

Accidental Swallowing of Dental Implant: Complication of Transnasal Endoscopic Removal From Maxillary Sinus

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Transnasal endoscopic removal of displaced dental implants in the maxillary sinus can be done easily under local anesthesia. However, very little is known regarding the precaution of this technique. In this report, we present the case of a 63-year-old man who visited the otolaryngologic department with a displaced dental implant in the maxillary sinus. Transnasal endoscopic removal of the displaced dental implant was planned and performed. However, the displaced dental implant was lost during removal. The implant was not seen in the other parts of the nasal cavity nor in the other parts of the oral cavity. Finally, radiographs revealed the presence of the dental implant at the level of the esophagus, although the patient did not notice anything because of local anesthesia. Thus, we conclude that operators should take into account the possibility of aspiration or swallowing of an implant through the posterior nasal aperture during the removal procedure. Precautions should be taken to avoid the possibility of implant aspiration or implant ingestion.

Key Words: maxillary sinusitis, dental implant, foreign bodies, maxillary sinus, endoscopy

INTRODUCTION

With aging and loss of teeth, the alveolar process of the maxilla is reduced and the sinus cavity is enlarged. A dental implant installed on a weakened maxilla can result in implant failure, odontogenic sinusitis, and oroantral fistula.^{1,2} In more severe cases, a dental implant can be displaced into the maxillary sinus.³ Most cases of implant displacement into the maxillary sinus are treated via an intraoral approach; however, recently, cases treated with a transnasal endoscopic approach have also been reported.^{3,4}

The transnasal endoscopic approach is a relatively simple procedure. Displaced implants can be removed only with middle meatus antrostomy under local anesthesia. In addition, endoscopic middle meatus antrostomy is effective for the removal of the displaced implant and treatment of the sinusitis caused by displaced implants.⁵ However, the risks associated with intranasal removal are not well known in the elderly population.

We recently encountered a previously unreported complication. In this report, we present an unusual complication of endoscopic removal of a displaced dental implant and discuss the potential risks of this method and measures for prevention of this complication.

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CASE REPORT

A 63-year-old man presented with a 2-year history of rhinorrhea. The patient had a history of hypertension and diabetes mellitus. Rigid nasal endoscopic examination revealed mucopurulent secretion at the middle meatus of the left nasal cavity. Computerized tomography scans revealed the presence of a suspicious foreign material with high density and signs of sinusitis in the left maxillary sinus (Figure 1). The patient had undergone a dental implant surgery 2 years ago and had a loose implant abutment screw. However, he did not receive further treatment because of financial constraints. Considering his implant history, a clinical diagnosis of dental implant displacement into the maxillary sinus was made.

It was decided to surgically remove the displaced implant in the maxillary sinus via a transnasal endoscopic approach. Endoscopic middle meatus antrostomy was performed under local anesthesia. A 1.5-cm dental abutment was observed during the middle meatus antrostomy. After balancing the endoscope, foreign material removal was initiated. However, the displaced implant material in the maxillary sinus was not observed. Since the patient was conscious at the time, we asked if he had swallowed the foreign material. The patient replied that he had not swallowed the foreign material. However, the implant was seen neither in the other parts of the nasal cavity nor in the other parts of the oral cavity. A radiograph of the face and abdomen revealed the presence of the foreign body at the level of the esophagus (Figure 2).

After completion of the surgery, the patient was referred to the department of gastroenterology. An X-ray image of the abdomen, which was performed 1 hour later, revealed that the foreign material had moved into the left upper quadrant of the

