

Accidental migration of dental implants: Two unique cases and their management

Takuma Watanabe, Yuki Nishikawa, Takehiro Watanabe, Makoto Hirota

ABSTRACT

Introduction: Dental implant therapy has become a routine procedure with a high success rate. However, implant migration is a known complication. Migration or displacement of dental implants most commonly occurs in the maxillary sinus, while migration into soft tissue appears to be rare. Several approaches such as the bony window technique and endoscopic surgical approaches have been described for the management of implants displaced into the maxillary sinus. However, the optimal strategy remains controversial.

Case Series: *Case 1:* A female patient with migration of a dental implant into the right maxillary sinus following second-stage implant surgery was referred to our department. The implant was successfully removed using the bony window technique with endoscopic assistance under general anesthesia. Subsequent sinus augmentation and implant therapy are currently ongoing.

Case 2: A male patient with migration of a dental implant into the soft tissue adjacent to the maxillary sinus was referred to our department. Based on the surgeon's interpretation of the computed tomography (CT) images, the implant was successfully removed on the same day under local anesthesia. To date, no further implant treatment has been initiated at the same site.

Conclusion: Because bone healing is generally favorable following removal of migrated implants using the bony window technique, subsequent maxillary sinus floor elevation can be performed successfully. In addition, with appropriate interpretation of CT images, minimally invasive removal is also feasible. Our experience may serve as a useful reference for physicians and oral and maxillofacial surgeons managing similar cases in clinical practice.

Keywords: Dental implants, Endoscopy, Maxillary sinus

How to cite this article

Watanabe T, Nishikawa Y, Watanabe T, Hirota M. Accidental migration of dental implants: Two unique cases and their management. Int J Case Rep Images 2026;17(1):92–97.

Article ID: 101539Z01TW2026

doi: 10.5348/101539Z01TW2026CS

Takuma Watanabe¹, Yuki Nishikawa², Takehiro Watanabe³, Makoto Hirota⁴

Affiliations: ¹DDS, PhD, Junior Associate Professor, Department of Oral and Maxillofacial Surgery, Graduate School of Medicine, Kyoto University, Kyoto, Japan; ²DDS, Department of Oral and Maxillofacial Surgery, Japanese Red Cross Otsu Hospital, Otsu, Japan; ³DDS, Clinical Fellow, Department of Oral and Maxillofacial Surgery, Graduate School of Medicine, Kyoto University, Kyoto, Japan; ⁴DDS, PhD, Professor, Department of Oral and Maxillofacial Surgery, Graduate School of Medicine, Kyoto University, Kyoto, Japan.

Corresponding Author: Takuma Watanabe, 54 Kawahara-cho, Shogoin, Sakyo-ku, Kyoto 606-8507, Japan; Email: takuma@kuhp.kyoto-u.ac.jp

Received: 05 January 2026

Accepted: 09 March 2026

Published: 17 April 2026

INTRODUCTION

Dental implant therapy for the rehabilitation of partially or completely edentulous jaws with implant-supported prostheses has become a routine procedure among oral surgeons and dentists [1–4]. Although dental implant placement has a high success rate and a substantial positive impact on patients' quality of life, implant migration (i.e., displacement) is among the most common complications of dental implant therapy [5, 6]. Migration or displacement of dental implants is usually associated with poor surgical planning, inadequate surgical technique, or insufficient primary stability [2]. When migration into the maxillary sinus occurs, it can lead to serious complications like sensory disturbances, acute or chronic sinusitis, and oroantral fistula [7, 8]. Therefore, removal of a displaced implant from the sinus at an early stage is recommended [7, 9]. Migration or

displacement of dental implants most commonly occurs within the maxillary sinus [1–3, 5, 7–12]; however, migration into soft tissue appears to be rare.

