

Endoscopic assisted cranio facial resection of frontoethmoidalmeningocele in a neonate

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ABSTRACT

Nasal meningocele is a herniation of the meninges into the nasal cavity through a defect in the cribriform plate. It is a form of a neural tube defect. Frontoethmoidalmeningocele is more common in South-east Asia than those in Western countries. The basis of the treatment is to close the defect in order to prevent meningitis. The

endoscopic assisted craniofacial resection (EACFR) is a highly useful surgical technique to avoid the facial scar of lateral rhinotomy and post-operation paranasal sinus infection. (Rawal Med J 2014;39: 230-232).

Key words: Frontoethmoidalmeningocele, meningitis, endoscopic assisted, craniofacial resection.

INTRODUCTION

Meningocele is a dislocation of the meninges through congenital bone defects of the skull.¹ It is commonly found in the pediatric group due to a congenital defect, while in adult tends to happen following by trauma. The etiology is unclear.² There are two theories of meningocele; one is the disorders of embryogenesis of the neural tube in the 3rd-4th week of development and second is the disorders of development of cranial bones. In Asia, the incidence of intranasalmeningocele is of 1:5000 live births but in America and Europe is about 1:35000-40000 births.³ Other associated anomalies are ocular hypertelorism, nasal widening, complex facial malformations and median nasal fissure, ocular malformation and microcephaly. There are 2 main types of meningocele according to the location of the defect, frontoethmoidal and occipital.² We report first case of EACFR of frontoethmoidalmeningocele in a neonate.

CASE PRESENTATION

A 3 month old boy was referred from private hospital with history of left nasal discharge associated with low grade fever and reduced oral intake. The mother noticed the clear left nasal discharge since day 20 of life. There was no history of fall or trauma, no vomiting, no swelling and altered level of consciousness. There was no disturbance in normal developmental milestones. The baby was vacuum delivered with birth weight of 3.5kg. The antenatal and postnatal history was

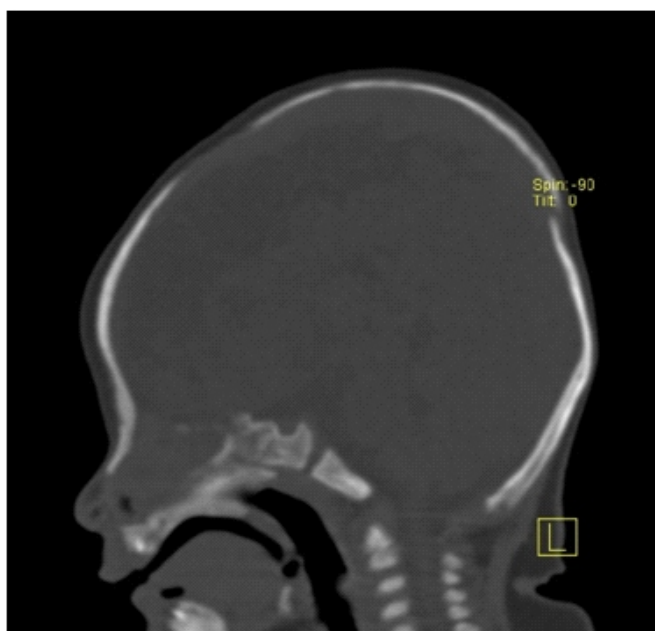
uneventful and immunization is up to age.

On general examination, the baby had no particular dysmorphic features and appeared active. The cranial nerves were intact. Flexible nasopharyngolaryngoscopy (FNPLS) revealed left intranasal mass arising superiorly from roof of nose. It involved the anterior 2/3rd of nasal cavity and was covered by pale looking mucosa with no evidence of bleed.

The left nasal discharge biochemical analysis was consistent with cerebrospinal fluid. Initial CT scans reported a defect in cribriform plate with a left nasal mass measuring 2.2 x 1.1 cm in diameter and 2.2cm in length displacing the crista galli posteriorly. (Fig.1). The ventricles and basal cisterns were normal.

A combined neurosurgical and ENT team performed surgery. On bifrontal craniotomy, a defect was identified in cribriform plate and it opening to left nostril. The bony defect was reconstructed with pericranium, fibrin glue (TISSEEL) and bone graft taken from part of the Burr hole bony fragments. An endoscopic clearance was performed by the ENT team. A left pedunculated encephalocele was seen extending intranasal up to the inferior turbinate. The defect over the cribriform plate was extending anteriorly from the internal valve up to the anterior part of middle turbinate. The stalk of the mass was cut off while the remnant over the defect area was debrided with micro debrider. The defect was repaired by the surgical and fibrin glue (TISSEEL).

Fig. 1. A sagittal view of CT scan showing defect in the cribriform plate.



The baby was well post operatively with no CSF rhinorrhea. On follow up at one month post surgery, the child was well with no CSF leak.

DISCUSSION

Nasal meningocele may give symptoms as respiratory disorders, swallowing problems, CSF leak, disturbance of smell and meningitis. In pediatric group, a common presentation is breathing difficulties.⁴ Anterior rhinoscopy may show a mass protruding from the vault of the nasal cavity and may be misdiagnosed as a polyp. The other differential diagnoses are cysts, mucocoele and tumor.

Meningocele usually can be diagnosed immediately after birth. Diagnosis can be difficult if it is just a small defect in the nasal cavity or forehead. CT scan and MRI have complementary role in evaluation. MRI defines the contents of the meningocele while CT scan provides detailed evaluation of the bony abnormality. CT scan is preferred for visualization of internal and external bony defect. MRI can differentiate an encephalocele from a meningoencephalocele.² MRI may help highlight

brain vessels, especially the cerebral artery prior to surgical intervention.

The proper management for nasal meningocele is requires a multidisciplinary approach, which includes ENT, neurosurgery and radiology team. Early surgical intervention is important in view of the potential risk of CSF leak and meningitis. The surgical approach depends on the location and size of the meningocele. Pre operatively, possible morbidity of a loss of sense of smell, post operative intracerebral hemorrhage, cerebral edema, epilepsy, frontal lobe dysfunction and concentration deficits should be explained.⁵ EACFR is a routine procedure performed at our center for excision of tumors of the anterior skull base in adult.⁶ Intranasal approach minimizes patient morbidity and post operation hospitalization.⁷

In our case, we performed a bicoronal craniotomy and nasal endoscopy in the same setting. Traditionally, a skull base defect is repaired via a bifrontal craniotomy approach but with advances in technology, endoscopic techniques are gaining popularity. Endoscopic technique minimizes the complications associated with craniotomy and frontal lobe resection and avoids external incisions or scar, retraction of brain or others structures, lower morbidity and conserves sense of smell. It also provides good view intraoperatively, with extended cephalocaudal and laterolateral visualization.³

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