 of life. After ruling out the possibility of anastomotic stricture and GER, and thoroughly examining the patient, a provisional clinical diagnosis of hypertrophic pyloric stenosis was made which was confirmed by radiological investigations. The patient subsequently underwent pyloromyotomy for the same and is presently thriving well at 14 months of follow up.

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**Innervation of the distal bowel in Jejunoileal atresia**
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**Background:** Small bowel atresia is a common cause of neonatal bowel obstruction. In-utero ischemic vascular accidents are believed to be the cause of type III A atresias. Our study aimed at examining the changes in cholinergic and nitricergic innervation in myenteric plexus of the distal bowel as well as C-kit positive interstitial cells of Cajal (ICC) that may have occurred due to in-utero ischemia.

**Methods:** Whole mount preparations made from the distal bowel of three neonates with type III A atresia were stained with Acetylcholine esterase and NADPH diaphorase. The myenteric plexus was examined for morphological abnormalities. A morphometric analysis of width of plexuses in the circular and longitudinal axis was also done. Full thickness specimens from the same points were stained for enzyme immunohistochemistry using anti-S 100 and anti C-kit receptor (CD 117) antibodies in conventional paraffin sections. Control bowel from two neonates was also studied.

**Results:** The polygonal architecture of the myenteric plexus of distal bowel was similar to controls. However the intensity of NADPH diaphorase reaction was less than in controls and some abnormal ganglia were present. On statistical analysis (Pearson’s correlation) the bowel circumference correlated significantly with plexus width in circular and longitudinal axis both in distal and control bowel. There was no reduction in the number of myenteric or muscular ICCs.

**Conclusion:** The distal bowel has near normal plexus architecture and dimensions with no reduction in ICCs. This segment of bowel does not seem to be significantly affected by in-utero vascular accidents that cause small bowel atresia.

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**Laparoscopically assisted anorectoplasty for high and intermediate imperforate anus**
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**Aim:** We would like to report our experience of Laparoscopic Anorectoplasty for high and intermediate variety of imperforate anus. This is the retrospective review of laparoscopic anorectoplasty performed over last 5 years.

**Material and Methods:** Fifteen patients underwent laparoscopic anorectoplasty with the age range from 5 months to 7 years. Nine patients had transverse colostomy and six patients sigmoid. The laparoscopic repair was performed using three ports. The rectum was mobilized using monopolar diathermy or Harmonic scalpel. The fistula was ligated only in first the four patients in our series and after that the fistula is divided without ligation. Sphincter muscle complex was identified using muscle stimulator on perineal side and tunnel was created by laparoscopic assistance using Veress Needle, guide wire, PCNL dilators and Hegar’s dilators. The maximum Hegar’s dilator size used was 14 or 15 number, so that the mobilized rectum could be easily accommodated in the tunnel. There was no conversion and blood loss was minimum during the procedure.

**Results:** Postoperatively mucosal prolapse was seen in 3 patients and was excised under general anesthesia. Rectal retraction was seen in one patient and required revision on D 10 postoperatively. On follow up clinically all patients have good sphincter tone and anal sensation. However long term follow up is awaited to comment upon continence in these patients.

**Conclusion:** Laparoscopic repair of ARM is feasible in high and intermediate variety. Long term results are awaited for continence.

**187**
**Our experience in laparoscopic correction of malrotation**
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Aim: To present our experience of correction of malrotation of bowel using laparoscopic techniques.

Material and Methods: This is a retrospective analysis of 5 cases of malrotation corrected laparoscopically. All cases presented with chronic abdominal pain and were referred with the barium study suggestive of malrotation. Three patients were referred with the CT scan of abdomen. One patient had appendectomy for chronic abdominal pain and one patient had exploratory laparotomy with jejunal stricturoplasty before referral. Four ports were used; one camera port, two working ports and one port for retraction of colon. Thirty degree camera, either 5 mm or 10 mm was used in all cases. Standard steps of the open surgery were performed in laparoscopic correction of malrotation, i.e., division of Ladd’s band on duodenal wall, widening of base of mesentery, straightening of the DJ flexure and appendicectomy.

Results: Age ranged from 3 year to 18 year. All patients had excellent post operative recovery and were on full feeds by third day and discharged from the hospital. One patient came back with bilious vomiting and underwent exploratory laparotomy with possible diagnosis of adhesive obstruction. However, he was found to have duodenal obstruction due to duodenal stenosis and underwent gastro-jejunostomy with no blood loss. The orals were started on the first or second post operative day and patients were discharged on 3rd or 4th post operative day.

Conclusion: Laparoscopic correction of malrotation is feasible with excellent outcome. In older patient upper gastrointestinal endoscopy should be performed preoperatively to rule out associated intra-luminal obstruction so that it can be tackled in the same surgery.

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Paraduodenal hernia: Laparoscopic management
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Internal abdominal hernias are rare conditions, accounting for 0.9% of all intestinal obstructions. Paraduodenal hernias constitute half of all internal abdominal hernias.

Case Report: A 10 Year old girl with complains of chronic abdominal pain without any associate fever or vomiting was referred for further management. The barium meal follow through and sonography of abdomen was performed and were reported to be normal. Patient was taken up for diagnostic laparoscopy, which revealed large right paraduodenal hernia. Almost entire small bowel, caecum, appendix and part of the ascending colon were in the hernial sac. The anterior boundary of the hernial sac was formed by the superior mesenteric vessels. After reduction of the content there was no defect in the mesentery which could be closed. The operative time was 60 mins and there was no blood loss. The recovery was excellent with full feeds on second day and patient was discharge. Patient is following up regulary and have not developed any complains.

Conclusion: Chronic abdominal pain can be caused by rare internal hernia. One may not find any defect for the closure.

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Laparoscopic repair of achalasia cardia: Our experiences
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Aim: This is a report of patients who have undergone laparoscopic repair of Achalasia cardia over last 5 years.

Material and Methods: The age range was 3 years to 14 years. Diagnosis was based on clinical symptoms and it was confirmed with Ba swallow. In one patient esophageal manometry was also performed to confirm the diagnosis. Laparoscopic esophagomyotomy with anterior Dorr’s Fundoplication was performed. Operative time was 150 mins to 200 mins. Blood loss was minimal. The orals were started on the first or second post operative day and patients were discharged on 3rd or 4th post operative day.

Results: Clinically there was immediate and long term resolution of the symptoms. Post operative barium swallow showed disappearance of rat tail appearance of the lower esophagus. On follow up of 1 to 60 months all patients are doing well.

Conclusion: Laparoscopic repair of Achalasia cardia is feasible in children with excellent results and long term outcome.