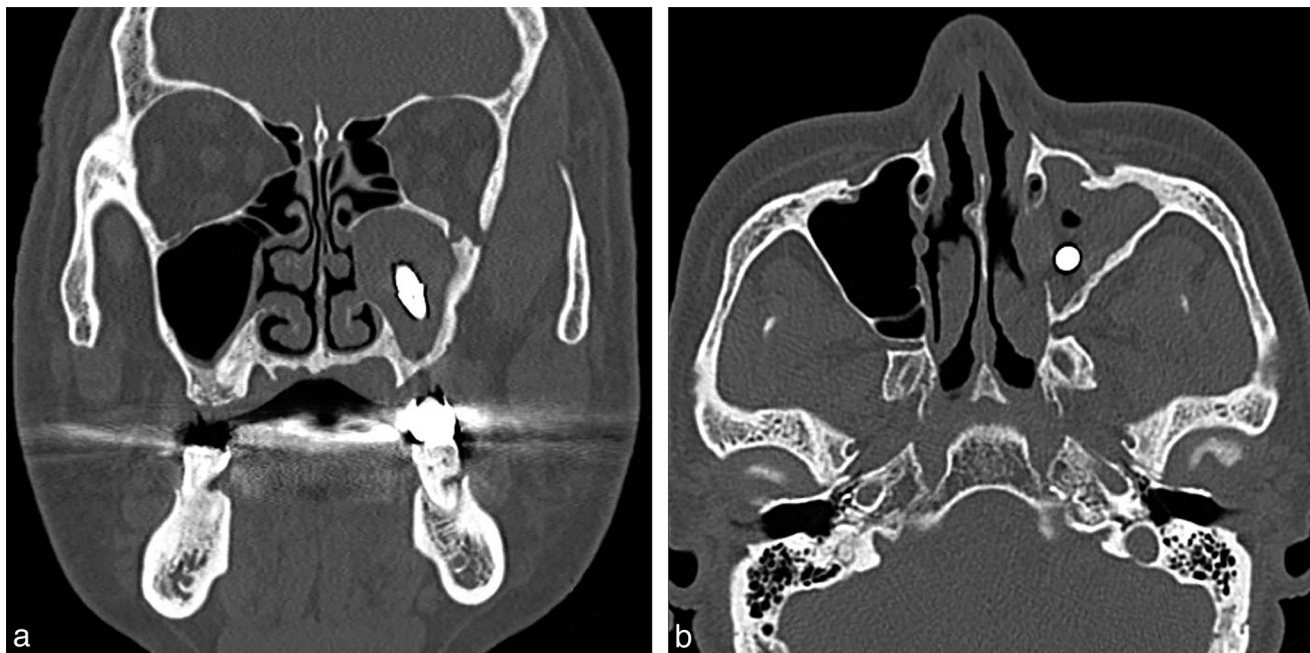


FIGURE 1. Computerized tomography shows a 1.36 × 0.6 cm well-defined metallic material and full occupying soft-tissue density in the left maxillary sinus (a: coronal; b: axial).

abdomen (Figure 3a). To prevent further complications caused by the foreign material, gastroduodenoscopic removal was recommended to the patient, but he wanted to wait and see. One year after presentation, the patient neither had signs of sinusitis nor the presence of the foreign material. In addition, an X-ray image of the abdomen revealed no foreign body at that time (Figure 3b).

DISCUSSION

The maxillary sinus is anatomically located between the nasal cavity and oral cavity. Thus, inflammation from teeth, maxillary trauma, tooth extraction, or a dental implant are the major causes of odontogenic sinusitis, and these cases account for approximately 10% to 12% of all cases of maxillary sinusitis.^{6,7}

