

Retrieval of an Unusually Displaced Implant With Healing Cap Into the Mandibular Canal

Vugar Gurbanov, DDS, PhD
 Damla Torul, DDS, PhD
 Dilara Kazan, DDS*

Accidental displacement of dental implants into the anatomical spaces is a rare complication that may be accompanied by tissue damage, functional disturbance, psychological distress, and medicolegal conditions. The aim of this report is to present an unusual case of a dental implant that displaced into the mandibular canal and to highlight the importance of adequate preoperative planning and surgical knowledge.

Key Words: complications, dental implants, displacement, oral surgery

INTRODUCTION

Dental implants are considered a reliable treatment option that provides long-term success and functionality for the rehabilitation of tooth loss.¹⁻³ However, despite the impressive success rates, several complications associated with implant surgery can inevitably occur.^{4,5} Displacement of dental implants is a rare but well-known complication of implant surgery. Damage to the vital structures and the necessity of a subsequent surgical procedure for implant retrieval that may trigger further complications are among the most undesirable consequences of this complication.⁶⁻⁹ Several cases of displacement into different anatomical locations such as maxillary,¹⁰ ethmoid,¹ sphenoid sinuses,² mandible,^{3,9} and sublingual,⁷ submandibular,⁸ and submental⁶ spaces have been reported previously.

This report presents details of an unusual case requiring the retrieval of a dental implant that horizontally displaced into the mandibular canal with its healing cap.

CASE REPORT

A 51-year-old woman was referred by a local clinic for further evaluation of a foreign object that was detected incidentally during a routine dental examination in the right mandibular molar region. The medical history of the patient was noncontributory. She had no history of osteoporosis and had not been medicated with any drugs. The patient had a history of dental implant installation to the right mandibular molar region approximately 5 years ago in a local clinic. She reported that 3 months after the first surgery, a second operation was performed by the same practitioner, and numbness on the right mandibular region of her jaw occurred the day following

the surgery. She also reported that due to this numbness, the practitioner prescribed vitamins but did not inform her about the reason for this alteration.

