

# Accidental Displacement and Migration of an Endosseous Implant Into Submandibular Fossa

Amerigo Giudice, MD, PhD\*  
 Walter Colangeli, MD  
 Ida Barca, MD  
 Umberto Riccelli, MD  
 Daniela Novembre, MD  
 Maria Giulia Cristofaro, MD

## INTRODUCTION

The introduction of endosseous dental implants as an option for restoring partially and fully edentulous patients has revolutionized dental treatment. Their predictability, functionality, and durability make them an attractive option for patients and clinicians alike, although complications can arise at any stage from patient assessment to maintenance therapy.

The insertion of an implant without an adequate primary stability or with poor bone integration commonly leads to implant failure, and rarely to its accidental migration into adjacent craniofacial structures. Foreign bodies are commonly displaced into paranasal sinuses and upper craniofacial structures, but rarely involve the mandible and lower facial structures or the neck. We present a case of implant displacement into the submandibular fossa, a rare complication that requires an important and quick management.

## CASE REPORT

A 45-year-old woman presented to the maxillofacial unit of the Università Magna Graecia di Catanzaro (UMG) with pain and swelling of the left submandibular fossa with chin numbness and trismus. She had been undergone dental implant surgery 5 days before in the No. 16–17 mandibular area.

The dentist who referred the patient had attempted implant placement in the left mandibular second molar area. The patient's preoperative orthopantomogram (Figure 1) showed the loss of some teeth in the lower jaw many years before, resulting in a long period of partial edentulism. The dentist planned to place 2 implants in the first and second left mandibular molar area. He did not use any surgical guide, and a presurgical computerized tomography (CT) scan was not performed. During the surgery, the patient felt an unusual pain while the dentist was performing the implant insertion. At that point, the dentist did not feel the implant any more, stopped the surgery, closed the wound, and discharged the patient with antibiotic therapy. The day after and during the 2

subsequent days, the patient felt progressively worse, with swelling and pain in the area of the surgery. On the fifth day, she attended the emergency unit of UMG.

Upon clinical examination, there was swelling of the left cheek and submandibular area with a slight limitation in oral mouth opening. In the oral cavity, the gums of the operative wound appeared slightly swollen and tender. Cranioradiographs showed the presence of a foreign body in the left submandibular fossa (Figure 2). A CT scan was then performed to examine the surgical field and the relationship between the foreign body and neck structures (Figure 3). Antibiotic therapy (amoxicillin 1000 mg and clavulanate 200 mg intravenously every 12 hours) and steroids (dexamethasone 4 mg intravenously once per day) were administered for 5 days with partial resolution of the symptoms. Then, the patient underwent surgery under general anesthesia: a submandibular approach was performed to access the submandibular space, and a blunt dissection around the submandibular gland was necessary to detect and remove the migrated implant (Figures 4 and 5). The implant had migrated from the oral cavity to the medial portion of the submandibular gland (Figures 6 and 7). The patient was discharged from hospital 4 days later. At 8-month follow-up, wound healing was satisfactory, but the patient felt persistent chin numbness.

## DISCUSSION

Accidental intraoperative displacement and delayed dental implant migration forward of the adjacent craniofacial structures have been reported.<sup>1–4,6</sup> Mechanisms of implant migration into the maxillary sinus have also been widely discussed.<sup>3,7–9</sup> The maxillary sinus is the more common location than the neck for implant displacement.