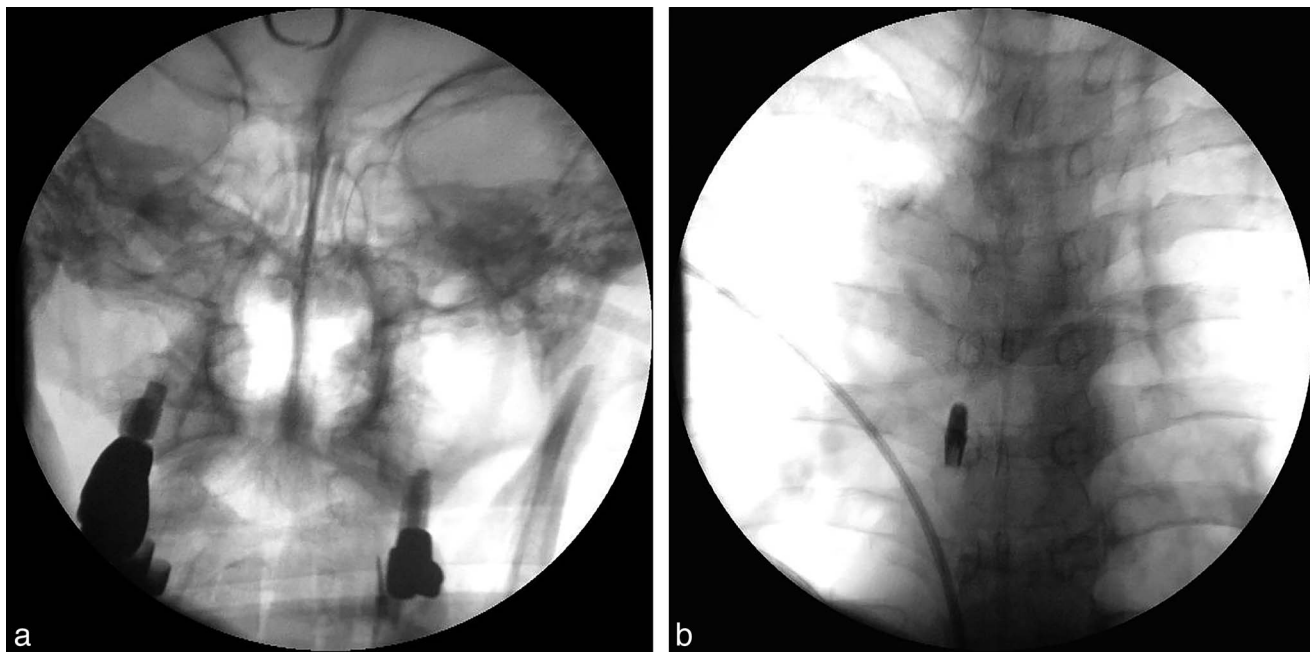


FIGURE 2. C-arm radiography could not detect any foreign object in the left maxillary sinus (a). However, a 1.36 × 0.6 cm foreign material was found at the level of the T5/T6 intervertebral disc, the theoretical position of the esophagus (b).

