



## Endoscopic Retrieval of Dental Implant from Maxillary Sinus

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### ABSTRACT

**Aim:** Minimally invasive method for retrieving displaced objects like implants from the maxillary antrum with minimal complications.

**Background:** Minimal invasive endoscopic surgery has been developed for various indications in the craniomaxillofacial area.

**Case description:** In this article, a technique for endoscopic removal of a dental implant displaced into the maxillary sinus is presented. Access to the implant was achieved transorally via the canine fossa. The endoscopic surgical approach described was reliable and minimally invasive for removing dental materials displaced into the maxillary sinus.

**Conclusion:** Transantral endoscopic surgery is a reliable, minimally invasive method for retrieving displaced objects from the maxillary antrum with minimal complications.

**Keywords:** Implant retrieval, Maxillary sinus, Sinus endoscope, Caldwell Luc approach, Crocodile forceps.

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**Conflict of interest:** None declared

### INTRODUCTION

Implant treatment is regarded as a safe technique with high rates of success<sup>1-5</sup> and has become the treatment of choice for rehabilitating missing teeth. Nevertheless, several complications can occur and that must be known in order to prevent or solve them.<sup>6</sup> The complicating factors can be divided into following categories: surgery related implant loss, bone loss, peri-implant soft tissue disease, mechanical problems and esthetic/phonetic results.<sup>7</sup> Displacement of dental implant into the maxillary sinus is one of the complications, which although rare, can occur.

The maxillary sinus is the widest paranasal air sinus, pyramidal in shape and varies remarkably in size. The average size in adulthood is 27 mm in transverse (mediolateral) dimensions, 35.6 mm in width (anteroposterior) and 37 mm in height (supero-inferior).<sup>8</sup> Its pneumatization is related to the age of the patient and presence of teeth. Placement of dental implants in the maxillary arch needs caution because of its close proximity to the maxillary sinus. Accidental displacement of implant into the maxillary sinus has been reported as a complication during placement of dental implants<sup>9</sup> or during the healing phase.<sup>10</sup> The following is a case report of an implant displaced into the maxillary sinus during the healing period and its endoscopic retrieval.

### CASE REPORT

A frantic 58-year-old female patient reported to the Department of Prosthodontics, SVS Institute of Dental Sciences, with a missing implant in the upper jaw. Past dental history revealed that the patient had undergone single stage surgical implant placement procedure in relation to 31, 42, 44, 46, 25 and 27, which was preceded by grafting the left maxillary sinus through a direct approach. An OPG (Fig. 1) confirmed the intraoral findings and found the missing 27 implant in the left maxillary sinus. A PNS view (Fig. 2) precisely located the implant close to the infraorbital ridge in the sinus. Patient however, had no history of pain, cold or change of tone and was worried whether the missing implant had been swallowed or inhaled. An ENT opinion was taken and an endoscopic procedure was planned for implant retrieval.

Patient was put on prophylactic antibiotics for a week prior to the surgery. The endoscopic surgery was carried out in the Department of Oral and Maxillofacial Surgery under local anesthesia. Since the implant appeared far away from the nasal cavity, an intraoral Caldwell Luc approach

(Fig. 3) was taken to retrieve the implant. The implant in the sinus was spotted with the help of a Karl Storz endoscope (Figs 4 and 5), and retrieved using a crocodile forceps. Following implant retrieval (Fig. 6) from the sinus the patient was under observation for a couple of weeks and declared fit for prosthetic rehabilitation.

### DISCUSSION

Occasionally, displacement of implants into the sinus may occur, either during implant insertion or during functional

loading period. Although some of cases may remain asymptomatic, such situation usually results in inflammation of the corresponding sinus, obviously requiring some kind of treatment. Even in asymptomatic cases, removal of displaced implant should not be postponed, since it may result in migration of implant into distant spaces, such as nasal cavity,<sup>11</sup> sphenoid sinus,<sup>12</sup> orbit<sup>13</sup> or even anterior cranial fossa.<sup>14</sup>

In available literature, two endoscopic techniques for removal of implants were described, creating access to the sinus through canine fossa or through middle meatal antrostomy. It seems that in cases of sinus related complications in implantology, several factors have to be considered before the decision regarding the most suitable treatment option can be made. Chronic sinusitis with obstruction of the sinus ostium probably should be treated by FESS, and middle meatal antrostomy can be used for removal of foreign bodies, including implants and grafting material, as well. Finally, in a study from Aimeti et al, it was shown that inferior meatal antrostomy and insertion of

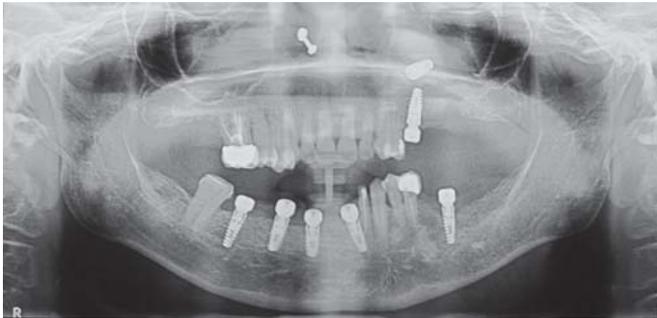


Fig. 1: OPG showing displaced implant in left maxillary sinus



Fig. 2: PNS view showing implant close to infraorbital rim in maxillary sinus



Fig. 3: Caldwell Luc approach through canine fossa to access the implant in the sinus



Fig. 4: Karl Storz endoscope for visualizing implant position

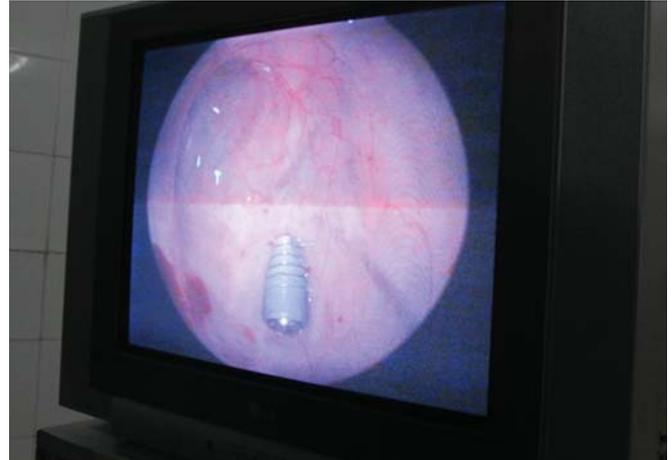


Fig. 5: Endoscopic view of implant position in the maxillary sinus



**Fig. 6:** Implant retrieval by using crocodile forceps

nasosinus tube might be useful in treatment of sinus lift complications.<sup>15</sup>

## CONCLUSION

Treatment of implant-related complications involving the maxillary sinus, endoscopic surgery has a potential to provide effective treatment of those cases, similarly to treatment of odontogenic sinusitis of non-implant etiology.

## CLINICAL SIGNIFICANCE

In situations with no or minimal signs of sinusitis and with preserved patency of the ostium, access via canine fossa is simple and effective for retrieval of displaced implants. When such an intervention is performed under the endoscopic control, it is possible to create significantly smaller bony window in the sinus wall, which should provide uneventful healing of the defect, without long-term effect on the corresponding sinus health.

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