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Our experience with laparoscopic Spleenectomy in children
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Aim: Splenectomy is frequently required in children for various haematological conditions. With advances in the minimally invasive surgery, laparoscopic splenectomy (LS) is becoming the standard of care. Herewith we present our experience with laparoscopic spleenectomy.

Materials and Methods: This is the retrospective review of the patients who underwent laparoscopic spleenectomy (n=21). Age of patient ranged from five to nine years. The indication for LS were Thalessemia Major in 13 patients, 5 patients were of Hereditary Spherocytosis and 4 patients with ITP. Four ports were inserted in the arch fashion 3-4 cm away from the palpable edge of the spleen. Ten mm 30 degree telescope, two working
ports and one port for retraction of the spleen was used. In our technique we open the lesser sac and control the splenic artery first and then mobilise the spleen from its attachments. The splenic artery was clipped in four patients, ligated in 14 patients and stapled were fired in 3 patients. The harmonic scalpel was used in 14 patients and in two patients’ combination of bipolar and monopolar diathermy was used for mobilisation of the spleen. The specimen was extracted by inserting it in the everted Ziplock plastic bag successfully in 13 patients. In remaining patients they were removed by extending the incision of camera port, subcostal or Pfennesteil incision.

**Result:** The operative time was 90 min to 200 min. There were two conversions to open procedure due to excessive bleeding. In all other patient was blood loss was less than 30 ml. One patient developed epigastric pain a week after the surgery and investigation revealed presence of portal vein thrombosis. There was no mortality in our series.

**Conclusion:** Laparoscopic splenectomy is safe and effective procedures in children.

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**Use of local skin flap in Redourethroplasty in hypospadias**

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**Introduction:** The goal of redourethroplasty is to achieve functional penis at tip and normal cosmetic appearance. We have done redourethroplasty in 13 cases in last 2 years. We have use local skin flap in majority of cases and end result was good.

**Material and Method:** We have done redourethroplasty in 13 cases in last 2 years. The primary surgery was Snodgrass urethroplasty in 4 cases, with prepucioplasty in 2 case. Duckett’s tube urethroplasty was done in 2 cases and in one cases BEAM procedure was done. Primary surgery was not known in 6 cases as they were operated outside. Out of 13 cases 10 cases presented with open glans wing with sub coronal meatus. In one case there was associated buried penis. Two patients had penoscrotal meatus and one case presented with two diverticulum. We used local skin flap (Mathieu’s Flip- flap) in 6 cases. In one case we used two split onlay skin flaps. Snodgrass urethroplasty was done in 3 cases and BEAM was done in 1 cases. Diverticulum repair with urethroplasty was done in one case and release of buried penis with urethroplasty was done in one case.

**Result:** Total seven patients were operated with the use of local skin flap. 6 patients passed single good in postoperative period. Two patients of Snodgrass urethroplasty developed fistula. The patient operated with BEAM procedure had complete breakdown of glans. The primary surgery in this case was Snodgrass urethroplasty. Patients of diverticulum repair and release of buried penis with urethroplasty did well in postoperative period.

**Conclusion:** Judicious use of local skin flap is very useful in Redourethroplasty. When there is scar over penile skin that can’t be used as neourethra then free graft should be used. BEAM should not be done in previously operated Snodgrass urethroplasty as urethra was incised dorsally is relatively weak when it heals hence not advisable to mobilize it. Re do Snodgrass urethroplasty for previously failed Snodgrass may not do well in all cases, depending upon pliability of urethral plate one should plan. Mathieu’s Flip flap is very good repair for distal cases with open glans wings.

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**Miliary abscesses in MDR tuberculosis**

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**Aim:** To highlight the uncommon presentation and multiple sites of abscesses in MDR Tuberculosis.

**Case Report:** A 10 years female presented to us with cervical, axillary swellings and pain in the abdomen since 15 days. Swellings were soft, cystic & nontender. Patient had a prior history of abscess at the left shoulder joint for which she had undergone debridement twice and on investigation was found to be tuberculous in origin so was started on first line AKT, which patient was taking since about 1 year elsewhere. For abdominal pain ultrasonography of abdomen done which showed multiple mesenteric abscesses, confirmed by CT-scan Abdomen. Patient was treated with non dependent aspiration of Cervical Abscess and open drainage of the abdominal and axillary abscesses, was continued on first line AKT awaiting culture and histopathological reports.

**Result:** Despite first line AKT therapy patient had refilling of the cervical abscess which required reaspiration twice. Meanwhile the culture showed growth of Mycobacterium tuberculosis resistance to the first line antituberculous drugs, sensitive to 2nd line drugs- Ethionamide, Moxifloxacin & Amikacin. Patient is currently started on these drugs with good response.

**Conclusion:** The modern era of tuberculosis recently has been characterized by a rise in the number of cases of multi-drug resistant tuberculosis leading to increased morbidity. Drug resistance should be suspected whenever therapeutic progress is not maintained and relapse occurs. Close follow up with early suspicion is mandatory to reduce morbidity.

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**Neonatal intestinal obstruction – peculiar challenges**

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**Aims:** To highlight peculiar diagnostic challenges while managing neonatal intestinal obstruction.
Methods and Materials: A prospective study was conducted in Department of Paediatric Surgery between Feb 2009 to June 2009 of neonates who presented to us with unusual form of intestinal obstruction. Patients were worked up in detail. Indications of operative treatment defined. Their investigations and management are described.

Results: 3 neonates, of which 2 were male & 1 female, all FTNVD, with age range of 7 to 10 days were included in the study. The peculiar symptomatic challenges were sudden onset absolute constipation after having passed meconium for first 4-5 days and presenting with features of intestinal obstruction. Investigations with radiographs, dye studies and blood investigations were not very conclusive. An initial conservative management with bowel washes, drip and suck and antibiotics for 48 hours did not show any changes in the obstructive pattern. Surgical exploration did not reveal any obvious pathology as the cause of obstruction, in spite of which an ileostomy with multiple biopsies was performed in all of the three patients. Histopathological reports were inconclusive. In one baby, ileostomy was closed after confirming distal patency a month after stoma creation, but child expired after 2 months at home. 2nd child developed generalised sepsis soon after surgery, and succumbed 10 days post-operatively. The 3rd neonate is awaiting closure of ileostomy.

Conclusion: Intestinal obstruction remains one of the most common conditions seen in the neonatal period. Early diagnosis depends largely on prompt recognition of obstructive manifestations by the clinician and the subsequent accurate interpretation of radiographic findings and other investigations. Although relatively straightforward at times, sometimes it may be very difficult to diagnose and even more difficult to treat as seen in our series.