Several approaches have been described for managing dental implant displacement into the maxillary sinus, including an intraoral approach with an anterior–lateral window to the maxillary sinus, transnasal or transoral endoscopic surgery, and, in some cases, no intervention with follow-up only [5]. The bony window technique, an intraoral approach involving the creation of a bony window pedicled to the sinus mucosa, can be used for removing dental implants displaced into the maxillary sinus [1]. The endoscopic surgical approach can be another treatment choice for removing dental materials displaced into the sinus [10]. Among preoperative imaging modalities used to determine the precise location of a migrated implant, computed tomography (CT) is most commonly employed [4, 11]. Although various approaches and imaging modalities have been proposed for the management of dental implant displacement [1, 3, 9, 10], the optimal strategy remains controversial.

Here, we report two cases of accidental migration of a dental implant into the maxillary sinus or soft tissue, in which the migrated implant was successfully removed using the bony window technique assisted by endoscopy or through precise interpretation of CT images.

CASE SERIES

Case 1

A 64-year-old female was referred to our department from a private dental clinic with the primary complaint of dental implant migration into the maxillary sinus. Systemically, she had hypertension and was taking oral antihypertensive medication. Two months prior, a second-stage implant surgery had been performed for the right maxillary first premolar. Subsequent panoramic radiography taken at the clinic revealed that the implant had migrated into the maxillary sinus, prompting her referral to our department. The patient exhibited no nasal or oral symptoms (Figure 1). However, panoramic radiography confirmed the presence of the migrated implant in the maxillary sinus (Figure 2). CT further revealed the implant located within the sinus without evidence of mucosal thickening (Figure 3A and B). According to the referring dentist, the migrated implant was a tapered fixture measuring 3.5×10 mm.

Based on a clinical diagnosis of accidental migration of a dental implant into the maxillary sinus, the patient underwent implant removal using the bony window technique assisted by endoscope under general anesthesia approximately two weeks after the initial visit. A rectangular bone lid was created by osteotomy in the lateral bony wall of the right maxillary sinus, while maintaining the integrity of the sinus mucosa on the superior side (Figure 4A). A rigid endoscope equipped with a digital video unit was inserted through the created bony window, allowing identification and subsequent

removal of the migrated implant (Figure 4B and C). The lid was finally repositioned and fixed using absorbable suture material passed through the previously prepared holes on the bone lid and the adjacent bone. A CT scan taken six months after surgery showed a healthy sinus appearance and no visible gap between the margins of the bony window on the lateral wall of the right maxillary sinus (Figure 5A and B).

Subsequently, a lateral window sinus augmentation was performed under general anesthesia using autogenous bone harvested from the extraction site of the right mandibular third molar, along with an octacalcium phosphate collagen composite (Bonarc; TOYOBO CO., LTD., Shiga, Japan) as the graft material. A surgical window was created in the lateral wall of the right maxillary sinus, and the sinus mucosa was carefully elevated to create space for graft placement. Complete healing of both the bony wall and the sinus mucosa at the site where the bone lid had been previously created was observed. The graft materials were placed beneath the elevated mucosa, and the surgical site was then sutured. The postoperative course was uneventful. A CT scan taken four months after the sinus augmentation revealed newly augmented bone on the floor of the right maxillary sinus, with no signs of sinusitis (Figure 6A and B). Currently, dental implant treatment is being carried out at a private dental clinic.

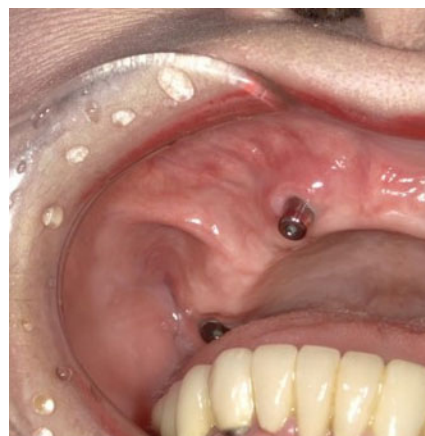


Figure 1: Intraoral photograph showing no signs of inflammation or palpable abnormalities around the right maxillary alveolar ridge.



