

Mucocele in an orbitoethmoidal (Haller's) cell (accidentally combined with acute contralateral Dacryocystitis)*

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SUMMARY

Haller's cells – according to recent terminology now called orbitoethmoidal cells (OEC) – are defined as anterior or posterior ethmoidal cells that have developed into the orbital floor. They can be excessively pneumatized and thus contribute to obstruction of the ostiomeatal complex area. We present the case of a 42 year old white male, who was admitted for treatment of an acute dacryocystitis on the right side. The CT scan revealed moderate sinusitis of the right ethmoid and maxillary sinuses and coincidentally a mucocele in an OEC on the left side. An endoscopic dacryocystorhinostomy on the right and a revision of the mucocele on the left side were performed in the same sitting. We consider both indications – stenosis of the nasolacrimal duct as well as mucocèles rewarding indications for endoscopic surgery. An external approach to the nasolacrimal duct in this case would have been problematic, as the external skin and soft tissue covering the duct already showed severe inflammatory changes. The operation of the up until that time asymptomatic mucocele was of prophylactic character. To our knowledge this is the first report of a mucocele developing in an OEC in the literature.

Key words: Haller cell, orbitoethmoidal cell, mucocele, endoscopic surgery

INTRODUCTION

Orbitoethmoidal cells (OEC) are defined as anterior or posterior ethmoidal cells that have developed into the orbital floor. Additionally, they must be differentiable from the ethmoidal bulla (Stammberger et al., 1995). The Swiss physician Albrecht von Haller (1708-1777) was the first to describe these air cells, which can be pneumatized considerably and thus contribute to obstruction of the ostiomeatal complex area (Messerklinger, 1977). Consequently, their role in pathogenesis of recurrent maxillary sinusitis by compromising the ethmoidal infundibulum has been highlighted by various authors (Kainz et al., 1993; Stackpole et al., 1997). In a morphological study OECs were present at least on one side in 8,14% of patients with chronic sinusitis admitted for FESS (Kainz et al., 1993). OECs are usually detected radiologically as they cannot be seen during a normal nasal endoscopy, except one performs in addition maxillary sinusoscopy. They may not only contribute to the development of a maxillary sinusitis by narrowing the natural sinus ostium, they can be diseased themselves as well. Inflammatory changes of the mucosa in an OEC are quite common as part of an ethmoidal and maxillary sinusitis, but also isolated inflammatory disease and even isolated mycotic disease in an OEC has been described (Kainz et al., 1993).

Mucocèles in most instances are obstructive complications of chronic sinus inflammation, polyposis, tumor or trauma including postoperative iatrogenic mucocèles. Frontoethmoidal mucocèles are the most common ones, whereas mucocèles of the maxillary and sphenoid sinus are rare. According to their content muco- and pyocèles can be distinguished. Mucocèles are more frequent but when infected, they may turn into pyocèles (Kennedy et al., 1989).

Mucocèles of the maxillary sinus mainly represent late complications of Caldwell Luc operations and similar radical procedures, or develop following trauma. Signs and symptoms depend on localization of the mucocèles. In the maxillary sinus they may lead to a slow growing swelling of the cheek, the oral vestibulum or of the palate, also exophthalmus, diplopia and headache are possible. Usually, mucocèles are a rewarding indication for endoscopic surgery, provided, they can be reached via the nasal cavity (Kennedy et al., 1989; Stammberger 1991). Ethmoidal, maxillary and sphenoidal mucocèles are almost always accessible to an endoscopic endonasal approach (Lund, 1997). To our knowledge (medline research - april 1998) there are no previous reports of a mucocele developing in an OEC in the literature.

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Dacryocystitis occurs postrauamatically due to formation of stenosis in the nasolacrimal system. In an acute phase, especially when associated with acute sinusitis, it must be differentiated from an orbital complication of the latter. An opthalmological exam and a coronal CT scan usually lead to the diagnosis. If probing and irrigation together with antibiotic therapy fails, microscopic or endoscopic dacryocystorhinostomy (DCR) has been advocated by various authors as an alternative to external surgical approaches (Heerman 1986, El-Khoury et al., 1992; Weidenbecher et al., 1994).

CASE REPORT

A 42 year old white male presented himself to our outpatient department with increasing swelling of the right eye region, particulary of the lower lid and the medial angle of the eye (Figure 1). The swelling felt hard on palpation and some putrid secretion out of the punctum in the medial angle of the eye could be identified. Patient's history revealed a traffic accident with fracture of the upper jaw on both sides twenty years ago. The patient's vision and motility of the eyeball were normal, but during the ophthalmological examination an irrigation of the nasolacrimal duct was impossible. A coronal CT scan showed extensive swelling of soft tissue infraorbitally on the right,

moderate opacification in the ethmoid and maxillary sinuses on both sides and bony defects of the lateral wall on the right and of the medial wall on the left side of the maxillary sinus as post-traumatic sequelae. Additionally, a ballshaped lesion 2,5 cm in diameter in the maxillary sinus roof of the left side was detected (Figure 2). This led to the diagnosis of a postraumatic dacryorhinocystitis on the right side and of a mucocele in an OEC on the left side. The patient underwent an endoscopic revision of the mucocele and an endoscopic DCR in the same sitting under general anesthesia. The operation of the up to then asymptomatic mucocele was of prophylactic character.