195 Preputioplasty

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Aim: This is report of patients who have undergone hypospadias repair with preputioplasty. Main purpose was to get an uncircumcised penis after the repair on demand of parents.

Materials and Methods: Hundred and twenty five patients underwent preputioplasty along with the hypospadias repair. Age range was 9 months to 7 years. All patients had distal hypospadias without chordee and torsion. Depending upon the site of meatus, urethral plate and glans various repairs done were MAGPI, GRAP, Snodgrass urethroplasty and Snodgrass along with preputioplasty. Preputioplasty was done in twenty patients who underwent MAGPI, hundred patients with Snodgrass, three with GRAP and two with Snodgrass. Dorsal vertical slit was given when the prepuce is tight and sutured transversely.

Results: Immediately in postoperative period there is increase in edema which starts subsiding by second week. Steroid ointment helps in retraction of prepuce. One patient had complete preputial dehiscence. Three patients had phimosis but that was in earlier part of our experience, when we resorted to dorsal slit there was no incidence of phimosis. Seven patients with Snodgrass repair had fistula. Rest all patients have good cosmetic appearance and uncircumcised penis as desired by parents.

Conclusion: Preputioplasty effectively gives good cosmetic appearance with uncircumcised penis as desired by parents.

196 Variable presentation of mullerian anomalies with hematometra and its management

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Aim: Though the Mullerian duct anomalies are rare in incidence but their variable age, and mode of presentation
makes the management difficult. The treatment depends upon the type of anomaly.

**Material and Methods:** We have managed 3 patients of hematometra with different types of Mullerian anomalies. They have presented to us with lower abdominal pain and lump in lower abdomen. Patients of uterine didelphys had normal menstruation. These two patients of uterus didelphys, one patient had vertical septum separating the vagina into two halves and a transverse vaginal septum on left side, another had cervical agenesis on the right side with normal opening in normal vagina. Third case is agenesis of lower 2/3 vagina. Patient of uterine didelphys one with the transverse septum underwent excision and in another with cervical agenesis, hematometra drain through the vagina and drain kept across the opening. Patients of vaginal agenesis underwent sigmoid colon vaginoplasty.

**Results:** The patients of vaginal agenesis who underwent sigmoid colon vaginoplasty is on regular average follow up with normal menstruation for last two year, without any complaint. The per vaginal examination showed that the neovagina was of adequate caliber. Both the uterine didelphys patient is on regular follow up of six month to two year and non have any complaint.

**Conclusions:** Mullerian duct anomalies can be presented in any age group and with variable symptoms. At peri-pubertal age, girls presenting with lower abdominal pain with normal menstruations does not rule out Mullerian anomalies and hematometra. Correct evaluation of this patients and proper management is a challenge. Sigmoid colon vaginoplasty is an excellent procedure for complete or partial vaginal agenesis.

**197**

**A rare case of benign multilocular cystic nephroma**  
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Multilocular cystic nephroma is an uncommon, usually benign, renal neoplasm characterized by a well-encapsulated mass of noncommunicating, fluid-filled locules separated by thin septations. It has a bimodal age and sex distribution, affecting boys from 3 months to 4 years of age, and women over 30 years of age. The tumor usually presents as a non-painful abdominal mass in children. We present our experience with a rare case of benign MLCN of the right kidney in a 7 yrs old male child who presented with a painless huge abdominal swelling. Patient was treated by of surgical excision (right nephrectomy) of the tumor. The tumor weighed 8kg while the weight of the patient after removal of the tumor was 12kg. The patient had an uneventful recovery after undergoing complete resection of the cystic nephroma and is doing well in follow up.

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**Mischievous round cell tumor of scalp**  
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15 mth male child attended hospital with ulcerated fungated mass over scalp. Mass initially apperred as small nodule, grown rapidly over 6 mth period and got ulcerated one month before child was reffered to us. Was treated locally as infected sebaccous cyst. Clinically he had above mentioned lesion of size 8-9 cm at ulcerated area and base was 6-7 cmin left parietooccipital region. There was another nodule measuring 3-4 cm below above mass with puckered skin. He also had half of his scalp on same side was black discoloured, multiple cafe au lait spots seen over the both lower limbs, back and abdomen. Lymph nodes developed in the right neck very rapidly over a period of 15 days. Child underwent wide local excision of mass along with nodule and primary skin graft. Healed well within a period of 10 days. Biopsy from specimen revealed highly malignant blue round cell tumour. Immunohistochemestry studies were advised and child was sent for further management to higher center. Rarity of scalp malignancy in such small child. Delayed diagnosis due to its rarity and association with skin lesions.
non-compliance left behind just an equal number of patients who are alive and well, TFS from 2 to 12 years.

**Conclusions:** Treatment failures from deaths or non-compliance to therapy amounted to 65.5%. These are the two major issues which need to be addressed in the future management of infantile tumors in our institution. Large tumors with delayed presentations led to unfavourable outcomes, hence we recommend efforts for early detection of the tumors in lower stages of the disease and increased surgical interventions to improve long-term tumor free survival in infants.

**200**

**Preliminary experience of thoracoscopic thymectomy in pediatric myasthenia gravis**

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Conservative medical management has been the main stay in the treatment of myasthenia gravis. Thymectomy, as a surgical treatment, is being offered to an increasing number of patients in recent times. Various approaches have been used for thymectomy of which sternotomy is the most commonly used. Thoracoscopic thymectomy represents a minimally invasive alternative to traditional thymectomy via sternotomy. We present our preliminary experience with Thoracoscopic thymectomy as a definitive treatment for myasthenia gravis. Three children ages ranging from 3-18 years underwent Thoracoscopic thymectomy for myasthenia gravis have been reviewed retrospectively. Thoracoscopic thymectomy was typically performed via the right thoracoscopic using three or four ports. A complete gland resection was possible in all cases and the procedure could be completed thoracoscopically in all cases. Mean operating time was 2 hours and 45 minutes. There were no intra or post-operative complication. Length of hospital stay averaged 2 days. Minimum post thymectomy duration of follow-up in the VATS patients is six months with all patients clinically improving over their base line status. Complete thymectomy, the goal of traditional surgical treatment for myasthenia gravis can be effectively achieved via this minimally invasive technique. It significantly shortens the post operative hospital stay, decreases blood loss and offers superior cosmetic results.