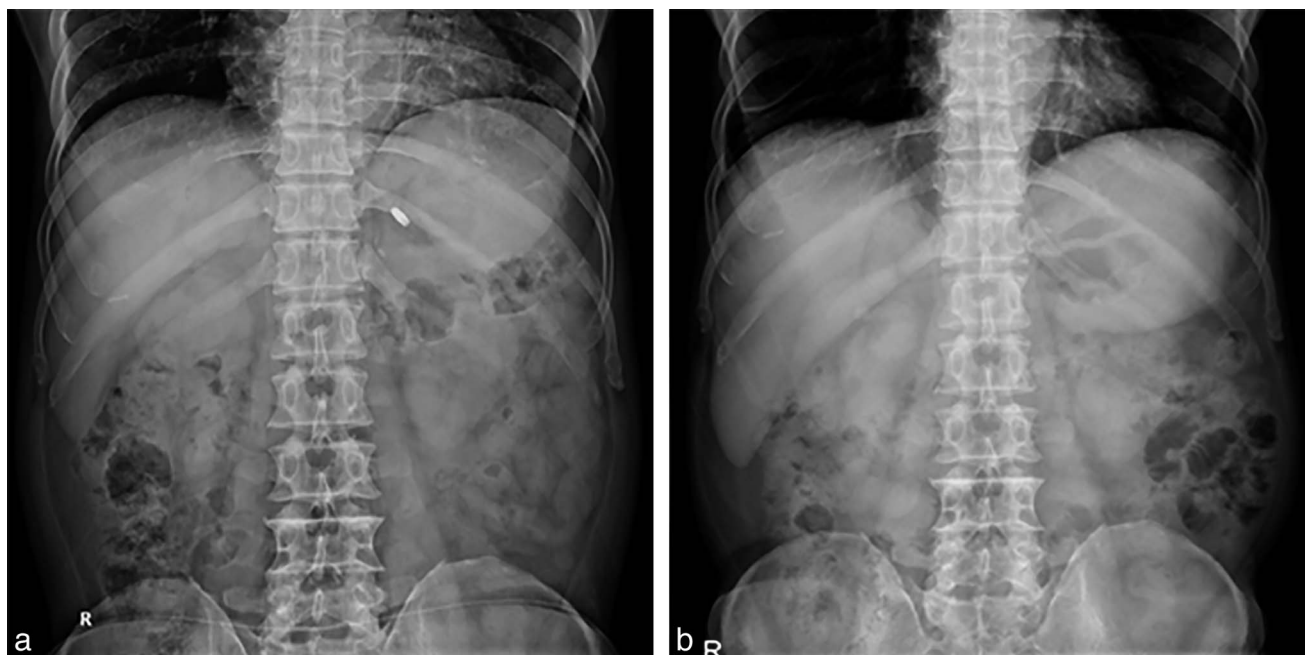


FIGURE 3. An immediate postoperative radiograph revealed a 1.36×0.6 cm well-defined foreign object in the left upper quadrant (a). However, no foreign body was detected in an abdominal X-ray that was taken 1 year later (b).

Displacement of a dental implant into the maxillary sinus is rare; however, it can also be a cause of odontogenic sinusitis.

Chiapasco et al⁴ suggested a treatment protocol for displaced dental implant into the paranasal sinus. If there is no sign of sinus mucosal infection or ostium obstruction, an intraoral approach may be preferred.⁴ A combination of endoscopic and intraoral approach is recommended in the case of oroantral communication. The endoscopic approach is recommended in the case of chronic sinusitis with ostium obstruction. In addition, comprehensive management of the infection source and sinusitis by a combination of medical and surgical approaches should be done for complete management of odontogenic sinusitis.⁸ Oral administration of culture-sensitive antibiotics for 3 to 4 weeks is required.

The patient had a sinusitis that required surgical management. The endoscopic approach may be a less invasive, simple, and intuitive procedure in many disease entities.^{9–11} In addition, no difficulties or complications during the endoscopic removal of displaced dental implants have been reported previously. However, we encountered a case in which an implant was lost during endoscopic removal. The patient did not recognize swallowing the implant. This may be due to decreased pharyngeal sensation and combined throat discomfort in the elderly population.¹² However, we could easily imagine what could have happened if the foreign material had entered the larynx instead of esophagus. It could have led to a life-threatening event such as death, dyspnea, or pneumonia.¹³

In most cases, a dental implant in the esophagus passes through the gastrointestinal tract without any subjective symptoms; however, it may cause intestinal obstruction, intestinal perforation, or infection. If the foreign material

remains in the site without moving, or symptoms such as abdominal pain or hemorrhage are observed after swallowing of foreign material, the possibilities of obstruction, perforation, or infection should be considered.¹⁴ Therefore, it is important to determine the exact location of the foreign material by a serial radiological examination.¹⁴

The surgery was done under local anesthesia, and the patient was conscious. However, the patient swallowed the implant without recognition. We speculated that the sensation of the pharynx was decreased because of his general condition or local anesthetic agent. Therefore, we suggest these precautions to prevent the accidental swallowing of an implant during endoscopic removal. First, endoscopic removal should be attempted after a posterior nasal packing to occlude the choana. Second, the head of the patient should be rotated to the disease site considering the force of gravity. Third, forceps, which can firmly grasp an implant, should be used. Finally, the bony window technique, which makes an implant-retrieval port on the anterolateral or lateral wall of the maxillary sinus with the intraoral approach, could be an easier technique for implant removal.^{15,16}

CONCLUSION

Dental implants displaced into the maxillary sinus should be carefully removed considering the possibility of aspiration or ingestion. Care must be taken during removal to prevent catastrophic accidents. Posterior nasal packing may be performed to close the choana before endoscopic removal, or the bony window technique may be considered instead of endoscopic removal to prevent fatal events.

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NOTE

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