Nasal dermoids are rare congenital anomalies, which usually present in early childhood as a midline nasal mass that requires surgical management. We describe a case of nasal dermoid with intracranial extension.

**Case History**

A 3-year-old female child presented with a gradually increasing pea-sized swelling over the bridge of the nose since infancy. There was no history of trauma, headache or seizures. General physical examination was normal. On local examination a cystic swelling, around 1 cm in diameter was seen on the bridge of the nose. The skin over the swelling was normal. It was non-pulsatile, non-compressible and cough reflex was absent. The transillumination sign was negative. The underlying nasal bone appeared normal on palpation. The nasal septum was in the midline. Imaging was performed to further evaluate the mass and to determine if intracranial extension was present, and to facilitate neurosurgical consultation and planning of the operation. A CT scan of the paranasal sinuses and 3-D reconstruction showed a swelling over the nasal bridge with extension into the anterior cranial fossa through a defect in the cribriform plate (Figures 1 and 2). After taking neurosurgical opinion, the swelling was excised by a vertical midline incision. The sac of the swelling was found to be going superiorly through a tunnel between the nasal bones and the underlying nasal septum. The nasal bones were removed along with the adjacent anterior part of the frontal bone. Intracranial extension through the cribriform plate was identified. The wall of the sac was incised and after evacuating the contents it was removed except for its base where it was attached to the dura. The secretory epithelial surface of the remnant of the sac was destroyed by bipolar electrocautery. The nasal bones were re-placed and the wound was closed in layers. The postoperative period was uneventful and there is no recurrence during a two year follow-up period.

**Discussion**

Nasal Dermoid and Sinus Cysts (NDSC) are uncommon congenital anomalies that may have intracranial extension in around 20% of cases and can be associated with other anomalies. In case of intracranial extension the sinus traverses either the cribiform plate or the foramen caecum and is attached to the dura or it can extend in the form of a cyst within the falx cerebri or other brain structures. Faulty closure of the anterior neuropore results in a defect in the anterior fontanelle, foramen...
caecum, cribriform plate, sphenoid and ethmoid bones. Development of NDSC is hypothesised to result from faulty involution of the dural tract. If brain tissue is also isolated extracranially by fusion of the cranial sutures, a glioma results. When a bony defect allows herniation of dura mater and brain tissue extracranially, an encephalocele results. Nasal dermoids are the most common followed by gliomas and encephalocele and the most common presentation is a nasoglabellar mass.\[1\] Clinically, a sinus tract exists which opens onto the skin of the nose anywhere between the base of the columella and the glabella, with the distal one-third of the nasal dorsum being the most common site. Nasal dermal sinus cysts are firm, non-compressible, non-pulsatile masses, which do not transilluminate as in our case. A cheesy material may be expressed from the cyst and small hairs may protrude from the dermal opening.

Preoperative CT / MRI evaluation is a must to identify intracranial extension of NDSC and for preoperative planning.\[2\] Reported findings on CT, which suggest intracranial extension, include a soft tissue mass, widened nasal septum, bifid septum, bifid perpendicular plate, bifid crista galli, interorbital widening, and defects in the cribriform plate. The role of MRI has been well established because of its superior soft tissue contrast thus aiding in differential diagnosis of nasal mass, non-invasiveness, lack of ionizing radiation, and easy multidimensional reconstruction.\[3\] MRI is also effective in delineating intracranial extension of congenital midline nasal masses. The differential diagnosis of midline nasal mass includes developmental anomalies, inflammatory lesions and benign or malignant neoplasms.

A variety of pre-surgical complications is associated with NDSC such as menigitis, osteomyelitis, periortibal and nasal cellulitis, nasal abscess, anomalies of nose requiring rhinoplasty, CSF leaks, and frontal lobe abscess.\[4\] Biopsy is contraindicated as this may lead to CSF leak, extensive bleeding and meningitis. Surgical excision of NDSC is not to be taken as a minor operation and it is important to address both the intracranial and extracranial components.\[5\] All explorations should take place in the operating room under general anaesthesia and with neurosurgical backup to tackle intracranial extension if any, identified at surgery. If intracranial extension is identified preoperatively, the standard procedure should be craniotomy with resection of the intracranial cyst and repair of dural defects or a combined approach of external rhinoplasty and craniotomy should be used.\[6\] External rhinoplasty incision can be used for better exposure and gives usually improved cosmetic results.\[7\] Incomplete excision is the cause for the 20% recurrence rate. Use of microsurgical instruments and microscope or endoscope to aid in total excision is recommended.\[7\] Early excision is advocated to avoid Craniofacial deformation, bony atrophy, infection and potential intracranial complications like meningitis.

**Conclusion**

Nasal dermoid with intracranial extension is a rare congenital anomaly. Preoperative radiological evaluation by CT scan or MRI is essential to rule out intracranial extension. An otolaryngologic, paediatric surgical and neurosurgical consultation is a must before taking a patient with nasal dermoid for excision.

**References**