

Retrieval of the displaced implant from maxillary sinus – A case report

¹Dr. Arushi Mahajan, Post graduate, Department of Prosthodontics, Dasmesh Institute of dental sciences and research, Faridkot, Punjab

²Dr. Poonam Bali, Professor, Department of Prosthodontics, Dasmesh Institute of dental sciences and research, Faridkot, Punjab

³Dr. Ramandeep Brar, Professor, Department of Oral Surgery, Dasmesh Institute of dental sciences and research, Faridkot, Punjab

²Dr. Rajnish Bansal, Professor, Department of Prosthodontics, Dasmesh Institute of dental sciences and research, Faridkot, Punjab

⁴Dr. Manpreet Brar, Assistant Professor, Department of Prosthodontics, Dasmesh Institute of dental sciences and research, Faridkot, Punjab

Corresponding Author: Dr. Arushi Mahajan, Post graduate, Department of Prosthodontics, Dasmesh Institute of dental sciences and research, Faridkot, Punjab

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Abstract

Implant placement in edentulous spaces is part of routine procedures. But no procedures are without any complications. One of the complications is implant displacement into the maxillary sinus. In this case report, implant was surgically retrieved using Caldwell-Luc Technique.

Keywords: Implant displacement, implant retrieval, Caldwell-Luc Technique, Maxillary Sinus, Implant complications

Introduction

Tooth loss is very common. It can happen as a result of disease or trauma. Dental implants are used for replacement of missing teeth. After extraction, insufficient bone height is frequently seen in the posterior maxilla due to postextraction bone remodelling and pneumatization of maxillary sinus.

Although dental implants have become a predictable aspect of tooth replacement in prosthodontic treatment, failures of up to 10% are still encountered¹. These failures are associated with poor bone quality such as encountered in the maxillary posterior area.

Maxillary Sinus

The maxillary sinus or the antrum of Highmore, is the largest of the paired paranasal sinuses. It is usually pyramidal in shape. It has a volume, approximately of 15cc. Anteriorly, the maxillary sinus is found just behind the anterior wall of maxilla. Medially it is bounded by the lateral wall of the nose. Posteriorly, by the infratemporal surface of the skull. The floor is formed by the three maxillary molars, although, it may extend upto the apices of premolars, also but rarely, to the canine.

Complications involving the maxillary sinus include perforation of the sinus membrane, bleeding from the sinus cavity, displacement of implants or other materials into the maxillary sinus, and postoperative sinusitis²

One of the most likely areas for transsurgical complications is the posterior maxilla. This region is characterized by soft bone with no cortical portions and a large trabecular portion, which will probably destabilize the implant and could cause failure. Typically, the resorption of the alveolar ridge, sinus pneumatization, and inflammatory reaction in the peri-implant tissues may promote the displacement of the implant into the sinus cavity³].

This article presents a clinical case report of removing implants displaced into the maxillary sinus.



Fig 1 – a: Dental implant placed in the region of 23, 25 and 27.



Fig 1 – b: Situation of implants after 3 months.

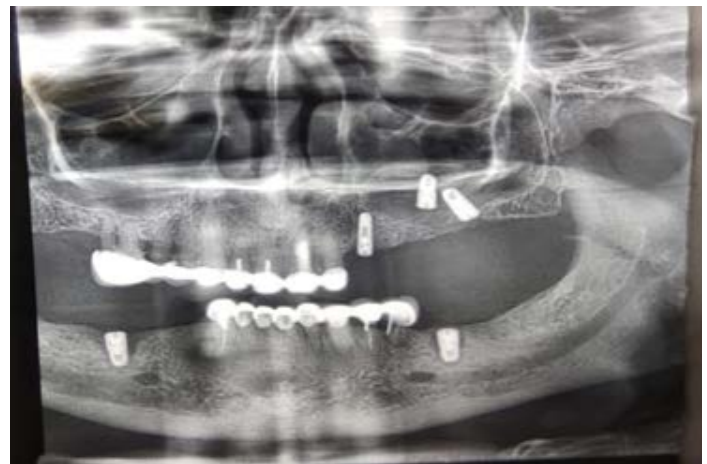


Fig 1 – c: Situation of implants after 6 months.



Fig 1 – d: Displaced implants seen in the region of 25 and 27. The implant in the region of 27 was seen lying on the floor of the sinus wall, whereas the implant placed in the region of 25 was seen lying at the level of lateral wall of nose, at the level of ostiomeatal complex



Fig 2: Clinical photograph showing membrane perforation through the left bone window to gain full access into the sinus cavity.



