Laparoscopic Orchiopexy: Is Closure of the Internal Ring Necessary?

Handa R, Kale R, Harjai MM

ABSTRACT

Background: Narrowing of the internal ring around the pulled through spermatic cord in cases of laparoscopic orchiopexy is the norm.

Aim: To carry out a prospective study to see if closure of the internal ring is really necessary, hypothesis being that mobilization of the impalpable testis leaves a raw surface, which, coupled with the presence of the spermatic cord results in effective closure of the internal ring.

Materials and Methods: 51 patients with 65 impalpable testes underwent laparoscopic orchiopexy between July 1998 and June 2003. An impalpable testis was present in 21 cases on the left, 16 cases on the right and bilateral in 14 cases. Following complete mobilization required for orchiopexy, all testes with adequate length of spermatic cord were pulled down into the scrotum through the inguinal canal. No suture was applied to narrow the internal ring around the pulled through spermatic cord. Five testes were pulled down by an opening in the medial end of the inguinal canal due to inadequate length of the spermatic cord. In these cases the internal ring was closed by a suture.

Results: Follow up of all cases ranged between 1.5 years to 6.5 years. Not a single case has reported with recurrence of a hernia.

Conclusion: The results suggest that narrowing of the internal ring around the pulled through spermatic cord may not be necessary.

KEY WORDS: Impalpable testis, laparoscopy, orchiopexy, internal ring closure

Laparoscopy is the single most accurate modality for diagnosis, localization and management of impalpable testes. The conventional and accepted technique of laparoscopic orchiopexy recommends that the internal ring should be narrowed around the pulled through spermatic cord to avoid herniation of viscera. However the authors hypothesize that mobilization of undescended testes leaves a raw surface, which, coupled with the presence of the pulled through spermatic cord results in effective closure of the internal ring. A prospective study was carried out to test this hypothesis.

Material and Methods

The study involved 74 patients with 92 impalpable testes reporting to the Department of Pediatric Surgery of a tertiary care hospital between July 1998 and June 2003. Out of these, 7 cases of impalpable testis in whom the testis was lying more than 3 cm proximal to the internal ring were managed with staged Stephen-Fowler technique and so were excluded from the study leaving 67 patients with 85 testicular units. After baseline investigations, all children underwent laparoscopy for localization of the testis along with mobilization and simultaneous orchiopexy by placement of the testis in a subdartos pouch using a 3 mm laparoscope set.

Following complete mobilization of the testis, adequacy of spermatic cord length was confirmed by the ability to take the mobilized testis to the contralateral internal ring. An artery forceps was then introduced retrogradely into the external and internal inguinal rings through a scrotal incision and the mobilized testis was grasped under laparoscopic vision and pulled down into a subdartos pouch. This resulted in the apposition of the raw surface of the spermatic cord with that of the raw area at the internal ring from where the testis was mobilized. In view of the opposing raw surfaces, the internal ring was not closed with a suture. Permission for this was obtained from the institutional review board and also in a written informed consent from the parents guardians. In those cases where the length of the spermatic cord was inadequate despite mobilization, the artery forceps was made to enter the peritoneal cavity directly in the region of the external ring so as to be medial to the epigastric vessels. In these patients, the native internal
ring was obliterated with a suture.

Results

Laparoscopy revealed a blind ending vas in two cases and the vas and vessels were seen to be entering the internal ring in 7 cases, which necessitated open inguinal exploration. These 9 cases were excluded from the study leaving 58 patients with 76 impalpable testes. The age ranged from 4.3 years. An impalpable testis was present in 23 cases on the left side, 17 cases on the right side and was bilateral in 18 cases.

Of the 76 testis, 71 testes had an adequate length of the spermatic cord which permitted them to be pulled down into the scrotum by holding in an artery forceps introduced in a retrograde manner from the scrotum and external ring into the internal ring. No suture was applied to narrow the internal ring around the pulled through spermatic cord. Five testes were pulled down through an opening created by the retrogradely introduced artery forceps at the medial end of the inguinal canal due to inadequate length of the spermatic cord. This enabled placement of the testis in the scrotum by following a direct route and exiting the peritoneal cavity medial to the epigastric vessels instead of traversing the inguinal canal. In these cases, since the testis was invariably lying proximal to the internal ring, its mobilization did not result in a raw area at the internal ring and since nothing was traversing the internal ring, it was obliterated by a suture.