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**Totally implantable venous access devices for long term chemotherapy in children: An institutional experience**

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Introduction: Totally implantable venous access devices allow for better treatment of children with malignancies, and are well accepted. Most TIVAD have been advocated for solid malignancies requiring long term chemotherapy. We present our experience with the use of TIVAD in children with both hematological and solid malignancies

Material and Methods: We retrospectively analyzed 23 children referred to us from regional cancer centre for insertion of venous access from 2004-2009. The age ranged from 8 months to 4 years. Internal jugular vein using Seldinger’s technique was used for venous access.

Results: The duration of venous access ranged from 3 months to four years. There was one intra-operative complication and one early complication in the form of migration. There were three minor late complications on follow up. There were no mechanical complications in the follow-up period.

Conclusion: TIVAD can be safely utilized in the delivery of long term chemotherapy with minimal morbidity.

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Role of thoracoscopic decortication in advanced empyema: A study

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Introduction: Video Assisted Thoracic Surgery (VATS) has firmly established its utility in early empyema. But, its role in late stages of empyema is not well established and needs to be considered

Aim: To study the feasibility, safety and efficacy of VATS in advanced empyema in children

Materials and Methods: A total of 66 children presented to our institute in the last 2 years with empyema. Of these, 18 were advanced empyema with thick peel and entrapped lung. Pre-operative imaging included chest ultrasound and CT scan. VATS was attempted in this group. The results were analyzed with respect to the total operative time, blood loss, any intra-operative problem, necessity for conversion and the post operative outcome

Results: The age range was 11 months to 4 years (mean age - 2.5 yr). Of the 18 cases taken for VATS, we could successfully complete in 10 without any significant intra-operative events. 8 children required conversion due to underlying significant parenchymal lesions &/or very adherent peel. The average operative time in VATS group was 96 min; the average post operative stay was 5 days.

Conclusion: There is a definite role for VATS in advanced empyema due to the obvious advantages. Good preoperative imaging and planning is vital for a successful out come.

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Our experience of ureteric substitution in pediatric age group

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Aim: Present objective of this study is to look for suitable ureteric substitute in the paediatric age group.

Material and Method: Retrospective analysis was done from 2003 to 2008 of all cases operated in our hospital that had undergone ureteric replacement. All cases were followed up to look for conduit patency, renal function and any related complication.

Result: In five cases ureteric replacement was done. Age ranged from 6 month to 9 year. Three cases were of obstructive megaureter; one was of redo-pyelo plasty and one case was of iatrogenic injury of ureter. Three patients underwent partial ureteric substitution of right ureter and in one patient complete replacement of left ureter with appendix was done. In one case small bowel as Monti’s tube was used to substitute ureter. At median follow up of 23 month (14-66 month) all the patients were well except in one case who had slight decrease in renal function.

Conclusion: We believe that our small series supports that either appendix or small bowel as Monti’s tube should be considered as ureteric replacement when confronting with short ureter in paediatric age group.

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Post-operative evaluation by MRI and manometry in 9 cases of Intermediate ARM after Sacro-perineal pull through using muscle stimulation
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Aim: 1. To determine surgical and functional outcome in children with Intermediate anorectal malformation who have undergone sacro-perineal pull through after accurate localization of sphincter complex during surgery using a muscle stimulator. 2. To study the relationship of the pull through rectum to the anorectal sphincter complex post-operatively by pelvic MRI.

Materials and Methods: 9 children with aged ranging from 5 months to 13 months (Mean age 9mths) between 2006-9 underwent sacro-perineal pull through in our department. All had accurate localization of the sphincter complex using muscle stimulator at the time of surgery and anorectal manometry and MRI evaluation of the pelvis post operatively.

Results: The position of the neo anus was in normal position in all nine children. Anal manometry showed average anal resting pressure of 63.3 cm of H2O which indicates that the bowel is within the sphincter complex. Recto-anal inhibitory reflex was present in 4/9 children. Pelvic MRI showed that the rectum was in the centre of pubo-rectalis in all nine children.

Conclusions: With intraoperative localization of the sphincter complex with muscle stimulator, the bowel can be placed in the centre of the puborectalis sling with out dividing the sphincter complex (divided in PSARP), thus avoiding fibrosis and damage to the sphincter muscle complex. This may results in better functional outcome in the long term.

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Two cases of Aphallia
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Case 1: 6months child reared as male came with a small rudimentary phallus since birth and passing urine & stools from normally situated anal opening since birth. On investigations, serum testosterone was raised and hcg, Ldh levels were normal. On clinical examination of external genitalia, a small rudimentary phallus was palpable (hypoplastic corpora). Scrotum was well developed with both testis descended. There was no identifiable urethral opening. Anal opening was very small and skin lined soft tissue of 3x2cm-pyramid shaped seen at anterior anal verge. On examination under anaesthesia, rudimentary glans & prepuce with hypoplastic corpora seen after releasing preputial adhesions present at the site of phallus-no urethral meatus or plate seen. Urethral opening was seen on anterior wall of rectum 2-3cm from anal margin. Anus was small and stenotic. Y-V cutback Anoplasty was done. MCU showed right grade II VUR and good capacity bladder. Urethroplasty & Phalloplasty is planned later.

Case 2: 6yr old child reared as male with perineal urethroplasty done in infancy. Clinical examination revealed aphallia and left undescended testis. Plan:Orchiopexy, phalloplasty later. Aphallia is seen in 1 in 30 million births and is due to complete or partial failure of genital tubercle to develop. Genitourinary anomalies are reported in 54% of aphallia patients and more proximal the meatal opening, more severe the associated anomalies & higher the mortality.

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High anorectal malformation with sigmoid perforation
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A DAY 1 male child, presented with imperforate anus at birth with distension of abdomen. Clinically, there was gross abdominal distension, with tenderness all over and absent bowel sounds. X ray abdomens erect revealed free gas under diaphragm. In view of poor general condition and abdominal distension causing respiratory distress, abdominal drain was inserted under LA. Meconium and air was released, which decreased the abdominal distension. I.V. fluids and antibiotics were started. Next day, exploratory laparotomy was done which revealed meconium peritonitis and rectum ending above the levator ani complex suggestive of high Anorectal malformation. Longitudinal perforation in the sigmoid was found and right transverse colostomy, perforation closure and perineal lavage was done. Post operatively patient required prolonged ventilator support and was discharged by post-op day 24 on
full orals and healthy functioning stoma.

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“Buried strip” urethroplasty with tunica vaginalis pedicled flap for re-do hypospadias
Uday Sankar Chatterjee
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Introduction: Vascularity of the neourethra determines the outcome of urethroplasty. In re-do urethroplasty the residual urethral plate or the skin (intended to be neourethra) are usually less vascular than the native plate and during creation of tube in urethroplasty, vascular supply may be diminished further due to the gradual tangential separation of ‘plate’ from subcutaneous tissue. Author reports the experience of “Denis Browne’s buried strip” principle in re-do urethroplasty.