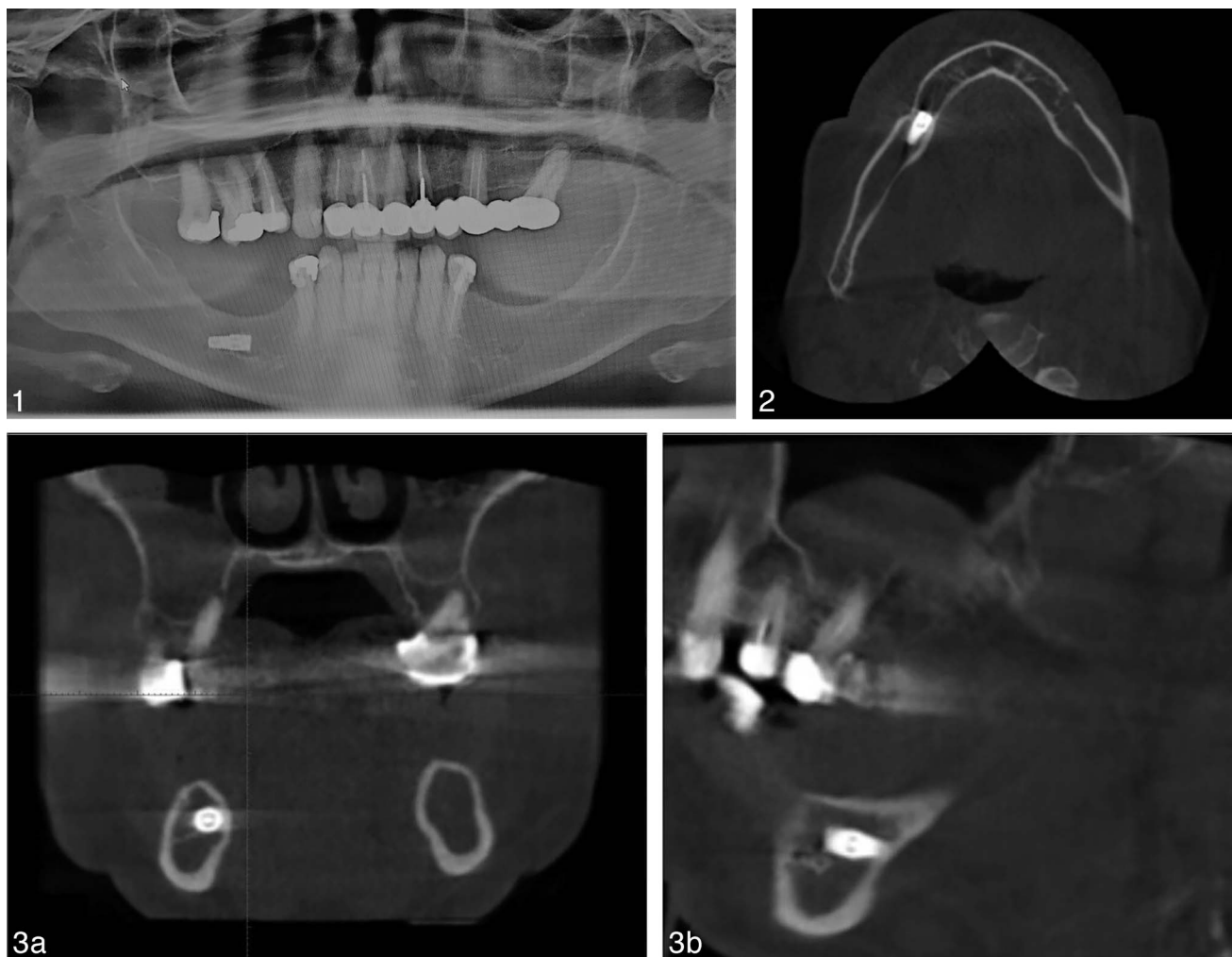
During clinical examination of the patient, no intraoral pathology was detected. Radiographic evaluation with panoramic radiography (Figure 1) and cone-beam computerized tomography scans showed the presence of a displaced implant located horizontally in the mandibular canal in the right mandibular first molar region (Figures 2 and 3a and b). Only a slight transposition was observed in the location of the inferior alveolar nerve. However, no abnormality in the bony architecture of the mandible was detected. To evaluate neurosensory function, a 2-point discrimination and discrimination between sharp and blunt instruments tests were performed. Reduced response to neurosensory function tests was detected in the right mandibular region. Because of the difference in sensation between the right and left mandibular regions and presence of intermittent pain that affected the patient's quality of life, retrieval of the implant was decided. All possible complications were explained to the patient in detail, and informed consent was taken.

Surgery was performed under local anesthesia. An incision from the mandibular first premolar to the third molar region was made. The mucoperiosteal flap was reflected carefully to prevent damage to the mental nerve. The buccal aspect of the surgical site was exposed. A rectangular osteotomy encompassing the estimated location of the mandibular canal was performed. After removing the bone adjacent to the mental foramen, the displaced implant was seen deeply in the surgical cavity (Figure 4). The bone around the implant was removed with care to prevent further damage to the inferior alveolar nerve. The implant was elevated and explanted with the help of a forceps (Figure 5). After irrigation of the surgical area, closure was performed with 3/0 silk suture. The patient was prescribed oral antibiotics and analgesics for 1 week. The postoperative course was uneventful, except for increased impairment in neurosensory functions (Figure 6). Three months after the operation, significant improvement was observed in neurosensory functions. The patient is still under periodic follow-up.

Ondokuz Mayıs University, Faculty of Dentistry, Department of Oral and Maxillofacial Surgery, Samsun, Turkey.