Figure 2: Panoramic radiography showing the presence of the migrated implant in the maxillary sinus.

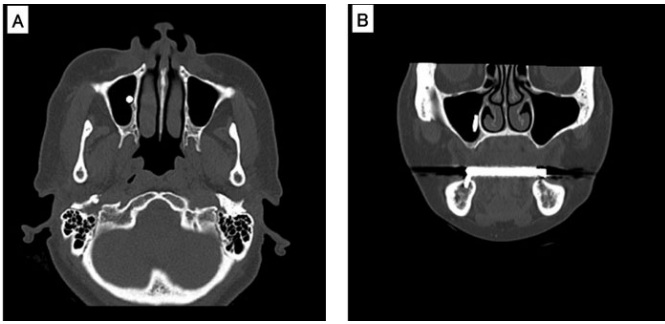


Figure 3: Axial (A) and coronal (B) computed tomography showing the implant located within the sinus without evidence of mucosal thickening.

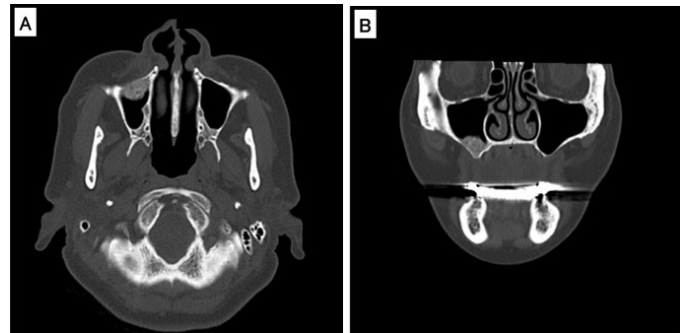


Figure 6: Axial (A) and coronal (B) computed tomography showing newly augmented bone on the floor of the right maxillary sinus, with no signs of sinusitis.

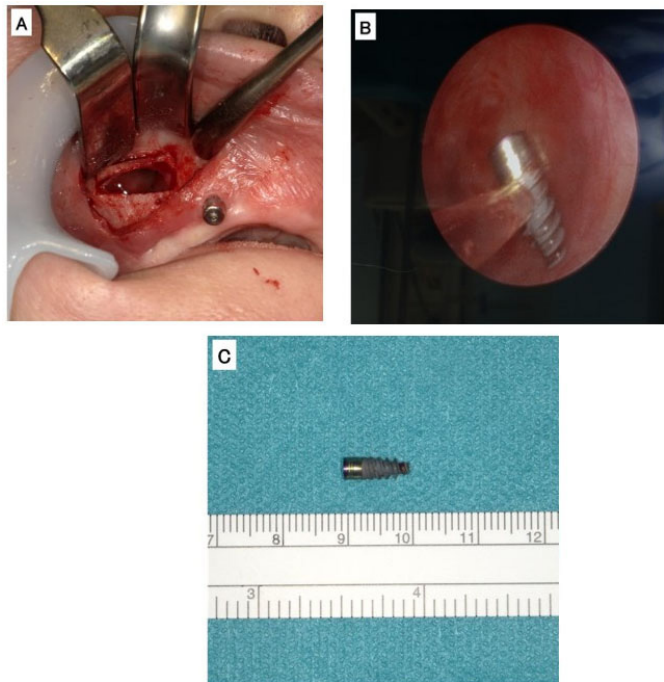


Figure 4: Intraoperative images showing: a rectangular bone lid created in the lateral wall of the right maxillary sinus (A); an endoscopic view of the implant within the sinus (B); the retrieved implant (C).

