Extrusion of Gutta-Percha into the Nasal Cavity Causing Maxillary Fungal Sinusitis: A Case Report

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ABSTRACT
There have been few reports about extrusion of endodontic obturation materials into the maxillary sinus and inducing fungal sinusitis. Endodontic materials and fungus balls both are seen as high attenuation in a CT scan so may be overlooked. We report such a case in which the surgeon and radiologist had missed the foreign materials on preoperative CT scans, and recognized the filling defect on the alveolar bone and a foreign body in the nasal cavity postoperatively.

KEY WORDS: Fungus · Sinusitis · Odontogenic · Foreign Body.

INTRODUCTION
A maxillary sinus fungus ball is a chronic noninvasive mycosis that is commonly diagnosed in patients with a history of recurrent maxillary sinusitis recalcitrant to standard medical therapy. Fungus balls frequently develop in healthy individuals with no obvious relation of fungal infection. Some studies have shown that endodontic treatment on maxillary teeth is a strong risk factor for formation of a fungus ball of the maxillary sinus. However, cases of extruded endodontic obturation materials into the nasal cavity and producing maxillary fungal sinusitis are rare. In this article, we report a case preoperatively diagnosed as fungal sinusitis which postoperatively revealed a fungus ball with gutta-percha in the nasal cavity.

CASE
A 52-year-old woman was referred to the Department of Otorhinolaryngology-Head and Neck Surgery of Samsung Medical Center with history of right side purulent nasal discharge, obstruction and right facial pain. Although she couldn’t remember exact data, more than 5 years age, she took a dental treatment. From five years before, she has got a pain in right cheek area. She visited several dental clinics, but she couldn’t get an answer about dental problem. Because pain did not stop, and newly nasal obstruction and discharge was occurred, she had undergone right

Fig. 1. Endoscopic view of right nasal cavity at first visit.

Fig. 2. (A) Preoperative coronal CT scans (bone window setting): Soft tissue lesion obliterating the right maxillary sinus and a mass-like lesion with a faint high-attenuation mottled calcification (white arrow) in the right nasal cavity medial to the maxillary sinus. (B) Preoperative coronal CT scans (soft tissue window setting; same cut with A): Prominent calcified rod (yellow arrow head) surrounded by a high-density mottled lesion.
sinus surgery for sinusitis at another ENT clinic 3 years previous.

The patient did not have other disease that could cause immune suppression. In nasal endoscopic examination, there was purulent discharge on right middle meatus (Fig. 1). CT scan revealed a soft tissue lesion with faint high-at-tenuated mottled calcification in the right maxillary sinus (Fig. 2A). She was diagnosed with right maxillary fungal sinusitis based on radiological results. Endoscopic sinus surgery under general anesthesia was performed. During operation, we incidentally detected and removed foreign bodies in the middle meatus, surrounded by typical fungus ball material. Pathology findings after surgery, authors could identify the presence of the fungal hyphae (Fig 3). The extirpated foreign material was confirmed to consist of gutta-percha (Fig. 4). We postoperatively reviewed the preoperative CT scan and noted empty spaces in the roots on the right maxillary tooth where root-filling materials would be positioned (Fig. 5). Changing the window level of the CT scan showed additional denser material, suggesting the presence of a foreign body surrounded by less dense mottled materials that had been missed in the bone window setting (Fig. 2B). The postoperative course was satisfactory.

**DISCUSSION**

A fungus ball of the maxillary sinus is the most common fungal sinusitis and usually develops unilaterally in the maxillary sinus without bony invasion. The pathogenesis of a fungus ball of the maxillary sinus remains largely unknown. However, it has been suggested that teeth having undergone a root canal with overextension of the root canal sealer into the sinus might be one of the etiological factors of aspergillosis of the maxillary sinus in healthy patients. The floor of the maxillary sinus or sinus mucosa can be damaged by chemical and physical trauma, causing inflammation as a result of endodontic treatment. Furthermore, root-filling materials containing zinc oxide-eugenol have been reported to microbiologically promote the growth of Aspergillus fumigates.

In the view of endodontic treatment, when sealer and/or gutta-percha are extruded into the periapical tissue, there is always a severe inflammatory reaction. For best endodontic treatment, the obturation must remain at the apical constriction.

Radiographically, the unique appearance of a dense opacity in the maxillary sinus is considered a characteristic finding of a fungus ball. In this case, we diagnosed a fungus ball in the maxillary sinus. However, we were not aware of gutta-percha in the nasal cavity or a preoperative filling defect in the maxillary tooth. This case shows that we must consider the possibility of a foreign body such as root filling materials and perform a thorough evaluation around the maxillary teeth and sinus in the presence of unilateral maxillary fungal sinusitis with a history of endodontic treatment.

As far as we are aware, this is the first report of root filling material (gutta-percha) surrounded by a fungus ball located in the nasal cavity, though migration of gutta-percha from a root canal location into the ethmoid sinus without fungal sinusitis was reported in 2004.

저자역할(Author Contributions)

REFERENCES


