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Retrieval of Displaced Foreign Objects from Maxillary Sinus: A Case Report

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Abstract

One of the four pairs of paranasal sinuses found inside the facial skeleton is the maxillary sinus. Occasionally, foreign bodies like implants, paralleling pins, ZOE packs get accidentally lodged in the maxillary sinus, causing pain, discomfort, and even complications. Some treatment modalities proposed for removal of the displaced foreign bodies in the sinuses followed by the treatment of associated infectious complications are, a trans-nasal approach using functional endoscopic sinus surgery and an intraoral approach by the creation of a window in the maxillary sinus's anterior-lateral wall

Keywords: maxillary sinus, foreign bodies

Introduction

The largest paranasal sinus is the maxillary sinus, which has a pyramidal shape. The maxilla's facial surface forms the anterior wall of the sinus; the maxilla's infratemporal surface forms the posterior wall, the delicate, triangular orbit floor forms the superior wall; and the medial wall divides the sinus from the nasal cavity.

Over the years, the rehabilitation of edentulousness has seen a surge in popularity for implant-supported prostheses. [1] Implant migration or the migration of objects like paralleling pins utilized to assess the position and angle of the osteotomy and to precisely space and align implants in a parallel fashion, into the sinuses may occur in the absence of any pertinent infection signs and symptoms, but it may also be linked to oroantral communication and/or infection, which may affect the sphenoid, frontal, ethmoidal, and maxillary sinuses. To avoid such complications, it is imperative to remove these displaced foreign bodies as soon as possible. [2] The most common consequence of a foreign body in the maxillary sinus that has been reported is

sinusitis, which can lead to more severe illnesses like panophthalmitis, pansinusitis, and orbital cellulitis [3-5]

Although reports of implant migration into the ethmoid or sphenoid sinus exist, displacement most frequently takes place into the maxillary sinus. [6-12]

Some primary treatment modalities proposed for removal of the displaced foreign objects in the sinuses followed by the treatment of associated infectious complications are, a trans-nasal approach using functional endoscopic sinus surgery and an intraoral approach by the creation of a window in the maxillary sinus's anterior-lateral wall [13-18]

Aim

Aim of this paper is to demonstrate a case of retrieval of displaced foreign body from the maxillary sinus

Technique

General anaesthesia was administered. The right nostril was used for nasotracheal intubation. A 5% betadine solution was used for skin preparation. Local anaesthesia with adrenaline was injected from the 11th to the 27th region. A crevicular incision was made from the 11th to the 25th region, which continued as a crestal incision over the 26th and 27th regions. The mucoperiosteal flap was reflected to expose the antero-lateral wall of the maxillary sinus. The sinus was osteotomized and examined for any foreign objects after thorough saline irrigation. No foreign object was found in the maxillary sinus, and the sinus membrane was healthy and intact. An ENT team was consulted to check if the foreign object was in the nasal cavity. However, they were unable to locate the object and stated that it was unlikely to be there due to the absence of inflammation in the turbinate and the intact maxillary sinus. C-Arm images were taken, and 2 periosteal elevators were used for localization. The first elevator was placed in the midline of the palate, extending to the soft palate, and the second was placed in the extraction socket of the 26th tooth. The foreign object was visualized in the oropharynx at the level of C5. The anaesthetist was called in to remove the throat pack, and the foreign object was found near the opening of the oesophagus. A heavy artery forceps was used to retrieve the foreign body, and intraoral irrigation with Metrogyl was performed. Closure was done using 3-0 vicryl sutures.