Case 2

A 68-year-old male was referred to our department from a dental clinic due to suspected migration of a dental implant into the soft tissue around the maxillary sinus. He had hypertension, for which he was taking oral antihypertensive medication. He also had a local history of a left maxillary fracture. One week earlier, implant placement surgery had been performed for the left maxillary first molar. Subsequently, as postoperative CT revealed that the implant was buccally deviated within the maxilla, an attempt was made to remove it. However, the implant accidentally migrated into the soft tissue adjacent to the maxilla. The patient exhibited no nasal symptoms. Intraoral examination revealed diffuse swelling of the maxillary buccal mucosa, although no distinct mass was palpable (Figure 7). Panoramic radiography showed superior displacement of the implant beyond the maxillary alveolar region (Figure 8). Three-dimensional CT showed that the implant was located buccally around the left maxillary alveolar region, and maxillary bone deformity was observed (Figure 9). According to the referring dentist, the migrated implant was a straight fixture measuring 3.3 × 10 mm.

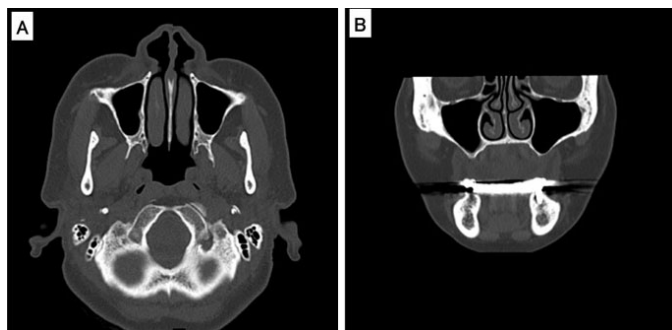


Figure 5: Axial (A) and coronal (B) computed tomography showing a healthy right maxillary sinus and no gap between the margins of the bony window in the lateral wall.



Figure 7: Intraoral photograph showing diffuse swelling of the maxillary buccal mucosa, with no distinct palpable mass.



Figure 8: Panoramic radiograph showing superior displacement of the implant beyond the maxillary alveolar region.

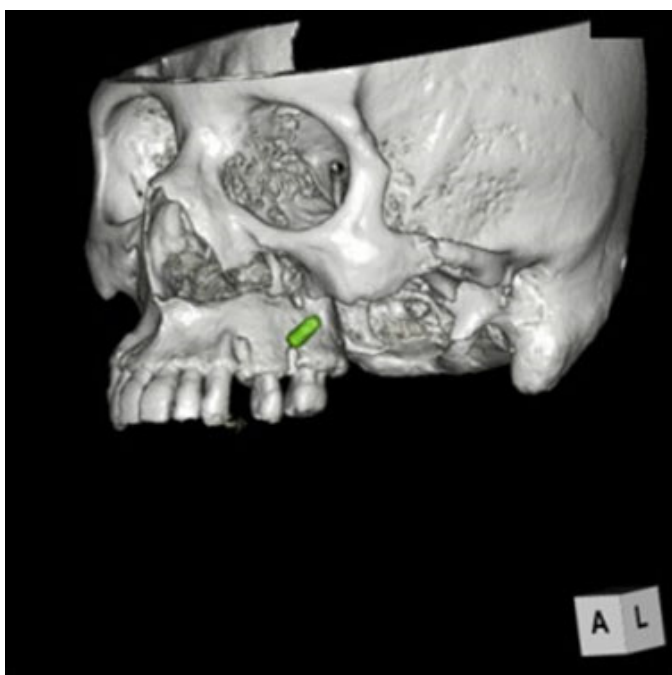


Figure 9: Three-dimensional computed tomography showing the implant located buccally adjacent to the left maxillary alveolar region, along with deformation of the maxillary sinus.

Based on the clinical diagnosis of accidental migration of a dental implant into the soft tissue adjacent to the maxilla, implant removal under local anesthesia was scheduled for the afternoon of the same day. Guided by the surgeon's interpretation of the CT images taken in the morning regarding the three-dimensional position of the migrated implant, a horizontal incision was made in the gingivobuccal mucosa at the level of the root of the maxillary left first molar. The implant was subsequently identified and retrieved without complications (Figure 10A and B). The postoperative course was uneventful. Currently, no further implant treatment has been initiated at the same site.