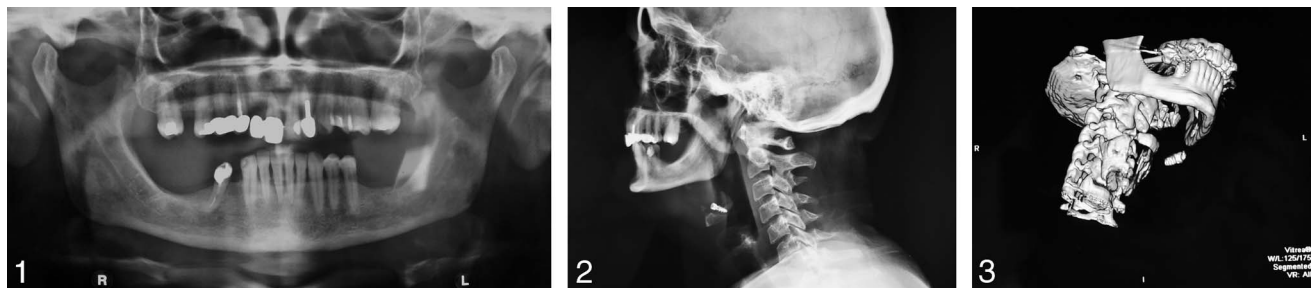
Accidental intraoperative displacement is more often correlated with poor primary stability and an uncorrected planning program.<sup>9–11</sup> The removal of displaced implants is advised, as is the removal of other metallic foreign bodies, in order to prevent the development of infection or chronic irritation.

We present a unique case of a displacement into the submandibular space that occurred as a surgical complication, probably due to an incorrect countersink of the implant site. The poor primary stability and the fracture of the mandibular

Oral Maxillofacial Surgery Unit, Università Magna Graecia di Catanzaro, Italy.

\* Corresponding author, e-mail: amerigogiudice@hotmail.com

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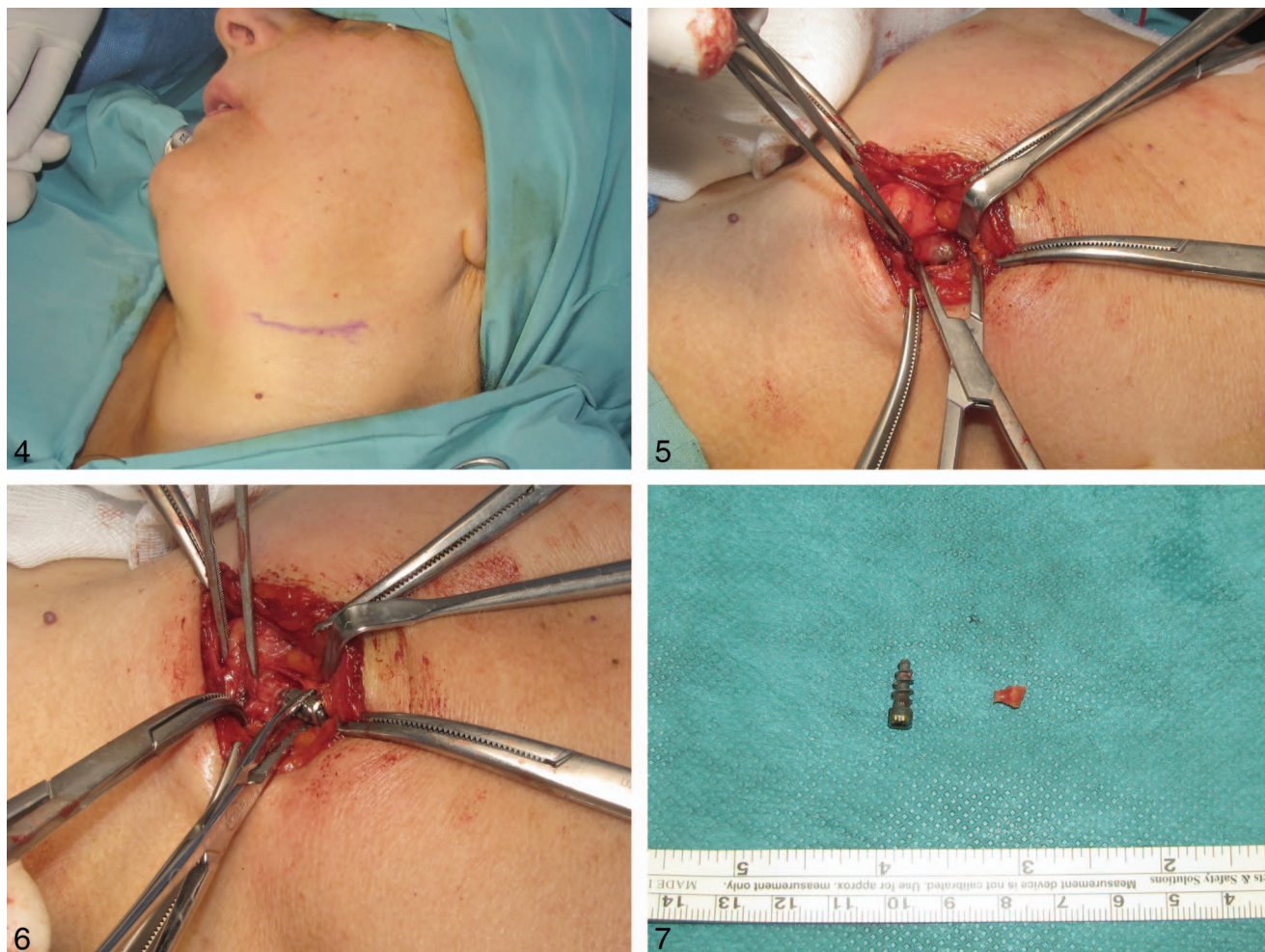


