THE MANAGEMENT OF AN OROANTRAL FISTULA - A CLINICAL STUDY OF 30 CASES

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ABSTRACT

The report presented is an analysis of 30 patients with an oroantral Fistula. The tooth most frequently involved was the upper first molar, followed by the second molar and second premolar. The highest incidence was seen in the third and the fourth decades of life and the lowest incidence in the second decade. In this study intercurrent sinusitis was the most obvious cause of the chronic oroantral communication. Long-term successful closure depends on the technique used, the size and location of the defect, and on the presence or absence of sinus pathology. The buccal advancement flap is the most commonly used in this study. The advantages and limitation of the technique as well as of other techniques are discussed.

INTRODUCTION

Oroantral communication and subsequent formation of an oroantral fistula is a common complication of dental extraction. Due to its anatomical location and close relationship with the teeth, the maxillary sinus occupies an important place in oral and maxillofacial surgery. From a small cavity at birth, the maxillary sinus starts to enlarge during the third month of foetal life and usually reaches maximum development around the eighteenth year. Its volume is approximately (2025) ml in a normal adult. The floor of sinus consists of the alveolar process and the hard palate. The roots of maxillary premolar and molar teeth are in close proximity to the sinus and those of the second premolars and those of the first molars may be observed within it. (Schaeffer 1990 and mustain 1993) reported that the second upper premolars have the most intimate relationship with the maxillary sinus. The study of (Von Bonsdroff 1925) revealed that the second molars are in close proximity to the base of sinus. However, (Killy and Kay 1967, Von Wowern 1971, Ehr11980 et al 1994) have shown that removal of the first molars is the most common aetiological factor in oroantral fistula. An oroantral fistula is an abnormal communication resulting most frequently from extraction of the upper posterior teeth. In this study, we have seen a considerable defect produced when pre-molars and molars together with surrounding bone were removed during an excessively traumatic extraction. (McGovan et al., 1993; Guven; 1995).

Many techniques have been proposed for the closure of the oroantral fistula including buccal or palatal flaps and their modifications. The preferred technique may vary from one surgeon to another, depending upon the past experience. In addition to the above-mentioned techniques, the use of some alloplastic materials has also been proposed which ranged from autogenous bone graft (Proctor, 1969) to gold foil (Goldman et al, 1969). With advancing technology, dura mater and fascia lata, as examples of allotransplants have also been used for closing OAF.

In recent years, the use of a pedicled buccal fat pad in closure of large oroantral defects has become popular. Attempts to close larger defects caused by severe trauma or tumours by local flaps may lead to failure. Distant flaps from the extremities or forehead or tongue have been described earlier. Successful closure is dependent on the absence of pathology within sinus and a proper surgical technique.

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In this study, the clinical course and treatment aspect will be presented;

**PATIENTS AND METHODS**

The survey is based on 30 patients treated by the author between 1995 and 2001. The factor considered were sex, age, cause of the oroantral fistula, incidence and mode of treatment. In this study there were 21 males (70%) and 9 females (30%) Fig 1. The age distribution of the patients is shown in Fig 2. The majority were found in the 31-40 age groups. The distribution of the cases according to aetiology was highest in those involving tooth extraction of 27 cases (90%) Fig 3. The highest incidence was found after extraction of first molars, 15 cases (50%), followed respectively by the second molar 11 (37%) and first premolar 2 cases (6.50%) and third molar 2 cases (6.50%) Fig 4.

**RESULT**

In our study, we treated most of the cases 27 patients (90%) using buccal advancement flap technique BAF. In addition, two cases (6.50 %) were treated using a palatal flap PF and one (3, 3%) using buccal pad of fat. Table shows the distribution of the techniques used in the study. In one of the patients (3.35%), anaesthesia of the infraorbital nerve was observed postoperatively and resolved in 6 weeks post operatively. In three cases (10%), vestibular sulcus height was reduced permanently while the others were temporary and it disappeared in the following weeks. one out of 30 cases (3.06%) needed resuturing due to the failure of the original sutures.
DISCUSSION

Review of the literature as well as our findings demonstrate that OAF usually occurs after the third decade of life. This is in close agreement with the reports of other investigations. Elderly patients with few maxillary teeth appear to have larger sinuses than younger individuals. In this study, the highest incidence was found in the 31-40 years age group.

However, there was no statistically significant difference in the other age groups. The risk of occurrence of OAF in children is reduced because of the relatively small sinus cavity. None of the patients in this study was younger than 15 years old. The frequency of occurrence of OAF was nearly the same in both sexes. However, according to (Lin et al., 1991), females exhibit larger sinuses than males and should, therefore, be at greater risk of OAF.

The result of this study was similar to those of previous studies by Killey and Kay (1967), Von Woweren (1971), PUNWUTIKORN et al. (1994) and Hanazawa et al (1995). We found other causes like cysts, tumours and trauma, in this study. The highest incidence of OAF was found associated with extraction of first upper molar, followed by second molar and the upper second premolar tooth.

In a study by Wowern (1971) 104 oroantral communications he found that the chance spontaneous healing was small and surgical intervention and closure is necessary, in comparison with this study we found no closure is necessary as the communication is small and fresh extraction site and a healthy sinus, provided the clot is protected so that it will be organized and replaced by bone and epithelization of the oral surface occur, and use of prophylactic antibiotics with avoidance of intraoral negative pressure such as nose blowing. In this study, some cases were noticed with preexisting chronic sinusitis.

If there is a healthy sinus wall and mucosa, the opening of the sinus will heal up soon if opening is caused by tooth extraction. In addition, the length and width of the extraction socket is of importance. Shorter and wider extraction sockets are unfavourable to spontaneous closure. In the present study, the clinical diagnosis of chronic sinusitis was always confirmed by radiographic examination.

The treatment of sinusitis includes medical treatment (Antibiotics, nasal decongestant, inhalations and analgesics), the surgical treatment of cases with chronic sinusitis involved a classical Caldwell-Luc procedure. Because of its reliability and straightforward nature, the easy surgical technique of buccal advancement flap was the most frequently used. Other techniques were used much less frequently. In our study, a palatal flap was preferred in those cases which had reduced depth of the buccal sulcus due to an unsuccessful previous attempt at closure of an oroantral fistula. The buccal advancement flap has been criticized by some authors, for example: Von Woweren (1982) and Zide and Karas (1992) because of the postoperative decrease in sulcus depth.

However, it has a broad base, which ensures an adequate blood supply to the flap. The flap mobility is improved by making a parallel incision in the peristium at the base of the flap (Rehrmann, 1936). Although there is an argument that this method reduces the depth of the buccal vestibular sulcus, the studies of (Rehrmann-1936), and (Eneroth and Martensson 1961) showed this to be a temporary problem. These authors used study models from alginate impressions before and after surgery, which showed that the decrease in depth present at 2 weeks has disappeared after about 8 weeks. All the cases in this study were treated by buccal advancement flap which healed almost uneventfully except in one case where vestibuloplasty was done later on. In our opinion the buccal advancement flap technique is simple and is well tolerated by patients with an oroantral fistula, if the underlying sinusitis is treated properly.

Fig 5. Techniques used for closure
REFERENCES

1 Edgerton, M. T., A. Zoveckian: Reconstruction of major defects of the palate, plast. reconstr. surg. 17 (1956) 105-107.


11 Proctor, B: Bone graft closure of larger or persistent oromaxillary fistula. Laryngoscope. 79(1969) 822-825.