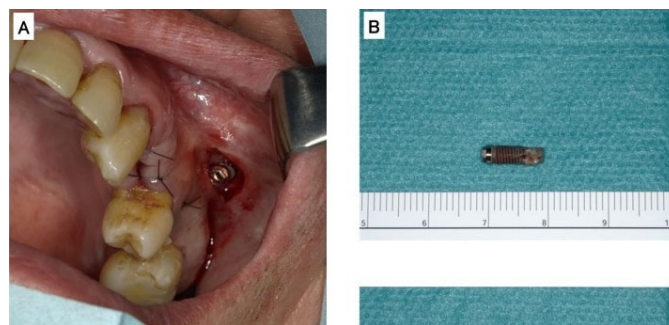


Figure 10: Intraoperative images of implant removal showing: (A) migrated implant exposed after horizontal incision; (B) retrieved implant.

DISCUSSION

The clinical courses of these two cases provided important insights. Although accidental migration of a dental implant into the maxillary sinus, as seen in case 1, can occur, bone healing is generally favorable following implant removal using the bony window technique assisted by endoscope. Subsequent maxillary sinus floor elevation can then be performed successfully. Minimally invasive removal under local anesthesia is feasible with appropriate interpretation of CT images, although migration of a dental implant into the soft tissue adjacent to the maxillary sinus—as observed in case 2—appears to be rare.

Accidental displacement of roots, endodontic materials, and dental implants into the maxillary sinus is a relatively common complication in dental practice [3]. Displacement of dental implants into the maxillary sinus typically occurs during implant placement or is identified during secondary surgery [2]. Regarding the causes of migration, perioperative implant displacement is often associated with inadequate surgical planning, such as placing implants in sites with insufficient bone height or volume, surgical inexperience, improper procedures (e.g., overpreparation of the recipient site, excessive force during implant insertion), or perforation of the sinus membrane during drilling [5, 11]. During the healing period, previous studies have suggested three probable mechanisms: (1) changes in intrasinus and nasal air pressures; (2) autoimmune reactions to the implant, leading to peri-implant bone destruction and compromised osseointegration; and (3) bone resorption caused by an incorrect distribution of occlusal forces [2, 9, 12]. Additionally, previous study showed that the incidence of implant migration into the sinus cavity is higher for cylindrical implants as compared to conical ones, for narrower implants [12]. In case 1, placement of a narrow implant in a site with insufficient bone height may have caused perforation of the sinus membrane and compromised osseointegration, and following secondary surgery, it appeared that the implant had migrated into the maxillary sinus due to occlusal forces on the healing abutment, despite its conical shape. In case 2, placement

of a cylindrical implant in a site with insufficient bone volume may have resulted in migration into the buccal soft tissue, which may have been associated with inadequate surgical planning.

Early removal of implants displaced into the sinuses is advisable to prevent further complications, such as facial pain, airway obstruction, nasal discharge, and infection, which may result from migration into other upper structures, even in asymptomatic cases [7, 13]. Although both cases were asymptomatic, prompt removal was performed in consideration of potential future complications and ethical concerns.

Removal of a foreign body into the sinus cavity may be performed using different techniques: extraction through the intraoral fistula, direct approach by opening a lateral window into the sinus, and transnasal or transoral endoscopic surgery [5]. The bony window technique, in which the bone lid was cut on three sides—inferior, medial, and distal—while the superior side remained intact, enables the creation of a bony window pedicled and vascularized by the thin blood vessels of the sinus mucosa, and also allowed the window to be rotated easily [1]. The advantages of this procedure include improved visibility of the sinus cavity, rapid healing of the sinus mucosa, and complete re-ossification of the bone lid margins, which may, if indicated, allow for a safe sinus lift procedure via a lateral approach, similar to that performed in a previously untreated maxillary sinus [1]. On the other hand, clinicians may preferentially choose the transoral endoscope-assisted approach for removing a dental implant displaced into the maxillary sinus, assuming that the implant may change position within the sinus [14]. This approach offers wider visibility and access, enabling rapid and safe removal via a minimally invasive technique under endoscopic control [4, 14]. In case 1, future sinus lift and implant placement in the same area were anticipated. Extraction through the intraoral fistula could have required excessive enlargement of the existing implant osteotomy, potentially complicating subsequent implant treatment. Therefore, a bony window technique was employed, allowing a safe lateral approach sinus lift. Because the reference CT image had been obtained two weeks prior and the implant's position might have shifted, an endoscope-assisted approach was also used to provide wider visibility and ensure safe removal. The window was created large enough for safe insertion of the endoscope shaft. Complete healing of the bone lid margins was achieved, and the subsequent lateral window sinus augmentation was highly successful.