Fig 3: Picture showing the displaced implant after removal.

Case Report

A 70 year male patient was referred to the department of Oral and Maxillofacial Surgery of Dasmesh Institute of Dental Sciences and Research, Faridkot, Punjab with the chief complaint of pain in the region of maxillary second quadrant since 1 month. According to the history given by the patient, he had undergone implant placement in the maxillary left anterior and posterior region 8 months back {Figure 1 (a)}. 8 months after the surgery, the patient reported of pain in the sinus region.

On panoramic radiograph, dental implant displaced in the region of 25 and 27 were seen. The implant placed in the

region of 27 was seen lying on the floor of the sinus wall, whereas the implant placed in the region of 25 was seen lying at the level of lateral wall of nose, at the level of ostiomeatal complex {Figure 1 (b) – 1 (d)}.

Surgical Protocol - The patient was operated under general anaesthesia. Patient consent was taken prior to surgery. The surgical approach planned was the Caldwell-Luc procedure. Crestal incision and release incision was given in 2nd quadrant in the region of 25 and 27. Trapezoidal full-thickness mucoperiosteal flap was raised. (Figure 2). Anterior maxillary sinus bony wall was exposed. A low-speed straight hand piece with round diamond bur was used to perform spherical osteotomy. Schneiderian membrane was perforated through the bone window and full access into the sinus cavity was achieved (Figure 2). Sinus cavity was irrigated with sterile saline and the implants were identified which were removed with a long mosquito artery forcep. The surgical flap was approximated and sutured back using 3-0 mersilk to close the surgical defect. After extubations, patient was shifted to ward and discharged next day. Patient was prescribed oral antibiotics and anti-inflammatory therapy drug every 8h and nasal decongestants for 7 days. The postoperative recovery was uneventful and sutures were removed after 7 days.

Discussion

The displacement of dental implants, like that of any other foreign body into the interior of the maxillary sinuses can cause inflammatory reactions in the maxillary sinuses, which may extend to other cavities, such as the paranasal, orbital, and intracranial cavities, thus, aggravating the patient's condition⁴.

Osteotomies for the bony window creation can be performed with traditional rotary instruments, or with piezoelectric instrumentation^{5,6}

There are few works reported in the literature about implant migrations into the paranasal sinuses.

Regev et al.⁷ reported three different cases of implant migration, and two of them were displaced into the maxillary sinus. One occurred at the time of abutment connection due to failure in osseointegration. The other was observed two months after implant placement in the anterior maxilla, where an autogenous onlay bone graft had been performed. The authors had suggested that the underlying osteopenia and the occlusal forces from the maxillary denture could be a reason for the displacement in the latter case.

Iida et al.⁸ reported a case of a patient who underwent dental implant placement in the region of second upper molar. Five years later, the patient noticed mobility of the implant. The prosthesis was removed from the implant, but the implant was left in position, and he underwent occlusal reconstruction of the area with an extension bridge. 11 years later, radiograph revealed displacement of the implant into the right maxillary sinus, and the implant was removed under local anesthesia.

Raghoobar and Vissink⁹ reported a case of a patient who went through three dental implants placement. After three months, the migration of an implant into the maxillary sinus was discovered after a radiograph. The implant was removed with a sinus graft reconstruction under general anesthesia.

Kitamura¹⁰ reported a case of a patient with discomfort in the right maxilla and a discharge of pus from the nose. Panoramic radiographs and CT scans showed the displacement of an implant in the right maxillary sinus. The patient underwent endoscopic removal of the implant under general anesthesia.

Galindo et. al.¹¹ reported two asymptomatic cases of implant migration: one implant was kept in place after the patient refusal to undergo the operation; in the second

case, the patient consented to surgical intervention, and the removal was performed 3 years later.

In the literature, we can find various possible explanations of the implant migration.

1. Bone resorption
2. Over-instrumentation of the bone site.
3. Posterior implant should be left undisturbed for proper osseointegration.
4. Inflammatory reaction around the implants
5. Changes in nasal air pressure

The majority of authors seem to agree that removal of implant that has been displaced into the sinus is a must to avoid any complications. Various different procedure has been described by different authors.

Conclusion

In the present era, Dental implant placement is a routine procedure. For a successful implant placement, primary stability is required. The displacement of dental implants into the maxillary sinus is rarely reported. Displaced implants should be removed in order to prevent any possible sinus diseases.

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