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## Oro-Antral Communications - A Review

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**Abstract:**

Oro-antral communication(OAC) is an abnormal communication between the maxillary sinus and the oral cavity. The causes for OAC are varied and related most commonly to teeth related factors including extraction of maxillary premolar and maxillary molar. due to the anatomical proximity of the maxillary sinus floor to the root apices of these teeth. Management initially focuses on follow up of cases with high index of suspicion. It is prudent to establish presence of infection, if any. It is important to evaluate the patient for the possibility of OAC occurrence prior to extractions with radiographs. A blunt probe test confirms the existence of fistulous tract. Any of the above mentioned surgical techniques can be used for closure of OAC in case of no-closure spontaneously.

**1. Introduction**

Oro-antral communication(OAC) is an abnormal communication between the maxillary sinus and the oral cavity. If the oroantral communication is not treated, the epithelial tissues may grow in it leading to formation of oroantral fistula(OAF).

The causes for OAC are varied and related most commonly to teeth related factors including extraction of maxillary premolar and maxillary molar. due to the anatomical proximity of the maxillary sinus floor to the root apices of these teeth. Other causes include surgeries like Caldwell Luc, extensive facial trauma, neoplasms, sinus diseases and maxillary cysts.<sup>[i]</sup>

Maxillary sinus also known as Highmore's antrum is present as a small cavity at birth and grows to its adult size between 18-20 years of age. The volume of the maxillary sinus in adults is between 18-25 ml. The development of the sinus runs alongside the development of the jaw and eruption of permanent teeth. Incidence is more prevalent in over 30 years of age.<sup>[ii]</sup> The teeth most commonly involved are the maxillary second molar followed by the maxillary first molar. Due to the better development of the sinus in women than men, the probability of its occurrence is higher in women.<sup>[iii]</sup> Sinusitis, the inflammation of the sinus, is frequently a cause for OAC and OAF especially in its chronic nature, hence necessitating the radiographic follow up of these diseases. The relation of the floor of the sinus to the nasal cavity is of utmost significance given that if the floor is closer to the dental roots or between the roots, the chances of OAC is higher.<sup>[iv]</sup>

**2. Aim**

The aim of the present study is to understand the available management options for OAC.

**3. Symptoms**

The symptoms of OAC can range from purulent discharge through the communication or fistula to patient subjectively feeling entry of consumed oral liquids into the nostril on the same side of the jaw.

**4. Management**

Management initially focuses on follow up of cases with high index of suspicion. It is prudent to establish presence of infection, if any. The longer the communication, more the possibility of infection intensifying it. The possibility of spontaneous healing of these tracts is controversial, with authors divided on either side. Hanazawa et al. have reported spontaneous healing in lesions less than 3mm whereas  $\geq 3$ mm it was not common.<sup>[v]</sup> Martensson et al take into account both the diameter(>5mm) and the duration (3-4 weeks) while predicting the possibility of spontaneous healing.<sup>[vi]</sup> Von Wovern, Ehrl et al. have shown adequate control of infection was vital to the success of therapeutic management and that closure of the perforation was often needed.<sup>[vii, viii]</sup> Guven has shown that in the study carried out in Turkey, not many of the 98 patients required closure of the perforation. The aim being achieving adequate support for the blood clot formation as to promote healing and epithelialisation on both surfaces. Use of figure of eight wire or acrylic splint was found to achieve better support for the healing tissues.<sup>[iii]</sup>

Various surgical approaches have also been studied for treatment of oroantral fistulae. One of the earlier methods was use of buccal advancement flap by Rehrmann in 1936 with its advantage being ease of use. Use of an incision of around 3mm around the OAC and

closed with one or 2 layers with vestibular flap.<sup>[ix]</sup> While it the advantage of use in cases with lo alveolar ridge, it does not protect the bone base. Nowadays it is used preferably for edentulous jaws.

Palatinal flap of full thickness to close the OAF with the mucous membrane of the hard palate was described in 1939 by Ashley et al. It was seen that due to good blood supply and with its thickness, it covered the fistula better. Diameter larger than 1cm could also be covered by this technique. The major advantage is no lowering of the vestibule, flap being firmer is more resistant to infection and trauma. However, the most significant disadvantage was necrosis of the flap.<sup>[x]</sup>

Further modifications of the paltinal flap were published. Takahashi et al and James et al modified the flap by using only the mucosal part and separating it from the submucosal and periosteal layer and this left the palatal surface better protected than the conventional palatinal flap. Ito et al also described in 1980, palatinal submucosal flap technique. All the methods preserve the bone surface and avoid periosteal usage.

Interseptal alveotomy is another technique wherein the incision is along the alveolar ridge of the neighboring tooth towards retromolar regions and over the fistula and vertical osteotomy is done wherein buccal and palatinal wall of the alveolar ridge is broken and close individual sutures are placed. This is considered non-traumatic and safer.

Hanazawa et al. described the use of BFP-pedicled buccal fat pad graft in 1995 to close an OAC. Over 3 weeks, the fatty tissue converts into granulation tissue and later epithelialises.<sup>[v,vii]</sup>

Unsuccessful cases of closure of OAF by above techniques have been treated by radical sinus surgeries.

## 5. Conclusion

Oro-antral communication is an abnormal communication that can occur most commonly due to tooth related factors. It is important to evaluate the patient for the possibility of OAC occurrence prior to extractions with radiographs. A blunt probe test confirms the existence of fistulous tract. Any of the above mentioned surgical techniques can be used for closure of OAC in case of no-closure spontaneously.

## 6. References

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