**FIGURES 1–3.** **FIGURE 1.** Preoperative implant surgery panoramic radiogram. **FIGURE 2.** Preoperative radiograph. **FIGURE 3.** Preoperative 3-dimensional computerized tomography scan.

lingual cortex led to the implant displacement. It is appropriate to remark that if the implant does not provide enough primary stability, it should be removed to avoid immediate or delayed migration and further complications. The operative technique involving drilling, countersinking, and implant installation is a very important factor in jaw implant surgery, especially in the Nos. 17, 18, 31, and 32 area. When performing surgery, the surgeon should always remember that the submandibular fossa imprints the posterior lingual part of the mandible. Poor

preoperative knowledge may affect the choice of implant length and angulations, which can finally protrude through the lingual bone cortex.

After the posterior mandible teeth have been extracted, it is common to lose a portion of the thickness of the bone. This phenomenon leads the clinician to place the implant too far lingually to avoid the alveolar nerve or further grafting procedures. Intentional angulation of implants in the posterior mandible is another careful procedure that can be used to



**FIGURES 4–7.** **FIGURE 4.** Intraoperative incision. **FIGURE 5.** Intraoperative surgery, implant detection. **FIGURE 6.** Intraoperative surgery, implant removal. **FIGURE 7.** Removed implant.

place implants of adequate length in case of insufficient bone height.

We suggest special attention be paid when performing these procedures because of the presence of the alveolar bundle and the mylohyoid ridge. Treating these areas properly requires the implant surgeon to be motivated in exercising his best skill and technique.

The implant surgeon must keep in mind the scope of treatment, the importance of planning, and the potential consequences of a failed procedure in such a sensitive area. It is also critical that the surgeon know the location of the neurovascular bundle and the shape of the posterior mandible before drilling holes for implants. Computerized tomography scan images are the most accurate measurement of the alveolar shape, allowing the clinician to note the inclination of the alveolar cortical bone and the shape or the narrowing of the ridge. Cross-sectional images can easily be used to assess the location of the anatomy of the concavity from the mylohyoid ridge.

Foreign body removal, even when there are no related symptoms, is also recommended to avoid triggered inflammation or a malignant change. Displaced foreign bodies should be removed as soon as possible to prevent further complications, and both medical and surgical therapies are mandatory. This case featured a patient referred to the hospital feeling pain, with a severe swelling of the cheek involving the neck, and with difficulty in mouth opening. We approached the neck through the submandibular incision as soon as possible to remove the foreign body (Figure 6).

Accidental implant displacement into the submandibular fossa is a rare localization of the migration site for implants, with a very high risk complication of damaging the adjacent structures. Removing the foreign body should be evaluated correctly by determining the size and the exact location of the foreign body. The key factors in minimizing dental implant complications are the selection of an experienced implant

dentist, careful preoperative treatment planning, and proper aftercare.

#### ABBREVIATIONS

CT: computerized tomography  
UMG: Università Magna Graecia di Catanzaro

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