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Combination of Caldwell LUC and Endoscopic Sinus Surgery for the Removal of Dental Implant from the Maxillary Antrum: A Case Report

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Abstract: ***We introduce a case with an unusual foreign body (dental implant around 8cm in length) which entered in the maxillary sinus after sinus lift procedure. A 65 year - old patient reported at the outpatient department with the complaint of pain on right cheek region post implant placement. Examination revealed displaced implant into the sinus with positional changes seen in panoramic and Cone Beam Computed Tomography images. This article describes the use of the functional endoscopy assisted Caldwell luc approach for the implant removal. This was followed - up with a two - layer soft tissue closure.***

Keywords: sinus lift, dental implant

1. Introduction

The maxillary sinuses are air - filled cavities located above the upper premolars and molars. Communication between the maxillary sinus and the oral cavity (oroantral) or between the nasal and the oral cavity (oronasal), has been considered as an undesired issue (complication) when encountered post dental extractions or other oral surgical procedures. Once the communication occurs, it leads to exchange of microbial flora and inflammation further to major problems hindering faster recovery. Thus, preferably its better to avoid direct contact with sinus. But after tooth loss, the edentulous area in the posterior maxilla undergoes bone resorption and aggravation of sinus pneumatization requiring augmentation procedures. For almost 30 years, the augmentation procedures have been carried out to facilitate implant - directed maxillary reconstruction.

The type of augmentation required is decided based on the morphology of bony defect, that is height and width of the alveolar bone, presence of septa and pre - existing sinus disease. This detailed analysis is done with the help of Cone Beam Computed Tomography. During the delicate lifting process and placement of implant, if there is any perforation it may result in displacement of implant into sinus. A thorough understanding of the implantation and sinus augmentation is crucial to facilitate implant - directed successful maxillary reconstruction. The purpose of this study was to report an unusual case of dental implant displaced into maxillary sinus while insertion and left in situ.

2. Case Report

A 65 year old man, without any uncontrolled systemic diseases, reported to our department in April 2023 after dental implant placement at a local dental clinic with the complaint of pain on the right cheek area and gave history of direct sinus lift done 5 days ago. A diagnosis of acute sinusitis and presence of foreign body in the right maxillary sinus was made. A panaromic radiograph and a Cone Beam Computed Tomography (CBCT) showed the displaced dental implant sited in molar position into the right maxillary sinus with mucosal thickening and dental implants present in first molar and second molar site (figure 1). On Intraoral examination, sutures were present in the posterior molar region extending from first molar to third molar site, buccal vestibular obliteration noticed suggestive of buccal advancement flap used for closure. Patient had no records regarding the procedure when reported.

The implant position in the panaromic radiograph and CBCT were different suggestive of its free movement within the sinus during changes in the patient's position. The treatment plan was to retrieve it through Caldwell luc assisted endoscopic sinus surgery under General anaesthesia. Patient was informed about the treatment and publication and consent was obtained.

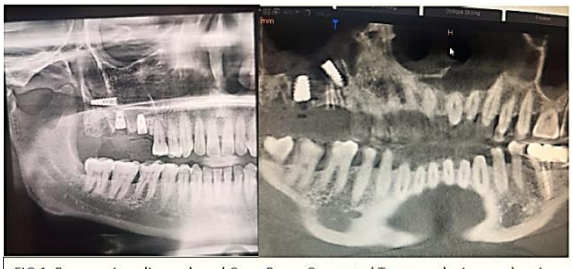

FIG 1: Panoramic radiograph and Cone Beam Computed Tomography image showing positional change in displaced implant in right maxillary sinus

The vestibular incision was placed extending from premolar to tuberosity region, and an existing lateral window was used to access the maxillary sinus. Even after a thorough

debridement as the implant was not visible, Endoscopic approach was utilised. After the detection of the location of implant, artery forceps was inserted through the bony window to retrieve it (Figure 2, 3). Post retrieval, the sinus was irrigated with sterile saline solution and flaps were reapproximated with simple interrupted sutures. Antibiotic therapy and non - steroidal anti - inflammatory drugs were prescribed for 7 days. After the surgery, patient was instructed to avoid blowing his nose for 2 weeks and sneeze with the mouth open. Postoperative course was uneventful and patient had no symptoms of sinusitis after 6 months of follow - up.

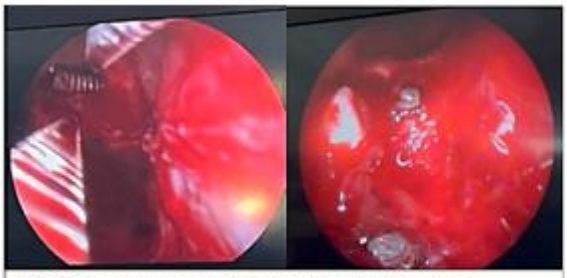

FIG 2: Endoscopic images of right maxillary sinus showing displacement implant and apical portion of implants placed in first and second molar region.

FIG 3: Retrieved dental implant

3. Discussion

Displacement of dental implants into the maxillary sinus is considered iatrogenic as it mostly occurs due to lack of proper surgical treatment planning. In 2000, Lida et al. [11] reported a case of a patient who underwent dental implant placement to replace an upper molar. Five years later, the patient noticed mobility of the implant: the prosthesis was removed but the implant was left in position.11 years later, a panoramic radiograph revealed migrated implant in the right maxillary sinus, and under local anesthesia via an intraoral approach, implant was removed.

Zaid Hamoon et al. (2021) reported 11 patients who had implants migrated into maxillary sinus and had divided the location of displaced site as follows: near the junction of the sinus and nasal floor, the sinus floor above the alveolar bone, near the floor of the orbit, and the most posterior aspect of the sinus. In this study, they concluded that the choice ofsurgical approach to retrieve displaced dental implants from the maxillary sinus depends on the location and the vital anatomical structures surrounding the implant [4]. Galindo - Moreno et al. reported 2 cases of implant migration. In their study the migrated implant was left behind on request of the patient with no signs of clinical complications at 4 - year follow - up visit [6]. Contradicting this, Regev et al. and Raghoebar et al. chronic maxillary sinusitis occurrence from the displaced dental implants left in the maxillary sinus because of a foreign body reaction and concluded that they need to be retrieved even if they were asymptomatic [7, 8, 9].

In most of the reported studies mentioned above, removal of the displaced implant, sinus bone grafting, and new implant placement were divided into two or three individual procedures. Delayed implant placement is usually indicated when primary stability cannot be obtained or when extensive perforation of the sinus membrane or severe sinus infection is present [2]. However, these divided procedures delay rehabilitation of the edentulous area.

Declarations

- Consent for the treatment and publication is obtained.
- Competing interests - Authors declare that they have no competing interest
- Funding - none

Authors' contributions: N. N and R. P performed the surgery. All the authors assisted N. N in preparing the manuscript and provided their suggestions.

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