MANAGEMENT OF FRONTO-ORBITAL FISTULA USING BALLOON SINUPLASTY

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INTRODUCTION

Balloon sinuplasty is playing an increasing role in the management of various frontal sinus pathologies. Here, we present an unusual case of a patient with a fronto-orbital fistula, successfully treated with balloon sinuplasty.

CASE

A 29 year old man sustained a facial crush injury in 2013, causing a puncture and tissue loss to the left globe, a complex, displaced nasoethmoidal fracture, bilateral medial orbital fractures and a CSF leak into the left globe (Figure 1). This necessitated a lid-sparing orbital exenteration with mesh reconstruction of the orbital bone. Despite the extent of his injury, the orbit initially epithelialised well.

More than a year after his initial presentation, the patient developed pain and discharge from the socket. This responded well to systemic and topical antibiotic therapy and an orbital prosthesis was fitted.

Figure1: CT sinuses demonstrating severe facial injuries

However, a year on from this, the patient developed a fistula between the frontal sinus and orbit (Figure 2). He described a short history of self-limiting acute sinusitis, following which he found that air came out of his orbit upon nose-blowing, displacing the prosthesis and causing significant distress. He was also experiencing a thick mucous discharge from the socket.

TREATMENT OPTIONS

The case was discussed between maxillo-facial, plastics and ophthalmology teams and several treatment plans were put forward, including anterolateral thigh free-flap, a buccal mucous membrane flap plus/minus skin graft or temporo-parietal fascia. However these techniques threatened to obliterate the concavity of the socket, which could prevent correct fitting of the patient's prosthesis.

A nasolabial flap was suggested, but this risked causing a prominence at the medial canthus which also may have affected the stability of the prosthesis.

The patient was therefore referred to Ear, Nose and Throat

for consideration of a trial of endoscopic frontal sinus drainage. Due to the significant risk of osteomyelitis, a balloon sinuplasty was felt to be a safer approach, which could then be followed by a small local flap to seal the fistula. Had this procedure failed, endoscopic sinus surgery with cranialisation of the frontal sinus would be indicated.

Figure 2: CT sinuses showing development of periorbital fistula

MANAGEMENT

A size 6 Entellus balloon was inserted into the left frontal recess, the position being confirmed with a light probe. The balloon was then inflated. The patient was discharged the same day with a month's supply of beclomethasone nasal drops.

A two month post-operative review confirmed the sinus to be closing, and four months post operatively the patient had a complete resolution of symptoms, without requiring a local flap.

DISCUSSION

Frontal balloon sinuplasty is recognised to be a safe and effective alternative to endoscopic sinus surgery for improving frontal sinus drainage [1]. In our department it is mostly used in the treatment of chronic rhinosinusitis and frontal sinogenic headache. However we also use it as an alternative to endoscopic sinus surgery for the drainage of mucocoeles and Pott's Puffy Tumour [2,3].

We have presented a novel use of frontal sinus balloon in an unusual case of traumatic fronto-orbital fistula; we were unable to find any previous reports of this in the literature. The procedure was minimally invasive and produced a satisfactory outcome; alternatives included local and distant flaps, and endoscopic frontal sinus surgery with cranialisation of the frontal sinus.

1 Acta Otolaryngol. 2017 Feb;137(2):202-206. Epub 2016 Sep 20. Comparison of intra-operative characteristics and early post-operative outcomes between endoscopic sinus surgery and balloon sinuplasty. Koskinen A, Mattila P, Myller J, et al

2 Allergy Rhinol (Providence). 2013 Spring;4(1):e36-40. In-office balloon dilation and drainage of frontal sinus mucocoele. Eloy JA, Shukla PA, Choudhry OJ, Eloy JD, Langer PD

3 Kulak Burun Bogaz Ihtis Derg. 2012 Nov-Dec;22(6):342-7. Treatment of Pott's Puffy tumor with balloon sinuplasty: report of three cases. Bozdemir K, Kutluhan A, Yalciner G, Cetin H, Bilgen AS, Tarlak

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