* Corresponding author, e-mail: dilarakzn@gmail.com

DOI: 10.1563/aaid-joi-D-18-00021



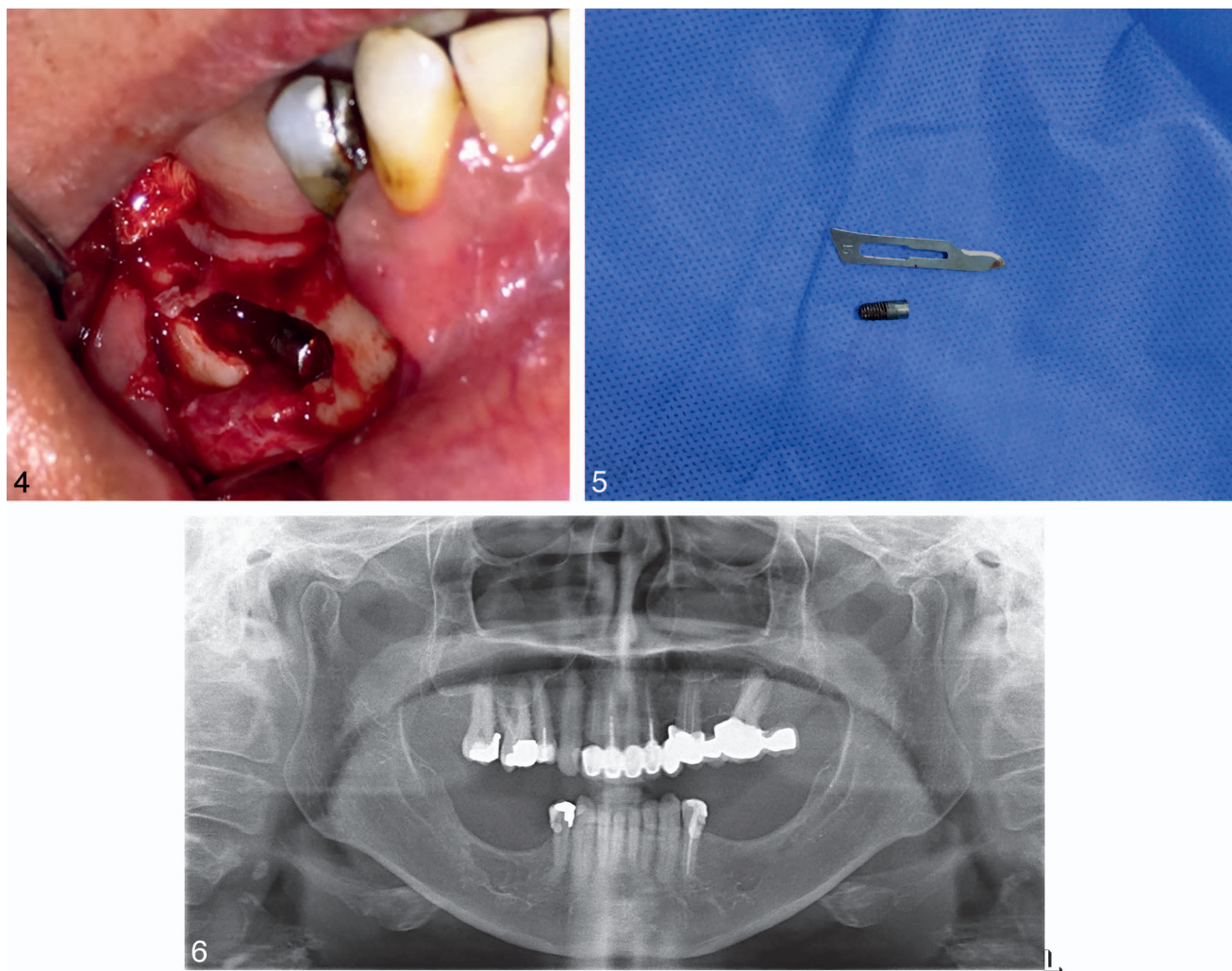
FIGURES 1–3. **FIGURE 1.** Preoperative panoramic radiography of a displaced implant in the mandibular canal. **FIGURE 2.** On cone-beam computerized tomography scanning, axial view of the right mandibular region showed the presence of a displaced implant located horizontally in the mandibular canal. **FIGURE 3.** (a) In the coronal view, the mental foramen was observed in the proximity of the displaced implant. (b) Sagittal view of the right mandibular posterior region adjacent to the mental foramen.