Patients and Method: Since December 2005 to Jan 2009, in 28 patients had the failure of previous urethroplasty and the previous attempted of urethroplasty were in the range (mean) of 2-6(2.5) times. Buried strip urethropasty and wrapping with Tunica Vaginalis Pedicled Flap (TVPF) were done in all cases. Supra pubic cystostomies were done in eight patients to avoid the bad effects of post op penile erection.

Results: Post-op uroflowmetry was satisfactory in 26 patients. Fistula in one patient. No stenosis. In two patients neo-meatus receded to corona and disruption of reconstruction in another patient. Vertical meatus was possible in 20 patients.

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Three cases of cleft sternum closed successfully
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Aim: To highlight our experience with three cases of sternal cleft and the surgical technique of closure.

Materials and Method: Three infants born with sternal cleft without any other congenital anomalies underwent primary closure of the cleft sternum. The defect was widest between the two sternoclavicular joints. Mid-saggital incision was made; skin flaps raised and reflected laterally until the appearance of pectoralis major fibres, without injuring the pericardium. The endotheracal fascia was entered, the peristium over the the pericardium. The endothoracic fascia was entered, the appearance of pectoralis major fibres, without injuring the two sternoclavicular joints. Mid-saggital incision was made at the costochondral junction. A and a sliding chondrotomy was made at the costochondral

Conclusions: Three infants born with sternal cleft without any other congenital anomalies underwent primary closure of the cleft sternum. The defect was widest between the two sternoclavicular joints. Mid-saggital incision was made; skin flaps raised and reflected laterally until the appearance of pectoralis major fibres, without injuring the pericardium. The endotheracal fascia was entered, the peristium over the the pericardium. The endothoracic fascia was entered, the appearance of pectoralis major fibres, without injuring the two sternoclavicular joints. Mid-saggital incision was made at the costochondral junction. A and a sliding chondrotomy was made at the costochondral

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Cloacal extrophy: Putting the gut to use
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Cloacal extrophy represents one of the most severe congenital anomalies compatible with life. None of the organ systems are exempt, especially those developing from the caudal pole of the fetus. There is marked variation amongst affected individuals, with respect to the external appearance and the internal anatomical arrangement. Our case was unique in that there was an isolated type IIIa ileal atresia. We summarize our 5yr experience of managing one such patient, using staged repair. At the first stage the extrophic central bowel plate was separated from the extrophic hemibladders. This was, followed by bladder closure with Rectus abdominis onlay flap six months later. The urinary tract was finally reconstructed by fashioning an ileal neobladder, with bilateral ureteral reimplantation and a Monti Mitroanoff catheterisable stoma. Iyear later she manages with an end colostomy and daily bowel wash outs. Attempts to preserve the gut length and function is essential for a promising future in these individuals.

Conclusion: Successful repair with preservation of renal function and social continence for urine and faeces is possible in these individuals. Needless to say these individuals are best delivered and managed in multidisciplinary centres. Attention to the gut related issues that contribute to morbidity can result in an acceptable quality of life.

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Congenital hepatoblastoma
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Congenital hepatoblastomas are more common at the age of 1 – 3year. Less than 10% cases are diagnosed in neonatal period. They are commonly associated with Beckwith – Wiedemann syndrome and FAP. A full term child presented with hepatomegaly and jaundice since birth. Antenatal and post natal ultrasounds and CT abdomen were suggestive of an echogenic mass in the right lobe of liver. CT guided biopsy revealed congenital hepatoblastoma. Tumour markers (LDH, AFP) and bilirubin were increased but showed a downward trend over the 1st month. Patient was started on chemotherapy (Cyclophosphamide, 5FU, Vincristine, Adriamycin). Surgery is planned after 4 cycles.

211
A rare case of epigastric heterophagus twin

J Indian Assoc Pediatr Surg / Jul-Sep 2009 / Vol 14 / Issue 3 184
Conjoined twins are one of the rarest congenital anomalies (1 in 50,000 to 100,000 life births) and are classified into symmetric & asymmetric types. The asymmetric form is known as heterophagus. Asymmetrical conjoined twining constitutes only 1–2% of all the conjoined twins. In parasitic (heterophagus) twins the dependent portion (the parasite) is smaller than the host (autosite). The embryopathy is related to incomplete cleavage of the embryo at 2 weeks of gestation. However, some form of ischemic atrophy at an early age of gestation is also hypothesized. We report our experience with one rare case of epigastric heterophagus twin in which the parasite had an upper limb with shoulder girdle, a trunk, pelvis and both well developed lower limbs. Surgical excision of the parasite and repair of the abdominal wall defect was successfully done. The patient is doing well in follow up.

212 A rare case of hepatic mesenchymal hamartoma
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Hepatic Mesenchymal Hamartoma is a rare benign lesion arising from the mesenchymal tissue in and around the porta with associated cystic changes. It is seen predominantly in children within 2 - 3 yrs of age. It usually presents as a painless right upper abdominal mass. The tumor is usually solitary and located in the right lobe of the liver. Edmonsons proposed that Mesenchymal Hamartoma arises from mesenchymal rest that becomes isolated from the normal portal triad architecture and differentiates independently. We report our experience with one rare case of Mesenchymal Hamartoma that involved segment v, vi, vii and viii of the liver in a 4yrs old male child. In the present case complete surgical excision of tumor was done and no tumor recurrence was noted during the follow-up period.

213 Lump in abdomen in a neonate: Enteric duplication cyst
Parag J. Karkera, Paras Kothari, Abhaya Gupta, Gursev Sandlas, Prashant Joshi
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A 3 day old male child presented with lump in the right lumbar region since birth. Clinically, a cystic, non-ballotable lump in right lumbar region was noted and radiological investigations suggested a mesenteric cyst or an enteric duplication cyst. Exploratory laparotomy and cystectomy was done. Histopathological examination revealed enteric duplication cyst. Post operative course and follow up was uneventful. Enteric duplication cyst was first reported by Calder in 1733. It may be tubular or cystic and duplication of the colon & rectum constitute about 17% of all enteric duplications.