Figure 1: Depicts elevation of mucoperiosteal flap to expose antero-lateral wall of maxillary sinus

Figure 2: Depicts examination of maxillary sinus for any foreign objects

Figure 3: Depicts the retrieved paralleling pin from, near the opening of the oesophagus

Case report

Male patient, 45-year-old, reported to sree Balaji dental college and hospital due to implant failure, the patient was referred to the department of prosthodontics for

management, from where they sent the patient to department of periodontics for bone grafting. There was an incident in the procedure where a paralleling pin used for assessing the position and angle of the osteotomy got displaced into the maxillary sinus. The patient was then referred to the department of oral maxillofacial surgery with the chief complaint of paralleling pin being displaced into the maxillary sinus. There was no history of ENT bleeding, nausea, vomiting, headache. There was no recorded medical history of diabetes mellitus, hypertension, coronary artery disease, bronchial asthma, epilepsy. Patient complained of pain over the left cheek region. Facial asymmetry was observable and there was a swelling present over left cheek, there were no other evident extra oral findings. Intra orally there was an implant in relation to 27, extraction socket in relation to 26 and sutures were placed in relation to both 26 & 27. Patient was advised to take chest x-ray, ECG, CBC, BT CT, LFT, serum electrolytes levels. An ENT opinion was obtained and anaesthetic fitness was obtained under ASA 2. An experienced OMFS surgeon performed the surgery using Caldwell-Luc technique with the help of an ENT team. At the level of C5, the foreign object was visible in the oropharynx. When the anaesthetist arrived to remove the throat pack, the foreign object was discovered close to the oesophageal opening. The foreign body was removed with a heavy artery forceps, and Metrogyl intraoral irrigation was carried out. Vicryl sutures (3-0) were used for closure. Patient experienced mild headache after the procedure. Patient was asked to follow semi-solid or soft food diet for a week. Immediate follow-up was done after discharge, after 1 week, 2nd week and 1 month, patient was normal and there were no complications.

Figure 4: Depicts the pre-op OPG of the patient, where we can see the paralleling pin displaced into the maxillary sinus

Figure 5: Depicts the post-op OPG of the patient, paralleling pin has been removed successfully

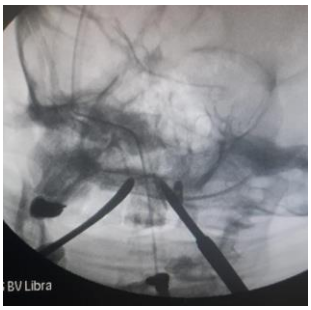

Figure 6:

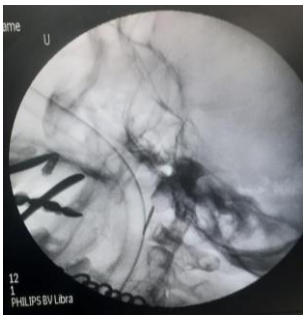

Figure 7:

Figure 6 & 7: Depicts the c-arm images where 2 periosteal elevators were used for localization

Figure 8:

Figure 9:

Figure 8 & 9 Depicts the extra-oral post-op photographs of the patient, there is no more swelling present in the left cheek region

Discussion

Four surgical approaches can be used to manage this complication: (i) intraoral removal using the Caldwell-Luc technique; (ii) removal through the alveolar bone; and (iii) a combination of the aforementioned two methods (iv) functional endoscopic sinus surgery. Implant displacement into the maxillary sinus can result in a number of issues with different outcomes if it is left untreated. This case emphasizes the value of conducting a comprehensive investigation and exploration when the preliminary assessment fails to identify the foreign body in the suspected location. In order to successfully locate and remove foreign bodies in complex cases, it highlights the importance of collaboration among various medical specialties, including radiology, OMFS, otolaryngology, and anaesthesiology. This case also highlights the importance of modifying the surgical strategy in response to new information and utilizing cutting-edge imaging methods like C-Arm to precisely locate the foreign object. Ensuring a safe and successful outcome for the patient required effective communication and coordination among the members of the healthcare team. C-Arm images were taken, and 2 periosteal elevators were used for localization.

Conclusion

Treatment for the unexpected displacement of a paralleling pin into the maxillary sinus can be challenging. This kind of issue was once uncommon and irregular, but in the last few years, its occurrence has increased dramatically. Thus, before beginning the implant planning process, it is crucial to precisely assess the unique features of the patient as well as the location of the bone. According to this theory, the surgeon has to evaluate any potential intraoperative problems and, if needed, refer the patient to a physician with greater experience. The migrated paralleling pin needs to be extracted from the maxillary sinus as soon as this occurrence happens because it may eventually lead to late sinusitis brought on by a foreign body reaction, which may happen years later. [19]

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