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Case Report
Dental Implants

Dental implant and fungus ball in the ethmoid sinus

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Abstract. Dental migration into the ethmoid sinus is extremely rare. Furthermore, it is very unusual that a displaced dental implant is associated with a concomitant fungus ball in the ethmoid sinus. Herein, we report an unusual case of the coexistence of a dental implant and fungus ball in the ethmoid sinus. It appears that this condition has not been reported previously.

Key words: dental implants; mycetoma; ethmoid sinus; displacement; endoscopy.

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Dental implants have been used widely in edentulous patients in recent years[1–4]. Unfortunately, dental implants have been associated with various complications such as nerve injury, maxillary sinusitis, and displacement or migration[1–4]. Several reports have suggested dental implant migration into the maxillary sinus; however, migration into the ethmoid sinus is extremely rare[1–5]. Herein, we report an unusual case of ethmoid sinus fungus ball coexisting with a dental implant. It appears that this condition has not been reported previously.

Case report

A 57-year-old healthy man presented with a 5-year history of left nasal obstruction. Physical examination revealed multiple polyps originating from the left middle meatus. Computed tomography (CT) scans demonstrated a metallic foreign body (arrow, Fig. 1) and calcified lesion (arrowhead, Fig. 1) in the left ethmoid sinus. CT also revealed chronic sinusitis involving the left maxillary, ethmoid, and frontal sinuses.

The patient underwent functional endoscopic sinus surgery. After removal of the nasal polyps, a dental implant (arrow, Fig. 2) and fungus ball (arrowhead, Fig. 2) were observed in the ethmoid sinus. The ostium of the maxillary sinus was already wide open and only the surrounding nasal mucosa was removed. Histopathological analysis of the fungus ball revealed *Aspergillus*.

The patient had received 10 dental implants into the maxilla approximately 8 years ago, without complications. Oral examination showed that only nine dental implants remained. Thus it appeared that one of them had become displaced into the maxillary sinus and transferred to the ethmoid sinus. Subsequently, fungus ball, chronic sinusitis, and nasal polyps appeared to be triggered by the dental implant.

Seven months after the endoscopic sinus surgery, the patient had no residual nasal symptoms and the ostium of the maxillary sinus was patent with normal mucosa on nasal endoscopy.

Discussion

The displacement or migration of dental implants into the paranasal sinus may be related to poor surgical technique, bone destruction due to alveolar bone infection, osteoporosis, or bone resorption[1–5]. Most often, it occurs in the maxillary sinus during surgery or within 6 months after dental implantation[2,3]. In our patient, we do not know exactly when the implant became displaced. However, the nasal obstruction had occurred 3 years after the dental implants were placed, suggesting possible displacement of the dental implant.

Dental implant displacement into the ethmoid sinus is extremely rare[1–5]. The displaced implant in the maxillary sinus seems to have been transferred to the ethmoid sinus through the ostium of the

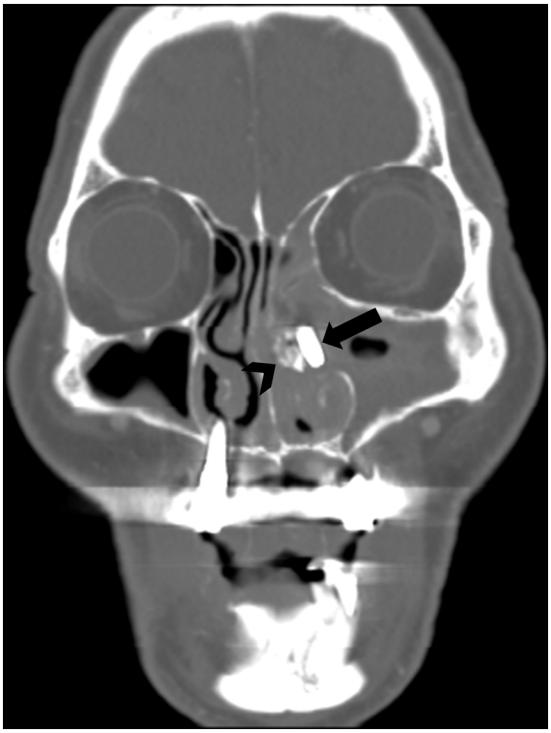

Fig. 1. Neck CT scan demonstrating the presence of a metallic foreign body (arrow) and calcified lesion (arrowhead) in the left ethmoid sinus.

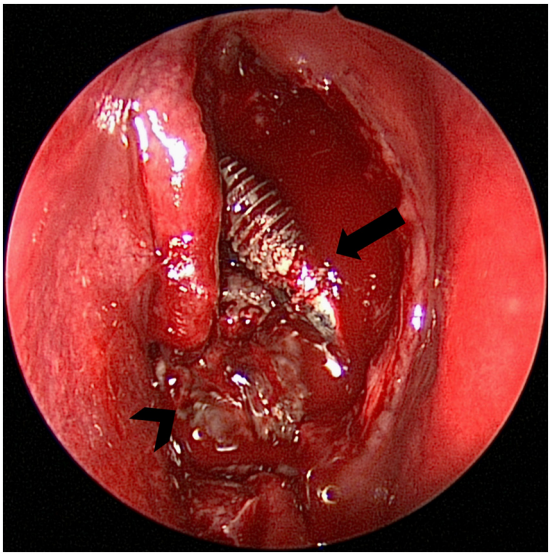

Fig. 2. Dental implant (arrow) and fungus ball (arrowhead) observed in the left ethmoid sinus.

maxillary sinus via mucociliary clearance of the maxillary sinus[1,2]. This explanation is suggested by the fact that there was no destruction of the medial wall of the maxillary sinus, and the CT scan and surgical field findings showed that the ostium of the maxillary sinus was widely enlarged. Apparently, the dental implant in the ethmoid sinus triggered chronic sinusitis, nasal polyps, and fungus ball. Other authors have reported opportunistic fungus balls caused by retained foreign bodies and endodontic materials[6,7].

Symptoms associated with dental implant displacement or migration into the maxillary sinus include maxillary sinusitis, oroantral fistula, postnasal drip, nasal obstruction, and pain[3,4]. A radiological examination is helpful for the detection of asymptomatic displacement of dental implants. In our patient, the displaced dental implant was diagnosed based on the CT scan.

The removal of displaced dental implants is usually recommended[1–5]. Depending on the position and size of the displaced dental implant and the presence of oroantral fistula, an endoscopic or external strategy, or a combination thereof, may be needed[1–4]. This patient had no oroantral fistula and was indicated for surgical management of sinusitis and polyps. The main lesion involved the ethmoid sinus, warranting endoscopic removal.

In conclusion, dental migration into the ethmoid sinus is extremely rare. Furthermore, it is very unusual that dental implant displacement into the ethmoid sinus is accompanied by fungus ball. The displaced dental implant may have triggered the fungus infection.

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Competing interests

None.

Ethical approval

Not required.

Patient consent

Not required.

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