

ORO-ANTRAL COMMUNICATION THROUGH PERIODONTAL DEFECT: A CASE REPORT

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ABSTRACT:

Oro-antral communications are the not-so-uncommon sequelae of oral surgical procedures involving the maxillary posterior area, the prompt diagnosis and management of which is extremely important. Anatomical variations of the maxillary sinus can bring the sinus floor close to periodontal defects of the maxillary posterior teeth. Here we report a case of an oro-antral communication detected during flap surgery of the second quadrant. Immediate closure was done using a xenograft with a collagen barrier. CBCT examination ruled out the presence of any sinus pathology. One year post-surgical evaluation showed the clinical resolution of the defect. The case highlights the importance of careful evaluation of periodontal defects occurring close to the maxillary sinus.

Key words: Oro-antral communication, periodontal defect, bone graft, CBCT

INTRODUCTION:

The maxillary sinus is an important anatomical concern during various oral surgical procedures. Oro-antral communications (OAC) arise mainly after extraction of posterior maxillary teeth due to the close anatomical relationship between the root apices of the molar and premolar teeth and the sinus floor [1]. Development of a communication between the oral cavity and maxillary sinus is a complication which can also be encountered during endodontic procedures of the maxillary posterior

teeth [2]. It can also develop following removal of cysts or tumours of the posterior maxilla or during implant procedures. Epithelialization of an oro-antral communication can transform it into an oro-antral fistula (OAF), which is a rather challenging entity to manage. It must be emphasised that unlike OAC, OAF is characterized by the presence of epithelium arising from the oral mucosa [3].

A number of reports have suggested many alterations in the maxillary sinus following periodontal disease. A histomorphologic

study showed an increasing significant relation between severity of periodontitis and pathological changes of maxillary sinus mucosa [4]. Mora^[5] suggested that extension of periodontal disease into the maxilla can affect the maxillary sinus. Lane and O'Neal^[6] reported the close relationship between deep periodontal pocket and maxillary sinus. However, there is paucity of data in the literature regarding development of an oro-antral communication via a periodontal pocket. Here we report a case of an oro-antral communication existing through a periodontal pocket which was encountered during flap surgery of the maxillary posterior teeth and its management.

CASE DETAIL:

A 44 year old systemically healthy male patient presented to our department with a chief complaint of mobility of lower left back tooth since 6 months. There was associated bleeding and pus discharge and history of occasional swellings on the gums in relation to the same tooth. The medical history was non contributory and no deleterious oral habits were reported. Extra oral examination revealed no relevant findings. On intra oral examination, he presented with generalised 5-6mm pockets with deep pockets (> 10 mm) and grade II mobility of 21. The lower anteriors were missing. Radiographic examination showed generalised moderate horizontal bone loss (Figure 1) with a periodontal endodontic lesion in relation to 21. A small radiolucent area was noticed in

relation to distal furcation of 14 which was attributed to a possible furcation involvement (Figure 2).

Haematological examination showed blood values within normal limits. The treatment plan consisted of endodontic therapy of 21 with full mouth flap surgery and prosthetic rehabilitation of missing mandibular anterior teeth. After initial therapy, the patient was recalled for flap surgery. The surgical phase started with the first quadrant, the procedure and the postsurgical healing of which was uneventful. The patient presented at the next appointment for the surgery of the second quadrant. The flap was reflected and curettage was done with hand instruments. The interdental area between 14 and 15, which had an initial pocket depth of 6mm showed an increase in pocket depth to >10mm after degranulation. Moreover, the base of the defect could not be felt by any instrument. A sterile gutta percha point was inserted into the defect and a radiograph was taken. The radiograph showed the gutta percha point extending obliquely into the left maxillary sinus (Figure 3).

An oro-antral communication was diagnosed. As the size of the defect appeared <5mm in size (Figure 4), it was decided to close the defect. A xenograft (Figure 5) of bovine origin (Osseograft, Advanced Biotech Products, Chennai, India) was packed into the defect and a resorbable collagen barrier (Periodontal Plus AB, Advanced Biotech Products, Chennai, India) was used to stabilize the

graft^[7]. The flap was approximated and sutured using 4.0 black silk sutures and a periodontal dressing was applied. Post operatively the patient was prescribed suitable antibiotics, analgesics and nasal decongestants. Patient was informed of the condition and possible complications and detailed regarding appropriate post-operative care, i.e. to avoid blowing the nose, rinsing the mouth vigorously and sneezing.

In order to exactly estimate the size of the communication and to rule out any possible sinus pathology, the patient was referred for a cone-beam computerized tomography (CBCT) evaluation. On the evaluation, we could find a perforation at the interdental region of 14 and 15 on the floor of maxillary sinus, measuring around 4 mm (Figure 6).

