

## ETHMOIDAL MUCOCOELE IN AN 11 YEAR OLD CHILD: ENDOSCOPIC MARSUPIALIZATION

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### INTRODUCTION

A paranasal sinus mucocoele is an epithelial lined, mucus containing sac that fills the sinus and is able to expand by alternative bone resorption and bone formation [1]. The frontal sinus (65%) is the most common site, followed by ethmoid (30%), maxillary (3-10%) and sphenoid sinuses (1%) [2]. Paranasal mucocoele usually affects adults, most commonly in the fourth to seventh decades of life [3]. They are extremely rare in children and adolescents [4]. Ethmoidal mucocoeles usually present with ophthalmic manifestations like orbital displacement, proptosis, diplopia and restricted eye movements.

Frontoethmoidal mucocoeles have traditionally been treated by the external frontoethmoidectomy (Lynch-Howarth) or an osteoplastic flap operation. With the introduction of endoscopic sinus surgical techniques, rhinologic surgeons now prefer transnasal endoscopic management [5]. The endoscopic surgery has become the procedure of choice for mucocoeles of the ethmoidal, maxillary and sphenoidal sinuses. Many authors have advocated preservation of the mucocoele mucosa with marsupialization [6]. We present a rare case of ethmoidal mucocoele in an 11 year old boy, treated with endoscopic endonasal marsupialization.

### CASE REPORT

An 11-year-old boy presented with swelling in the medial part of left orbit and lateral deviation of the eye of one year duration. The swelling was insidious in onset, painless and gradually increased in size causing deviation of the eye towards left. There was no history of nasal obstruction,

excessive lacrimation, headache or diplopia. He denied any history of nasal surgery or trauma to the eye or face. Examination revealed bulging in the medial part of left orbit (medial and slightly above the inner canthus), inferolateral deviation of the eye and telecanthus (Fig. 1). The swelling was bony hard, smooth surfaced and non tender. Visual acuity and ocular movements were not affected. His nasal airways were patent, and throat, ears and neck were normal. Roentgenogram of the paranasal sinuses and the orbit revealed soft tissue density mass projecting into the left orbit along the superomedial margin with well defined rounded margins (Fig. 2). Frontal sinus was normal. Computed tomographic scan of the orbit showed homogeneous soft tissue density mass in the left ethmoid sinus, producing space occupying effect with thinning and remodeling of adjacent bone. Laterally the mass was involving the lamina papyracea, abutting the medial rectus muscle and causing displacement of the left eyeball (Fig.3). Ultrasound, B scan of left orbit also demonstrated rounded lesion of homogeneous echotexture, measuring 2.4 X 1.9/cm. The contours and contents of the eyeball were preserved and the retrobulbar tissue was normal. Nasoendoscopy under general anaesthesia, with Hopkins II and 30 degrees, 4 mm rigid endoscopes revealed bulging of the upper part of the middle turbinate. With sickle knife, an incision was made into the anterior portion of the bulge in the middle turbinate. Contents of the mucocoele came and were sucked out. With scissors, superior and inferior incisions were made and the mucocoele was widely marsupialized by using sinus surgery forceps.

Bulla ethmoidalis and agar nasi cells were also exenterated. Posterior wall of the mucocoele was visible. The cavity was packed with ribbin guaze impregnated with bismuth iodoform paraffin paste. Systemic antibiotics continued for five days and nasal decongestant for two weeks postoperatively.



Fig. 1: Bulging in the medial part of the left orbit and infero lateral deviation of the eye.

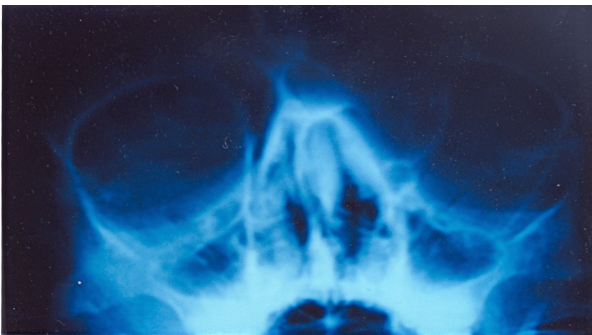


Fig.2: X-ray showing mass projecting into the orbit and normal frontal sinus.

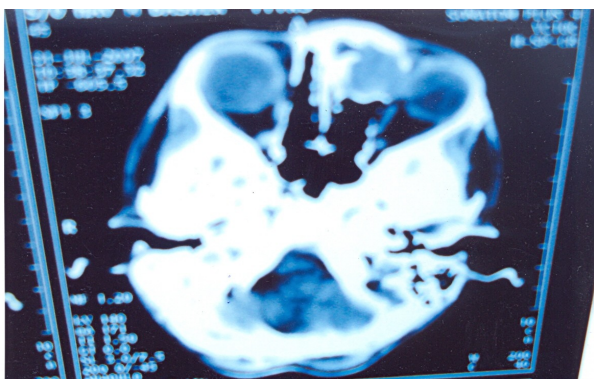


Fig.3: Axial CT demonstrating homogeneous soft tissue density mass involving the lamina papyracea and abutting the medial rectus muscle.