Follow up of 51 cases with 65 testicular units ranged between 1.5–6.5 years with 7 cases being lost to follow up. Median follow up was 2.2 years. No inguinal hernia was detected on regular follow up. 2 cases had atrophy of the testes and 1 case had local wound infection. In rest of cases, the testis was consistent with age and preoperative assessment.

Discussion

Impalpable and undescended testes are a very common preoccupation for specialized pediatric surgery teams. Laparoscopy as one of the most accurate modalities for diagnosis and localization of impalpable undescended gonad is well established.[5,6] However the therapeutic attitude and the technique are still a matter of debate.

No special investigative workup with ultrasound, CT or MRI scan was done in this study. This was because of the known inadequate sensitivity and specificity of ultrasound as a diagnostic modality for abdominal testis.[3,5] A CT scan exposes the child to radiation while the cost of a contrast MRI does not justify its use when laparoscopy is available both as a diagnostic and therapeutic modality.[6]

In this preliminary study, we have deliberately not closed the internal ring around the pulled through spermatic cord. This approach was prompted by the observation that the majority of the testes lie in the region of the internal ring. The mobilization of these testes by division of the gubernaculum and the dissection required to free a long loop vas deferens results in a large raw area at the internal ring. When the testis is pulled down into the scrotum, the mobilized surface of the spermatic cord is in apposition with the raw area at the internal ring. Healing of the peritoneum occurs rapidly and so results in a satisfactory closure of the internal ring. This is also supported by the fact that many surgeons feel that ligation of the hernial sac in herniotomy is not required.[7,8,9,10]

We have had a follow up for all these cases ranging from 1.5 to 6.5 years and no patient in whom the internal ring was not closed surgically around the pulled through spermatic cord reported with the development of a clinically obvious inguinal hernia on that side. We however acknowledge that the sample size of our study is small and the median follow up period is short to support our hypothesis conclusively.

The authors hence suggest that routine narrowing of the internal ring around the pulled through spermatic cord could possibly be omitted. This cuts down the operative time and also eliminates the possibility of vascular compromise to the mobilized testis in case the internal ring is tightened too much inadvertently. However, a large study with adequate follow up of at least 5 years is necessary before this approach is acceptable to all.

References

Laparoscopic for impalpable testis is one of the most widely practiced procedures by pediatric laparoscopists; it is traditionally used to exclude vanishing testis syndrome and formulate a plan of management for intra-abdominal testes. Recently, laparoscopic orchidopexy[1] is gaining popularity for impalpable testis with adequate testicular mobility. This article is addressing the dilemma of inguinal hernia noted during this type of operation. The authors have correctly suggested that inguinal hernial closure is not necessary under these conditions as extensive dissection around the internal ring will result in closure of the internal ring.

It should be noted that there is a difference between true inguinal hernia and inguinal hernia associated with undescended testis. Most pediatric surgeons dissect the hernia to free the testicular vessels from this tethering sac as to achieve extra length. It is of little importance whether herniotomy is performed under these circumstances, certainly it is not my practice to routinely suture ligates the sac and no recurrent inguinal hernia is noted over a 15-year period.

The situation is somewhat different in inguinal hernia that is not associated with undescended testis.

Suture ligation of the hernial sac flush with internal ring especially in neonates and premature infants is mandatory and to state otherwise is misleading. Every practicing pediatric surgeon has seen almost immediate recurrence of inguinal hernia when meticulous and proper closure of the sac is not performed. There are many articles that address the issue of laparoscopic hernial closure, and how this is done laparoscopically does affect the outcome,[2] as simple laparoscopic closure without herniotomy has shown to have a high recurrence rate (3% in most large series); current recommendation is complete herniotomy followed by suture ligation of the peritoneal opening.[3]

Finally, my present preferences for intra-abdominal testis diagnosed laparoscopically are:[4]

- If the testis can be stretched to contra-lateral internal ring; a preperitoneal approach is adopted.
- If mobility is not adequate then a laparoscopic assisted micro-vascular transfer is performed. In my experience Fowler-Stephen laparoscopic staged orchidopexy has a high atrophy rate and is no longer performed.

Banieghbal B
Division of Paediatric Surgery, Chris Hani Baragwanath Hospital, Faculty of Health Sciences, University of the Witwatersrand, Johannesburg, Republic of South Africa
E-mail: banieghbal@worldonline.co.za

References