DISCUSSION

Accidental displacement of the dental implant into the mandibular canal is a rare phenomenon. To our knowledge, there has been only 1 published case of mandibular canal displacement in the literature.⁵ A number of patient- and operator-related factors may be associated with the occurrence of this rare complication. Systemic conditions such as osteoporosis or osteopenia, which cause alteration in the trabecular pattern of the jaws, pathologies of the bone such as focal osteoporotic bone marrow defect, and also anatomically low-density internal bony architecture or large marrow space of the mandible are considered as the probable risk factors that contribute to the occurrence of this complication.^{3–5,9} On the other hand, operator-related factors such as inadequate clinical and radiographic evaluation, overdrilling, and incorrect manipulation due to the lack of surgical experience are also reported as other possible factors that facilitate the displacement of dental implants.⁴

In the present case, the possible mechanism that contributed to the occurrence of the displacement may be overdrilling

of the surgical site, which resulted in the violation of the mandibular canal and a lack of primary stability of the dental implant. The inadequate surgical experience of the practitioner probably caused the implant to migrate vertically into the canal during placement of the healing abutment. In addition, subsequent attempts at removing the implant resulted in further migration of the implant to its eventual horizontal position. Despite the favorable bone quality and noncontributory systemic status of the patient in the present case, displacement of the implant occurred as a result of poor preoperative evaluation and incorrect intraoperative manipulation. However, luckily, total loss of neurosensory functions of the inferior alveolar nerve did not occur, but the patient still has a risk of various problems, such as foreign-body reaction, infection, and shortcomings related to prosthetic rehabilitation. In the present case, because of the potential risks, implant retrieval was performed using a minimally invasive approach. We believe that obtaining optimal results in implant surgery is not a simple task and requires careful preoperative evaluation of numerous parameters. Therefore, to prevent such complica-



FIGURES 4–6. **FIGURE 4.** Intraoperative view of the surgical area. **FIGURE 5.** Explanted implant. **FIGURE 6.** Postoperative panoramic radiograph of the patient.

tions, surgery should preferentially be performed by an expert professional in this field.

NOTE

The authors declare no conflicts of interest.

REFERENCES

1. Bakhshalian N, Sim YC, Nowzari H, Cha HS, Ahn KM. Accidental migration of a dental implant into the ethmoid sinus following a transalveolar sinus elevation procedure. *Clin Implant Dent Relat Res.* 2015; 17:360–364.
2. Felisati G, Lozza P, Chiapasco M, Borloni R. Endoscopic removal of an unusual foreign body in the sphenoid sinus: an oral implant. *Clin Oral Implants Res.* 2007;18:776–780.
3. Doh RM, Pang NS, Kim KD, Park W. Implant displacement into the mandible: an unusual complication during implant surgery. *Implant Dent.* 2011;20:345–348.
4. Lee SC, Jeong CH, Im HY, et al. Displacement of dental implants into the focal osteoporotic bone marrow defect: a report of three cases. *J Korean Assoc Oral Maxillofac Surg.* 2013;39:94–99.
5. Theisen FC, Shultz RE, Elledge DA. Displacement of a root form implant into the mandibular canal. *Oral Surg Oral Med Oral Pathol.* 1990;70: 24–28.
6. Kirtay M, Yolcu U, Dundar S. Displacement of dental implant into the submental space after surgical integration. *J Craniofac Surg.* 2017;28: e403–e405.
7. Cariati P, Fernandez-Solis J, Marin-Fernandez AB, Valencia-Laseca A, Monsalve-Iglesias F. Accidental displacement of a dental implant into the sublingual space: a case report. *J Clin Exp Dent.* 2016;8:e459–e461.
8. Kim BH, Kim BC, Lee J. Accidental displacement of a dental implant into the submandibular space during explantation. *Br J Oral Maxillofac Surg.* 2016;54:686–688.
9. Kim JW, Paeng JY, Choi SY, Kwon TG. Displacement of dental implants into the mandibular bone marrow space: cause and treatment. A case study and literature review. *J Oral Implantol.* 2017;43:151–157.
10. Tavares RN, Nogueira AS, Sampieri MB, Bezerra MF, Goncales ES. Late displacement of a dental implant into maxillary sinus. *Braz J Otorhinolaryngol.* 2014;80:359–361.