Use of pedicled nasoseptal flap for pathologic oroantral fistula closure

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Abstract

**Objectives:** Oroantral fistula (OAF) is a pathologic, epithelialized communication between the oral cavity and the maxillary sinus. OAF is caused by tooth extraction, trauma, cyst/tumor removal, infection, or as a sequelae of radiation therapy. When locoregional flaps and grafts have failed, surgical options are unclear.

**Methods:** Case report.

**Results:** We have published a novel method for autologous tissue flap closure from the nasal septum for successful extension to, and coverage of, OAFs. This involved combined endoscopic and transoral OAF repair with a nasoseptal flap (pedicled off the posterior septal artery), and reinforced with a porcine small intestine submucosal (SIS) graft. OAF closure remains intact 8 months following surgery.

**Conclusions:** We present a novel application for use of the versatile pedicled nasoseptal flap for coverage of a sizeable OAF in a patient with numerous barriers to optimal wound healing. This flap can bring new vascular supply to sites in the maxilla with possessing devitalized bone and mucosa.

Introduction

- Oroantral fistula (OAF) is a pathologic, epithelialized communication between the oral cavity and maxillary sinus.

- OAF has many causes, but most commonly results from molar extraction due to the proximity of the dental roots to the maxillary antrum, and the thinness of the adjacent antral floor.

- Small fistulae measuring 3-5mm can frequently close without intervention. However, larger communications are less likely to heal spontaneously and may epithelialize, forming an OAF.

- There are numerous options for surgical repair of OAFs.

- Local flaps - buccal fat and palatal mucosa, Regional/distant flaps - tongue or temporals fascia. Tissue grafts - autogenous bone or cartilage Rare but reported - Alloplastic materials, biologics, and metals.

- When the above options are exhausted, but closure is still mandated, treatment options are less clear.

Case Description

- 63-year-old male was treated in 2006 with definitive chemoradiation for T3N2c squamous cell carcinoma of the right tonsil and base of tongue.

- In 2014, his dental implant dislodged in the ipsilateral first maxillary molar position (tooth #4), forming an minor (2mm) oroantral communication that persisted after 30 HBO dives.

- Initial attempt at OAF closure with a right rotational palatal flap was unsuccessful given concomitant palatal osteoradionecrosis. But patient strongly desired closure and was uninterested in an obturator to cover the defect.

**Surgical Methods**

A combined endoscopic and transoral approach was undertaken for nasoseptal flap placement and OAF closure. Debridement of the devitalized palatal bone and mucosal edges of the OAF demonstrated a 20mm defect in the region of tooth #4.

**Surgical Results**

A lengthy right nasoseptal flap was then elevated, and an endoscopic medial maxillectomy performed to allow contact of the flap to the maxilla base.

**Discussion**

- Despite the many described techniques for the surgical treatment of OAFs, our subject presented a unique set of comorbidities given past oropharyngeal radiation therapy, delayed osteoradionecrosis of the palate, and recent unsuccessful palatal flap closure.

- The nasoseptal flap is a vascularized flap employing the posterior septal branch of the sphenopalatine artery, that has been widely adopted in endoscopic skull base reconstruction of dural defects.

- This nasal flap was able to provide hearty, vascularized tissue and ample coverage for closure of a sizeable maxilla OAF despite devitalized bone and mucosa.

- An SIS graft provided for two-layer coverage, and to further protect the reconstruction from oral cavity insults. SIS grafts also carry embedded growth factors, which may assist in tissue integration.

**Conclusions**

Although there are many viable surgical options, we present a novel application of the versatile pedicled nasoseptal flap for extension to, and successful coverage of, a sizeable OAF at the base of the maxillary sinus in a patient with numerous barriers to optimal wound healing.

References


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