214 Ovarian fibroma: A rare entity in children
Parag J. Karkera, Paras Kothari, Abhaya Gupta, Gursev Sandlas, Prashant Joshi
LTMG Hospital, Sion, Mumbai, India

Fibromas are benign tumours arising from the mesenchyme composed of fibrous and connective tissue, commonest ovarian tumour of stromal origin and commonest solid tumour of the ovary but very rare in children. A 6 year old female had presented with pain in the left lower abdomen and lump in the abdomen since 2 months. Clinically it was a hard, non tender, mobile mass and on CT scan of the abdomen it revealed a heterogeneously enhancing mass in the pelvis with calcifications within, likely to be an ovarian teratoma. Exploratory laparotomy was done and well encapsulated left ovarian mass found and left oophorectomy was done. Histopathological examination revealed ovarian fibroma. Pre-and post-op tumour markers were found normal.

215 Management of near amputation of glans and transection of the urethra after circumcision with a partial de-epithelialisation technique: Experience with two children
Ravi Kishore, Reju Thomas, Sampath Karl, Sudipta Sen
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Aim: To highlight the danger of constrictive dressing or suture after circumcision and its surgical management.

Materials and Methods: Two boys presented with near amputation of the glans penis and complete transection of the urethra at the coronal level after circumcision done elsewhere. They were managed surgically by de-epithelialisation technique, carefully preserving the tenuous soft tissue pedicle to the glans.

Results: Both boys had a satisfactory cosmetic result with a normal appearing penis, good glans vascularity and normal voiding.

Conclusions: The partial de-epithelialisation technique is very effective treatment for the dangerous complication of circumcision.

216 Case presentation of a case of pouch colon with uterine fistula
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Aim: Presentation of a case of uterine fistula associated with type 2 pouch colon.

Methods: A 12 day old female child with anorectal malformation presented to our department. On exploration it was found that
the patient was having a type 2 pouch colon which was having a fistulous communication to the uterus. Fistula ligation with tuboplasty of the colonic pouch done which was opened as an end colostomy pending future pull through surgery.

**Conclusion:** Association of uterine fistula being rarely reported in literature prompted us for presenting the case.

### 217 Management of the troublesome prostatic utricle/uterus masculinus in 4 boys

**Sampath Karl, Reju J Thomas, Sudipta Sen**
Christian Medical College, Vellore, Tamilnadu, India

**Aim:** To highlight the clinical presentation and management of the symptomatic Prostatic Utricle in 4 boys.

**Materials and Methods:** 4 boys, 2 with major hypospadias and 2 with a normal penis presented with either retention of urine or recurrent epididymoorchitis. Initially they were managed with daily rectal massage to empty the utricle, which partly succeeded for about a year. However due to persistent symptoms they were operatively managed. The utricle was removed via a posterior approach, by retracting the rectum.

**Results:** 3 children were relieved of their symptoms while 1 child had another episode of epididymoorchitis for which a vasectomy was done.

**Conclusion:** The enlarged prostatic utricle can cause troublesome symptoms in hypospadias and non-hypospadiac boys. The various surgical approaches will be discussed.

### 218 Rib osteomyelitis

**Parag J. Karkera, Paras Kothari, Abhaya Gupta, Gursev Sandias, Prashant Joshi**
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Osteomyelitis of the ribs is a rare entity due to bacteria(45%), tuberculosis(45%), fungal(8-10%), parasitic(1%) causes. Pediatric osteomyelitis often masquerades as skeletal neoplasia, as illustrated in our case. A 2 year old boy had a swelling over the posterior chest wall, since 5 months. This hard, immobile paraspinal mass on radiological investigations revealed 12th rib osteolytic lesion suggestive of infective pathology with a paraspinal mass. A 2 year old boy had a swelling over the posterior chest wall, since 5 months. This hard, immobile paraspinal mass on radiological investigations revealed 12th rib osteolytic lesion suggestive of infective pathology with a paraspinal mass. Histopathologic examination revealed osteomyelitis. Post operative recovery was uneventful but for wound infection.

### 219 Surgical management of boys with major reflux and suspected bladder dysfunction

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Christian Medical College, Vellore, Tamilnadu, India

**Aim:** To highlight the importance of recognising the dysfunctional bladder during operating on a major VUR.

**Materials and Methods:** five boys underwent ureteric reimplant for major VUR. Indications for reimplantation were Grade IV/V VUR, Renal scars and recurrent UTIs. In each case, a trabeculated bladder wall was noted at surgery, along with widely gaping ureteric orifices. Evidence of abnormal bladder function was also noted in preoperative radiology by one or more of the following:

1. Trabeculations
2. Thick bladder wall
3. Very large bladder
4. Dilatation of posterior urethra
5. Hydroureteronephrosis in a contralateral nonrefluxing unit

The operative strategy included the antireflux surgery with concomitant addition of an appendicular Mitrofanoff port. Post operatively the children were advised anticholinergic therapy, CIC and night drainage.

**Results:** All boys are complying with the regimen. VUR has settled in 6 units but persists in one operated and one nonoperated unit. Signs of bladder dysfunction persist in 4 patients but are stable. No case has shown worsening of the hydroureteronephrosis and improvement was noted in 6 out of 8 refluxing units.

**Conclusion:** VUR and bladder dysfunction are related pathology. Since the literature is unclear as to whether treatment of one entity will resolve the other, we have elected to treat both in the same operative procedure.

### 220 Selective nonoperative management of blunt liver injury: Where do we stand?

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**Background:** Despite advances in the management of liver trauma during the past 40 years, hemorrhage has remained the commonest cause of death. Liver trauma, especially that as result of road traffic accidents; still remains a complicated problem. Modern treatment of liver trauma is increasingly non-operative.

**Aim of the study:** We retrospectively reviewed the severity of liver injury, associated injuries, treatment, and outcome. To determine the contrast material-enhanced computed tomographic (CT) criteria for selection of hemodynamically stable patients with blunt hepatic injury for angiographic evaluation. We reviewed our liver trauma to assess the success of non-operative management protocols

**Materials and Methods:** 40 patients with blunt liver injury from jan 2008 to june 2009 underwent CECT. Hepatic injuries were graded with CT-based classification. Scans were assessed for evidence of contrast extravasation and laceration or contusion extending into the hepatic vein(s), inferior vena cava, porta hepatis, or gallbladder fossa. Medical, CECT PACS, and surgical records were reviewed to determine angio graphic findings, surgical indications and findings, and outcomes.
Findings and Conclusion: Our data indicate that CT-based criteria can be used to guide the diagnostic management of blunt hepatic trauma in hemodynamically stable patients. Out of the 40 patients around 90% of the patients were managed conservatively. It seems that patients with limited liver injury diagnosed by CT scan and selected by strictly applied criteria can be managed safely without laparotomy in a setting where rapid evaluation and treatment of any potential complication is available.

