A case series of upper lid skin crease approach to frontal mucoceles

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Introduction

Sinus mucoceles are pockets of loculated sterile mucus lined with pseudostratified ciliary (respiratory) epithelium. Acute and chronic frontal sinus disease may lead to complications which pose a distinct challenge to the surgeon and patient. Acute rhinosinusitis may lead to abscess formation, with risk of extension to the periorbital and orbital structures; while chronic inflammation of the frontal sinus can allow insidious formation of mucocoeles.

Surgical approach to these complications of disease is a balance of adequate surgical access versus patient morbidity; practically this is usually a decision that must be struck between an endoscopic versus open approach. While the endoscopic approach offers unparalleled cosmetic outcomes, reported experience has demonstrated that nearly 20% of patients with mucocoele are inaccessible endoscopically; while acute abscess formation that extends from the frontal sinus to the orbit is almost universally managed by open drainage. The traditional open approaches such as a bicoronal or lynch Howarth carry a significant cost in patient morbidity, and particularly, the legacy of an unsightly prominent scar.

We describe the adaptation of the anterior orbitotomy approach to manage these complications of the frontal sinus and achieve excellent disease control with optimal aesthetic outcomes.

Methods

This is a retrospective case series which consists of five patients aged between 33-54 years who presented with frontal signs mucoceles secondary to frontal sinusitis, 3 were unilateral 2 were bilateral. All patients underwent successful mucocele drainage via an upper-lid skin crease approach in a combined endoscopic sinus procedure with ENT. In two cases, the utility of the approach in facilitating a combined open/endoscopic procedure is described, whereby an endoscope is placed via the lid crease incision to assess ostial patency or to confirm correct placement of a balloon inserted through the frontal recess.

This case series demonstrates that drainage of frontal sinus mucoceles via the upper-lid skin crease is appealing to both the patient and surgeon as it provides good operative visibility but leaves only a subtle scar buried in the eyelid's natural contour.

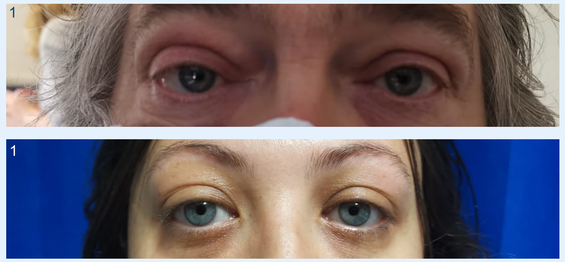


Figure 1) Photographs taken at presentation of patients 4 (Left) and 5 (Right) in the case series. Both patients have proptosis of the right eye. Both patients had advanced disease at presentation, demonstrating the insidious nature of frontal sinus mucoceles.

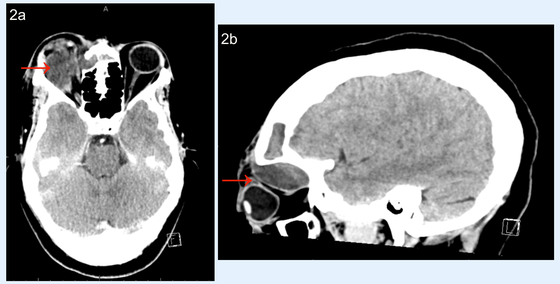


Figure 2a) Pre-operative Axial CT Head and Orbit, of patient 3. There is evidence of bony erosion through the orbital wall with anterior displacement of the globe. 2b) Pre-operative Sagittal CT Head and Orbit, of patient 3 showing a superiorosteal abcess in the right superior orbit with superior compression of the extraocular muscles.

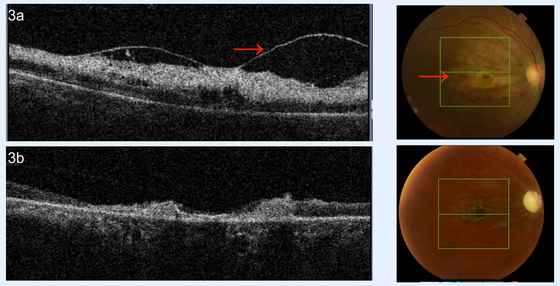


Figure 3a) Fundal OCT of patient 3's right eye 2 weeks after presentation showing compression ischaemic optic neuropathy secondary to the frontal sinus mucocele. Flame haemorrhages can be seen, and there is evidence of macular traction. 3b) Fundal OCT of patient 3's right eye 3 months after presentation. Their is atrophy of all retinal layers and disc pallor, indicating that irreversible nerve optic nerve damage.

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Results

At presentation reported symptoms included blurred vision, hypoglobus, proptosis and more uncommonly restricted extraocular movements. One patient presented with orbital cellulitis her vision had reduced to no perception of light and she had complete ophthalmoplegia. Unfortunately her vision did not improve. On review of an old scan 20years previously a smaller mucocele could be seen, indicating the chronic nature of this disease. Post-operatively all patients had full extraocular eye movements and normal lid position. All regained normal vision except the patient presenting with NPL.

	Age	Background	Presenting	Outcome / Complications
P1	33	Recurrent left frontal sinusitis which had been complicated by periorbital cellulitis.	Left sided proptosis	Successful drainage
P2	37	Previous Lynch incision and failed drainage.	Reduced adduction of left eye Binocular diplopia on right gaze Blurred vision	Successful drainage Loss of sensation in the supraorbital area of left eye
P3	47	Nil	Reduced VA NPLin right eye, 6/6 left eye 3 days of bilateral proptosis right>left, associated with vomiting. Complete ophthalmoplegia	Successful drainage Full EOM VA NPL Temporary right forehead numbness resolved
P4	54	Bilateral frontal muscle	Blurred vision	Successful drainage
P5	33	Bilateral frontal mucocoele 7yr hx sinus issues 2x previous endoscopic surgeries	Occasional blurriness Bilateral fullness of the upper lids	Successful drainage

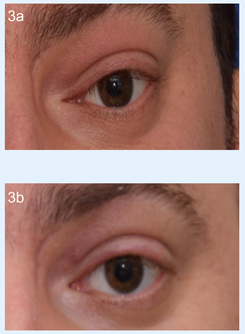


Figure 3) Patient 2 (P2) before (3a) and after (3b) surgery

Conclusion

The modified anterior orbitotomy offers unique advantages of both the wide access of the open technique and the cosmetic appeal of minimally invasive surgery, making this appealing to both surgeon and patient. This approach permits flexibility both in the procedure performed and the targeted structure: even the most lateral and superior limits of both the orbit and frontal sinus, allowing access for biopsies, abscess drainage, and clearance of diseased mucosa. We present our experience of its practice and discuss the benefits and extended applications of this approach.