An accurate radiological examination is essential to determine the exact location of a migrated implant before its removal [4, 8]. Accurate localization minimizes the invasiveness of the procedure, reduces patient discomfort, and helps avoid further complications while improving clinical outcomes [4]. Three-dimensional imaging is particularly well suited for this purpose and should be performed immediately before surgery, as secondary

migration can occur within a short period [4]. In case 2, removal surgery was performed a few hours after the CT scan, and the migrated implant, lodged within the soft tissue, appeared unlikely to move. We therefore considered that the CT findings accurately reflected the actual condition, and that careful interpretation of the three-dimensional reconstructed CT images enabled minimally invasive implant removal.

CONCLUSION

Accidental migration of dental implants can occur either into the maxillary sinus or into adjacent soft tissue. In cases involving the maxillary sinus, the endoscope-assisted bony window technique may facilitate favorable bone healing and may permit subsequent sinus floor elevation. Rare soft tissue migration might also be managed in a minimally invasive manner under local anesthesia with accurate interpretation of CT images. Our experience may serve as a useful reference for physicians and oral and maxillofacial surgeons managing similar cases in clinical practice.

Acknowledgments

The authors thank ChatGPT (version 5.3 from OpenAI) for its assistance in improving the English language and grammar of the manuscript draft. The authors take full responsibility for the final content.

Author Contributions

Takuma Watanabe – Conception of the work, Design of the work, Acquisition of data, Analysis of data, Interpretation of data, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Yuki Nishikawa – Acquisition of data, Drafting the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Takehiro Watanabe – Acquisition of data, Drafting the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Makoto Hirota – Acquisition of data, Drafting the work, Revising the work critically for important intellectual

content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Guarantor of Submission

The corresponding author is the guarantor of submission.

Source of Support

None.

Consent Statement

Written informed consent was obtained from the patient for publication of this article.

Conflict of Interest

Authors declare no conflict of interest.

Data Availability

All relevant data are within the paper.

Copyright

© 2026 Takuma Watanabe et al. This article is distributed under the terms of Creative Commons Attribution License which permits unrestricted use, distribution and reproduction in any medium provided the original author(s) and original publisher are properly credited. Please see the copyright policy on the journal website for more information.