221 Evaluation of focused assessment with sonography for trauma in blunt abdominal trauma: A 26 months prospective study
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Background: The use of focused ultrasonography has now become an extension of the physical examination of the trauma patient. Performed in the trauma room by properly trained and credentialed staff, it allows the timely diagnosis of potentially life-threatening hemorrhage and is a decision-making tool to help determine the need for transfer to the operating room. CT scanner or angiography suite.

Aim of the study: To study the diagnostic accuracy and clinical efficacy ofFocused Assessment With Sonography For Trauma (FAST) in blunt abdominal trauma.

Objective: To evaluate abdominal ultrasonography (FAST scan with free fluid analysis) for indirect detection of organ injury in patients with blunt abdominal trauma, with findings at computed tomography (CT) and/or surgery as the standard of diagnosis. To analyze whether the quantity of free intraperitoneal fluid on the FAST examination, alone or in combination with unstable vital signs, is sensitive in predicting the need for exploratory laparotomy in patients presenting with blunt abdominal trauma.

Findings and Conclusions: focused assessment with sonography for trauma [FAST]/trauma ultrasound, for free fluid analysis for indirect detection of organ injury in patients with blunt abdominal trauma, is readily available, rapid, safe, relatively inexpensive, minimally invasive. It can be performed at the bedside and can predict organ injury from Blunt Abdominal Trauma fairly accurately. FAST provides an early extension of the physical examination A negative FAST scan reduces the number of emergency CT scan performed, increases the rate of conservative management and probably eliminates altogether the need of DPL in blunt abdominal trauma The high sensitivity and negative predictive value of FAST makes it a excellent test for blunt abdominal injury and it can be can be put to good use as screening tools for surgical triage of patients with suspected solid visceral injury from blunt abdominal trauma.

222 Management of anorectal malformation our experience

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Aim: To study the clinical profile of Anorectal malformation (ARM’S) in Kashmir valley and its Surgical management and post operative rehabilitation of the affected children.

Methods: This post operative study extends over a period of 5 yrs. and involved a total of 96 patients.Patients were thoroughly evaluated for the nature and type of ARM’S and any associated anomalies using proper investigation including prone cross table lateral view X-ray, X-ray lumbosacral spine, USG, MCU, IVU, Echocardiography,distal cologram, cystoscopy and vaginoscopy. Classification of the defect was made by Wingspreads method. Patients were managed according to the type of the defect. All rectoperineal fistulae in both the sexes were managed without a colostomy. A protective colostomy was fashioned in all male babies with rectovesical fistulae, rectourethral fistula, imperforate anus without fistula and rectal atresia. In female babies a prior colostomy was made in all cases of Rectovaginal fistula, imperforate anus without fistula, rectal atresia and persistent cloaca. Colostomy was required in all cases of H-type fistulae. We always preferred a descending colostomy with separate stomas. Anal dilatations and bowel training formed an important part of the postoperative management.

Results: Out of the 96 patients, 90 were assessed for the results of surgery. Male babies were affected more commonly than females. High and low anomalies were commoner in male babies. Intermediate anomalies were more common in female sex. All cases of H-type fistula in our series were of female sex. Among the associated anomalies genitourinary were commonest followed by sacral anomalies, sacral anomalies significantly affected the functional outcome of the ARM’s. PSARP was the most common definitive surgery performed. Bowel continence was the main aim of the correction and the most important factor assessed in the follow up. All cases of low defect were totally continent. Voluntary bowel movements were achieved in 77.77% cases. The highest incidence of soiling was seen in bladder neck fistula and persistent cloaca.

Conclusion: ARM’S are the frequently occurring birth defects in our region. The incidence and clinical spectrum of these anomalies is similar to those reported in other parts of the country and rest of the world. The exception to this fact is the H-type fistula which has been reported very frequently by other authors. In general, the main purpose of surgical management of a baby with ARM is not only to restore the continuity of the alimentary canal but also the physiology of the canal mainly bowel control, urinary control, and future sexual functions.

223 Renal function, metabolic and acid-base status in exstrophy bladder patients following augmentation colcystoplasty
**Aim:** To study the effect of augmentation colostomyplasty on renal function, metabolic & acid-base status in exstrophy bladder patients. Methods: A retrospective study on 47 exstrophy bladder patients who underwent augmentation with detubularised sigmoid colon during Jan.’85-May’07. The patient details were obtained from the pediatric urology clinic records; the parameters included blood urea, serum creatinine, Na+, K+, Ca+, PO4-, alkaline phosphatase & arterial blood gas (ABG) analysis. Glomerular filtration rate (GFR) was calculated with DTPA, during filtration phase of renal dynamic scan in ml/min/1.73m² BSA. Mean±SD were computed for all the measurable variables & the corresponding pre & post-augmentation values were compared by applying student’s paired t test; p value <0.05 was considered significant.

**Results:** The mean urea & creatinine values were within the normal range both pre and post augmentation. A rise of 6±1/ min/1.73m² body surface area in the mean GFR was observed in the post-augmentation period. The mean serum Ca+ and PO4- levels were within normal limits before augmentation & slightly higher in the post augmentation period (p=0.053). Mean alkaline phosphatase level was 217 & 458 IU pre & post-augmentation respectively (p=0.0005); although statistically significant, the mean value was within the normal range for children. ABG reports, available for 34 patients, showed mean pH of 7.37 & 7.28 pre & post-augmentation respectively (p=0.217). Severe acidosis with al pH of <7.2 was seen in 3 patients only. The pre & post-augmentation mean HCO3 levels were 25.31 & 18.36mmol/dl resp. (p=0.0001). The mean pre-augmentation PaCO2 & base excess were 47mmHg and -6.20 respectively, while the post-augmentation values were 34.26mmHg and -6.20 respectively. The difference in base excess was statistically significant (p=0.0001) & suggests compensated metabolic acidosis.

**Conclusion:** Colostomyplasty for children with normal renal function is not associated with significant metabolic changes, renal function or I ABG. The low level of PaCO2 probably implies CO2 washout from the lungs as a compensatory mechanism for the metabolic acidosis.

### 224

**Urodynamic behavior of sigmoid augmented bladder in classical bladder extrophy patients**

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**Aim:** To study the urodynamic behavior of augmented neo-bladder after sigmoid colostomyplasty for exstrophy bladder.