The mucocele had almost completely obstructed the natural maxillary sinus ostium. After opening the mucocele, its content, which had been under considerable pressure, could be aspirated and the lumen of a huge ball shaped OEC could be identified. Its walls were resected and a large communication between the maxillary sinus and the nasal cavity via the natural ostium was established. On the right side we performed the endoscopic DCR by creating a mucosal flap over the bony bulging of the nasolacrimal duct antero-inferiorly of the middle turbinate and milling away the bone covering the duct. The ethmoid itself was left untouched, as we do not combine the DCR routinely with a resection of the uncinat process or an opening of agger nasi



Figure 1. Patient preoperatively with acute dacryocystitis on the right side.



Figure 3. Day 4 postop: the infraorbital swelling on the patients right side is gone, still some superficial postinflammatory changes of the infraorbital skin can be seen.

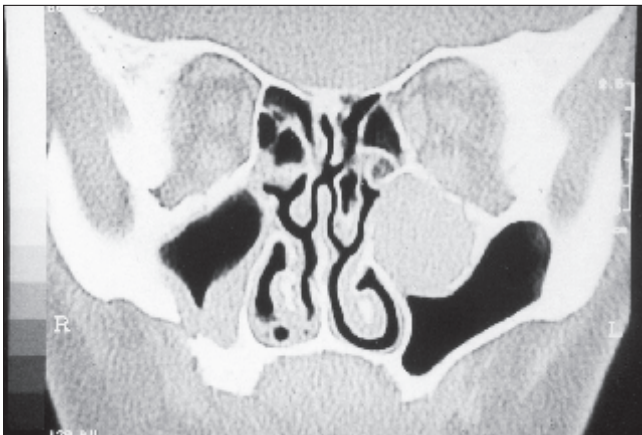


Figure 2. Coronal CT scan showing a mucocele in a Haller's cell on the left side.

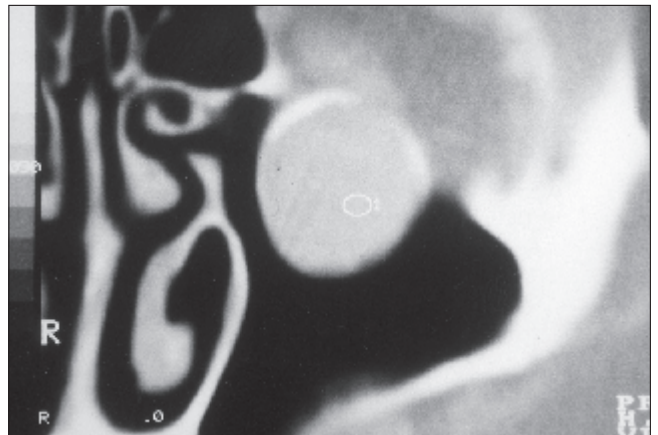


Figure 4. A possible differential diagnosis: a cavernous hemangioma in the infraorbital nerve canal.

cells. After exposing the medial wall of the nasolacrimal sac, the wall was incised with a sickle knife and putrid secretion gushed out under pressure. Finally, a 1 to 0,5 cm piece of the fibrous medial nasolacrimal sac was resected. Thus we created a permanent fistula, which we actually always try to achieve in endoscopic DCR. No stents were used to keep the drainage open. The putrid secretion out of the nasolacrimal duct was sent for culture which revealed staphylococcus and streptococcus constellatus. Postoperatively the patient improved rapidly under antibiotic covering and could be dismissed on day four postoperatively (Figure 3).

DISCUSSION

In this case two ideal indications for advanced applications of endoscopic sinus surgery could be found at the same time. For dacryorhinocystitis as well as for mucoceles we consider an endoscopic approach the least traumatic for the patient. In experienced hands the success rates for both indications are comparable, if not superior to conventional, external approaches. For mucoceles however, the likelihood of success for an endoscopic approach must be assessed on coronal CT scan preoperatively, which will show whether the lesion can be reached via the nasal cavity. An external approach to the nasolacrimal duct in this case would have been problematic, as the external skin and soft tissue covering the duct already showed severe inflammatory changes. For the endoscopic DCR, we did neither resect the uncinate process nor any ethmoidal cells. In fact, we do not feel, that any manipulation in the ethmoid is necessary for this kind of operation at all, at least not as a routine procedure.

A differential diagnosis of a mucocele in an OEC could be a neuroma of the infraorbital nerve or a cavernous hemangioma in the infraorbital nerve canal. Such a hemangioma had been operated on our clinic (Figure 4) and the case was reported recently (Walch, 1998).

This is - to our knowledge - the first case of a mucocele in an Orbitoethmoidal cell reported in the literature. Most likely the multiple fractures of the midface 20 years ago have led to the development of this mucocele.

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