Follow up at two week postoperatively

showed marked reduction in orbital displacement.

## DISCUSSION

Paranasal sinus mucocoele is relatively uncommon, particularly in infants and children. In about 90% of cases, mucocoeles in children are unilateral. Cystic fibrosis, cranio-facial trauma and chronic sinusitis may be the predisposing factors in pediatric mucocoele formation [3]. No aetiological factor was found in our case. Hartley and Lund also found no cystic fibrosis in their series of seven patients [7]. In the series of 10 cases published by Nicollas et al. eight involved the anterior ethmoids, one the frontal sinus and one the sphenoid sinus. In our case also, mucocoele involved the anterior ethmoids. Paranasal mucocoeles expand slowly due to continued mucus production and erosion of the sinus walls caused by the mass effect of the lesion and by the presence of cytokines such as interleukin 1 (IL-1) and IL-6 [8]. However, in case of infection the expansion becomes rapid. Presentation depends upon the site and size of mucocoele, and degree of bone erosion. Due to close proximity of the ethmoids to the orbits, majority of these mucocoeles have intraorbital extensions giving rise to superior nasal/orbital palpable mass, proptosis and diplopia. They can also extend into the nasal cavity or intracranially [9]. Symptoms are usually present from 1 to 18 months before the diagnosis of the mucocoele [2]. This corresponds with our case that had one year history of swelling before the definitive diagnosis. Radiological evaluation is done by computed tomography (CT) and sometimes by MRI. CT scan shows bony erosion of the sinus wall with smooth expansion and is the optimum imaging method for mucocoele. In paediatric patients, the differential diagnosis includes meningocele, neuroblastoma, lymphoma or rhabdomyosarcoma. MRI is

useful in differentiating a mucocoele from other tumours.

Traditional treatment for mucocoele had been the removal of the entire mucocoele lining by external approaches. It is now considered that to be successful, removal of the entire mucocoele lining is not necessary. Rather, removal of the floor lining or marsupialization is adequate as long as the mucus is drained and the cavity is well aerated [2]. Surgical management is now unanimously performed through an endoscopic endonasal approach [10]. Review of the literature revealed that the recurrence rate after endoscopic sinus surgery is very close to 0% [3, 10]. Nicollas et al. also found that all his patients with ophthalmologic complains related with the mucocoeles were free of trouble after surgery, with no recurrence in his series of 10 children treated by endoscopic surgery [5]. We conclude that endoscopic marsupialization is safe and effective approach for management of ethmoidal mucocoele in the paediatric population. It is mini-invasive, permits accurate drainage with excellent visualization and lacks external incision.

## REFERENCES

1. Lund VJ, Milroy CM. Fronto-ethmoidal mucocoeles: a histopathological analysis. *J. Laryngol. Otol* 1991; 105: 921-3.
2. Natvig K, Larson T. Mucocoele of the paranasal sinuses: retrospective clinical and histological study. *J Laryngol Otol* 1978; 92: 1075-82.
3. Busaba NY, Salman SD. Ethmoid mucocoele as a late complication of endoscopic ethmoidectomy. *Otolaryngol Head Neck Surg* 2003; 128: 517-22.
4. Nicollas R, Facon F, Levillain IS, Forman C, Roman S, Triglia JM. Pediatric paranasal sinus mucocoeles: etiologic factors, management and outcome. *Int. J. Pediatr. Otorhinolaryngol* 2006; 70: 905-8.
5. Caylakli F, Yavuz H, Cagici AC, Ozluoglu LN. Endoscopic sinus surgery for maxillary sinus mucocoeles. *Head and Face Medicine* 2006; 2: 29.
6. Kennedy DW, Josephson JS, Zinreich SJ, et al. Endoscopic sinus surgery for mucocoeles: A viable alternative. *Laryngoscope*. 1989; 99: 885-95.
7. Hartley BE, Lund VJ. Endoscopic drainage of pediatric paranasal sinus mucocoeles. *Int. J. Pediatr. Otorhinolaryngol.* 1999; 50: 2: 109-11.
8. Ologe FE, Odebode TO, Owoeye JF, Eletta PA. Ophthalmic manifestations of frontoethmoidal mucocoeles: a report of five cases. *Afr Med Sci* 2003; 32: 209-14.
9. Rashid M, Haider SMZ, Firdous M, Naqvi SNU, Ahmed A. Frontoethmoidal mucocoele with intraorbital extension – an unusual cause of diplopia. *JCPSP* 2006; 16: 5: 371-2.
10. Sciarretta V, Pasquini E, Farneti G, Ceroni AR. Endoscopic treatment of paranasal sinus mucocoeles in children. *Int. J. Pediatr. Otorhinolaryngol.* 2004; 68: 7: 955-960.