**Methods:** Urodynamic changes were studied in the bladder of 54 classical exstrophy bladder patients who underwent augmentation with detubularised segment of sigmoid colon during Jan.’85-May’07. The augmentation was done either following staged bladder reconstruction, during bladder neck repair or as primary augmentation in cases with very small bladder plate. The urodynamic study (UDS)was done by a computer based standard fluid cystometry using a 7 Fr double lumen catheter, saline infused @ 10 % of the expected capacity for the age per minute. Cystometric bladder capacity (MCC), bladder compliance, leak point pressure, volume at detrusor pressure of 20 cm H2O, post void residue and external sphincter electrical activity were measured. Any uninhibited detrusor contractions during filling were recorded. If the patient was able to void per urethra, uroflowmetry was also done. Mean ±SD of pre & post augmentation values were compared by student's paired t test and p value <0.05 was considered significant.

**Results:** The interval between bladder closure & UDS ranged from 3–84 months (mean 27 months). There was 7x increase in bladder capacity; MCC pre & post augmentation was 57 ml & 402 ml resp. The improvement in compliance was 6.6x; the pre & post augmentation mean compliance was 2.72 & 18 ml/cmH2O resp. There was 13x increase in the residual volume, suggestive of poor emptying after augmentation. The pre & post augmentation 20 below capacity was 32 & 252 ml respectively. Hyper-reflexia was present in 16% patients before augmentation and in 37% patients after augmentation. Regular phasic activity was observed in 63% patients after augmentation.

**Conclusion:** The UDS show that changes in the bladder dynamics after augmentation are favorable and prevent renal damage. The augmented bladder functions as a continent low pressure reservoir. The ill effects of increased post void residual urine can be annulled by CIC, supra pubic pressure during voiding, double voiding and continuous catheter drainage during the night.

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**Effect of augmentation colostomyplasty on physical growth and bone mineral density in exstrophy bladder patients**

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**Aim:** To study the effect of augmentation colostomyplasty on physical growth & bone mineral density in exstrophy bladder patients.

**Methods:** A retrospective evaluation of 54 classical exstrophy bladder patients who had undergone augmentation sigmoid colostomyplasty from Jan.’85 to May’07. The details of anthropometry (height and weight) were obtained from the pediatric urology follow-up clinic records. The percentile height and weight were calculated using CDC 2000 Indian reference charts and categorized into three subgroups (<50th, 50th-75th, >75th percentiles). Following colostomyplasty the patients were submitted for bone densitometry (BMD) scan of upper end of femur using QDR 4500A model dual energy X-ray absorptiometry (DEXA), Hologic, USA. The BMD values were compared with the age and sex matched normal children and exstrophy bladder patient who were not augmented. In augmented group BMD scan was also repeated 6 months after the first study to note any change. Pre and post-augmentation...
values were compared by applying student’s paired t test and p value <0.05 was considered significant.

Results: The median percentile of height and weight was 50. The percentile height and weights were nearly the same in the pre & post augmentation period. The anthropometric values of 60-80% of cases remained in the 50th-75th percentile group. A total of 34 augmented children were evaluated for BMD at a mean of 15±4.5 months after augmentation. The mean BMD of Indian normal child matched for age and sex of the study group was 0.665±0.06 g/cm². The BMD of exstrophy bladder patients was 0.612±0.10 g/cm² and post augmentation study group was 0.645±0.17 g/cm². There was no statistically significant difference among the 3 groups. The mean of BMD repeated at 6 months in the augmented group was 0.657±0.158 and is on uptrend.

Conclusion: The results of our study shows no reduction in linear growth & bone mineral density after augmentation with sigmoid colon in exstrophy children.

226 Complications following augmentation sigmoid colocoloplasty for bladder exstrophy
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Aim: To study the complications following augmentation sigmoid colocoloplasty for bladder exstrophy.

Methods: A retrospective study of complications in 54 patients of bladder exstrophy who underwent augmentation cystoplasty with detubularised sigmoid colon during Jan.’85-May’07. The details of the patients were obtained from the pediatric urology clinic records. Mean and standard deviation were computed for all the measurable variables and the corresponding pre-augmentation and post-augmentation values were compared by applying student’s paired t test and p value < 0.05 was considered significant.

Results: The mean age at colocoloplasty was 4.3 years and follow up ranged from 3 months-19 years (mean 4.5 years). The mean age at analysis of data was 9.5 years. Three patients were above 20 years of age. The complications included stone formation, ‘pyuria’, fistula, urine retention, and intestinal complications. Sixty six percentage (31 cases) of cases had at least one episode of retention of urine after augmentation either due to thick mucus or bladder outflow obstruction; 12 patients required urethral dilation under anesthesia. Though 16 patients had 20 instances of bladder calculi it is not statistically significant when compared with pre augmentation status.

Conclusions: There is a significant increase in the retention rate, pyuria and fistula formation after augmentation necessitating follow-up and timely intervention to preserve the renal function. Stone formation and mucus production was a problem in the initial postoperative period, but decreased over time and none of our patients had considered it a significant problem after 2 years. Plenty of hydration and regular CIC has helped to reduce the problems.

227 Voiding pattern and continence status of exstrophy bladder patients after augmentation colocoloplasty
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Aim: To study the voiding pattern and continence status of exstrophy bladder patients after augmentation colocoloplasty.

Methods: The study group includes 54 classical exstrophy bladder patients who underwent augmentation colocoloplasty with detubularised sigmoid colon during Jan.’85-May’07. Detailed history on voiding pattern, frequency, duration of dry period, stress incontinence and number of pads used per day were enquired. The degree of continence was defined as ‘dry’ if completely dry or dry interval >3 hours; ‘acceptable’ if dry interval >2 hours or usage of <3 pads per day and as ‘wet’ for all other cases. Pre and post augmentation changes in the degree of continence were tested for statistical significance by applying student’s t test and p value <0.05 was considered statistically significant.

Results: The mean age at colocoloplasty was 4.3 years and follow up ranged from 3 months-19 years (mean 4.5 years). The mean age at analysis of data was 9.5 years. The pre and post augmentation continence status was available in 44 patients; ‘dry’ in 6 (13.6%) and 28 (63.6%) patients (p=0.0001), ‘acceptable’ in 5 (11.3%) and 10 (22.7%) patients and ‘wet’ in 33 (75%) and 6 (13.6%) patients (p=0.0001) before and after augmentation respectively. Three patients were able to void normally per urethra and remain dry pre augmentation and 2 more patients could achieve this status post augmentation; this was statistically not significant. Before augmentation only 4 (9%) patients required CIC per urethra but this increased to 68 (native urethra 59%, Mitrofanoff 9%) after augmentation due to increase in post void residue.

Conclusions: A significant number of cases become dry and continent after augmentation as the bladder becomes a capacious reservoir. They should be counselled for performing CIC prior to the augmentation.