REFERENCES

1. Biglioli F, Chiapasco M. An easy access to retrieve dental implants displaced into the maxillary sinus: The bony window technique. *Clin Oral Implants Res* 2014;25(12):1344–51.
2. Yamashita Y, Iwai T, Hirota M, Omura S, Aoki N, Tohnai I. Removal of migrated dental implants from maxillary sinus 4 years 10 months after implant placement. *Oral Maxillofac Surg* 2015;19(3):315–9.
3. Nogami S, Yamauchi K, Tanuma Y, Odashima K, Matsui A, Tanaka K, et al. Removal of dental implant displaced into maxillary sinus by combination of endoscopically assisted and bone repositioning techniques: A case report. *J Med Case Rep* 2016;10:1.
4. Bär AK, Werkmeister R, Becker P, Lindwedel K, Al-Nawas B. Displacement of maxillary dental implants: A case series on various scenarios. *BMC Oral Health* 2024;24(1):1380.
5. Laureti M, Ferrigno N, Rosella D, Papi P, Mencio F, De Angelis F, et al. Unusual case of osseointegrated dental implant migration into maxillary sinus removed 12 years after insertion. *Case Rep Dent* 2017;2017:9634672.
6. Li S, Xing Z, Yu L. Accidental migration of a dental implant into the nasal cavity. *J Int Med Res* 2020;48(8):300060520948736.
7. Tsodoulos S, Karabouta I, Voulgaropoulou M, Georgiou C. Atraumatic removal of an asymptomatic migrated dental implant into the maxillary sinus: A case report. *J Oral Implantol* 2012;38(2):189–93.
8. Mahmood Hashemi H, Mohammadi S, Razmara F. The causes of dental implant migration into the maxillary sinus: A case series study from 25 years of experience. *J Dent (Shiraz)* 2024;25(1):86–90.
9. Fusari P, Doto M, Chiapasco M. Removal of a dental implant displaced into the maxillary sinus by means of the bone lid technique. *Case Rep Dent* 2013;2013:260707.
10. Nakamura N, Mitsuyasu T, Ohishi M. Endoscopic removal of a dental implant displaced into the maxillary sinus: Technical note. *Int J Oral Maxillofac Surg* 2004;33(2):195–7.
11. Chang PH, Chen YW, Huang CC, Fu CH, Huang CC, Lee TJ. Removal of displaced dental implants in the maxillary sinus using endoscopic approaches. *Ear Nose Throat J* 2021;100(10_suppl):995S–8S.
12. Galindo-Moreno P, Padiál-Molina M, Avila G, Rios HF, Hernández-Cortés P, Wang HL. Complications associated with implant migration into the maxillary sinus cavity. *Clin Oral Implants Res* 2012;23(10):1152–60.
13. González-García A, González-García J, Diniz-Freitas M, García-García A, Bullón P. Accidental displacement and migration of endosseous implants into adjacent craniofacial structures: A review and update. *Med Oral Patol Oral Cir Bucal* 2012;17(5):e769–74.
14. Murase Y, Yoshida S, Kishimoto K, Shimizu R, Ibaragi S, Sasaki A. The transoral endoscope-assisted approach for removal of a dental implant displaced into the maxillary sinus: A case report and review of the literature. *J Maxillofac Oral Surg* 2022;21(2):639–47.

Access full text article on other devices



Access PDF of article on other devices





INTERNATIONAL JOURNAL OF
CASE REPORTS AND IMAGES



VIDEO JOURNAL OF
CLINICAL RESEARCH



VIDEO JOURNAL OF
BIOMEDICAL SCIENCE



INTERNATIONAL JOURNAL OF
HEPATOBIILIARY AND
PANCREATIC DISEASES



INTERNATIONAL JOURNAL OF
BLOOD TRANSFUSION AND
IMMUNOHEMATOLOGY



EDORIUM JOURNAL OF
OPHTHALMOLOGY



Submit your manuscripts at
www.edoriumjournals.com



EDORIUM JOURNAL OF
MEDICINE



EDORIUM JOURNAL OF
CARDIOTHORACIC AND
VASCULAR SURGERY



JOURNAL OF CASE REPORTS
AND IMAGES IN ORTHOPEDICS
AND RHEUMATOLOGY



EDORIUM JOURNAL OF
PSYCHOLOGY



EDORIUM JOURNAL OF
CELL BIOLOGY



JOURNAL OF CASE REPORTS AND IMAGES IN
DENTISTRY



EDORIUM JOURNAL OF
CANCER



EDORIUM JOURNAL OF
PSYCHIATRY



JOURNAL OF CASE REPORTS AND
IMAGES IN INFECTIOUS DISEASES



EDORIUM JOURNAL OF
ANATOMY AND EMBRYOLOGY



EDORIUM JOURNAL OF
SURGERY



JOURNAL OF CASE REPORTS
AND IMAGES IN PATHOLOGY



EDORIUM JOURNAL OF
ANESTHESIA