The patient was reviewed daily for 1 week post operatively. At the first post-operative visit, patient reported nasal regurgitation of blood tinged fluid while he took water for brushing the teeth. The problem subsided by itself from the 2nd post operative day onwards. Suture removal was done after 2 weeks. The surgical site showed normal healing and the patient reported no discomfort associated with the sinus area. The patient was regularly reviewed every two weeks for assessing the plaque control as well as for the development of any sinus related complaints.

At three months review, the patient was apparently non symptomatic and the surgical site demonstrated adequate healing (Figure 7). Periodontal probing was

however not attempted to maintain the area undisturbed. The tooth responded normally to pulp vitality tests throughout the review visits and there was no evidence of any periapical changes in radiographs.

DISCUSSION:

Oro-antral communication (OAC) is the space created between the maxillary sinus and oral cavity. The most common precipitating factor of an OAC is the extraction of posterior maxillary teeth, usually the first or second molar ^[8]. The factors influencing the creation of OAC are teeth size and configuration of the roots, density of alveolar bone and thickness of sinus floor, size of the sinus, relation of sinus to the root of upper teeth, rough extraction and misguided manipulation, apical pathosis and attached granulomas, periodontal diseases which may erode sinus floor, presence of cysts and neoplasm, invasive surgery like dental implant placement etc. In the present case, the possibility of an iatrogenic cause, i.e., curettage cannot be ruled out; however considering the proximity of the sinus floor to the periodontal defect and the technique of debridement, it is unlikely that instrumentation created the communication.

Usually an OAC less than 2mm in diameter closes spontaneously but when the defect is more than 3-4 mm in size, the opening persists and requires closure ^[9]. Spontaneous healing can occur in defects smaller than 3 mm if the sinus is healthy. The larger communications should be treated without delay. Untreated OAC

may lead to epithelialization of the tract and lead to formation of oro-antral fistula. OAC, if left untreated, may rapidly cause acute sinus disease. Reports suggest sinusitis in 60% of cases on the fourth day after sinus exposure [10]; therefore for a favourable outcome, early diagnosis of OAC is required [11]. Advanced imaging modalities like CBCT can be helpful in early identification of bony communication/close relation of maxillary sinus and periodontal defects [12]. However, in this case closure of OAC was done immediately and CBCT was taken for further confirmation of the clinical findings.

Vischer et al categorized the treatment modalities of OAC into soft tissue flaps, bone grafts (autogenous, allogeneous, and xenografts), synthetic materials, and other techniques like guided tissue regeneration. Grafting procedures along with GTR are recommended for communications occurring by chronic infections like periodontitis [7]. Sandhya et

al proposed a sandwich technique employing resorbable GTR membranes and freeze dried bone allografts in the surgical management of OAC [13]. In our case, we used a combination of a xenograft with a resorbable collagen barrier. Regular follow up of the patient for one year showed the sustenance of the surgical results and till now, the patient has remained symptom-free.

To summarize, the presence of bone loss due to periodontitis along with antral anatomic variations can easily disrupt the sinus floor integrity during periodontal surgical procedures and may lead to chronic complications. Therefore, the anatomy of maxillary sinus especially the relation of the sinus floor to the maxillary posterior teeth should be carefully evaluated before routine periodontal surgical procedures. With the advent of newer imaging modalities like CBCT, more accurate diagnosis of conditions like OAC is possible.

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FIGURES:



Figure 1: OPG showing generalised horizontal bone loss



Figure 2: IOPA x-ray of 14 showing a small radiolucent in relation to the distal furcation



Figure 3: IOPA x-ray showing gutta percha point extending obliquely into left maxillary sinus

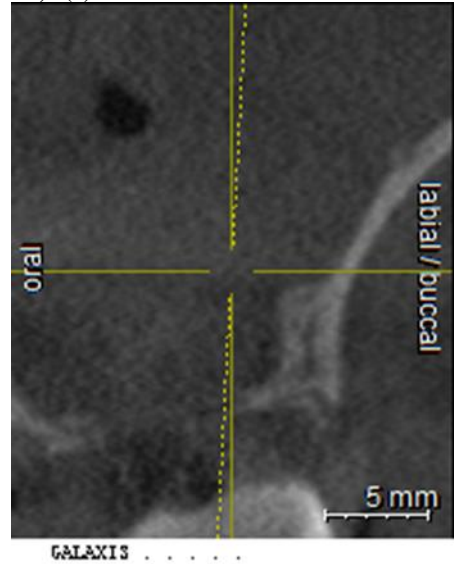


Figure 6: CBCT image showing cross sectional view at the interdental region of 14 and 15 with loss of continuity at the alveolar crest suggestive of perforation.



Figure 4: Clinical picture showing oro-antral communication



Figure 5: communication closure with xenograft



Figure 7: Post-operative view after three months