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Bilateral postoperative maxillary cysts after orthognathic surgery: A case report

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ABSTRACT

Postoperative maxillary cysts are locally aggressive lesions, usually developing as delayed complications many years after radical antral surgery. This report describes a case of bilateral postoperative maxillary cysts following orthognathic surgery performed approximately 21 years previously. The patient complained of stinging pain on her right cheek. Radiographic examination revealed low-attenuation lesions on both maxillary sinuses with discontinuously corticated margins without distinct expansion or bone destruction. The cysts were enucleated with the removal of metal plates and screws for pain relief. Histopathological examination confirmed the diagnosis of postoperative maxillary cysts lined by ciliated, pseudostratified columnar cells. The patient has remained asymptomatic thus far, and there was no evidence of local recurrence at 21 months of postoperative follow-up. (***Imaging Sci Dent 2014; 44: 321-4***)

KEY WORDS: Maxillary Sinus, Orthognathic Surgery, Cysts, Radiography

Postoperative maxillary cysts, also known as surgical ciliated cysts, are tardy complications after a radical surgery for maxillary sinus disease.[1] They are locally aggressive unilocular or multilocular and fully or partially sinus-occupying lesions.[2,3] As the size of the lesions increases, the cysts may displace or perforate adjacent sinus walls and invade adjacent tissues.[2] These lesions clinically present as expansive swelling of the dental alveolus and palate with pain, discharge, or fistula formation.[4]

Sugar et al[5] first reported three cases of postoperative maxillary cysts that occurred after orthognathic surgery, and since then, several additional cases have been reported.[6-8] As the number of cases of orthognathic surgery has increased recently, the diagnosis of postoperative maxillary cysts has become more important. Although panoramic and Waters' radiographs are the commonly used diagnostic imaging modalities for these lesions, the use of computed tomography (CT) has been proposed recently due to its relatively high diagnostic accuracy.[9]

This report describes a case of bilateral postoperative maxillary cysts following orthognathic surgery performed approximately 21 years ago; these cysts were diagnosed using some imaging modalities including CT. To the best of our knowledge, this is the first report of postoperative maxillary cysts occurring in both maxillary sinuses.

Case Report

A 42-year-old woman came to Seoul National University Dental Hospital complaining of intermittent stinging pain in her right cheek. Previously, she had visited a local dental clinic due to intermittent pain in the past 6 months. The vitality test of upper-right teeth had been performed. Even though the teeth had been vital, she had received endodontic treatment on the upper-right second premolar due to worsening pain. Then, she was referred to the Department of Oral and Maxillofacial Radiology at our hospital when she complained of new sharpening pain on the right side of her face after two or three days.

There were no clinically abnormal findings in physical and oral examinations. The patient only had a history of

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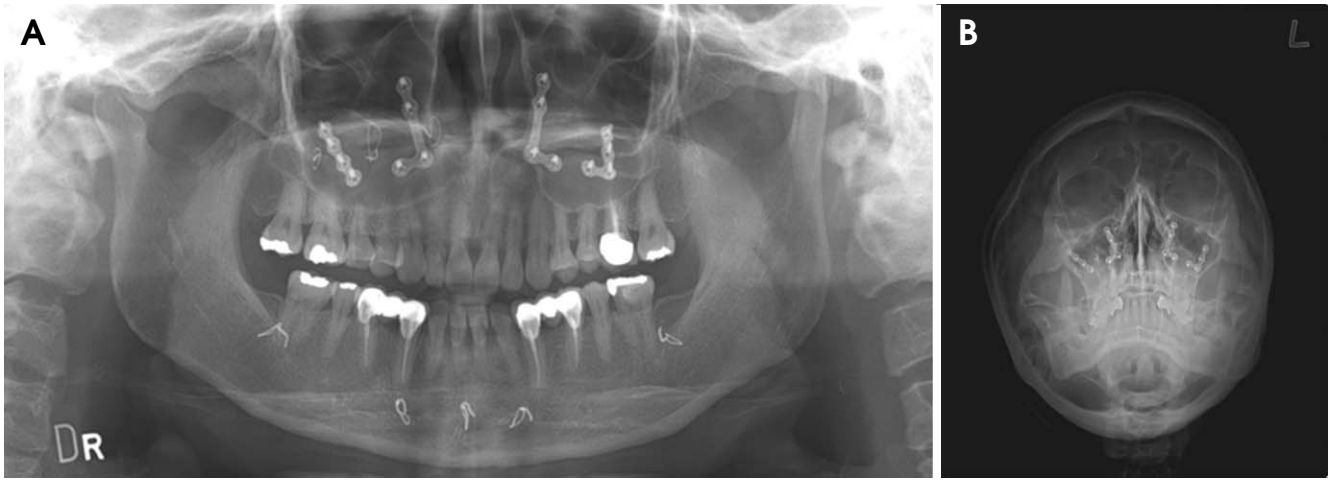

Fig. 1. A. Panoramic radiograph shows dome-shaped homogeneous radiopacities at the lower regions in both maxillary sinuses. There are metal plates, screws in the maxilla, and wires on the mandible from the previous orthognathic surgery. B. Waters' radiograph shows increased haziness at the lower regions in both maxillary sinuses, but there is no distinct expansion or bone destruction.

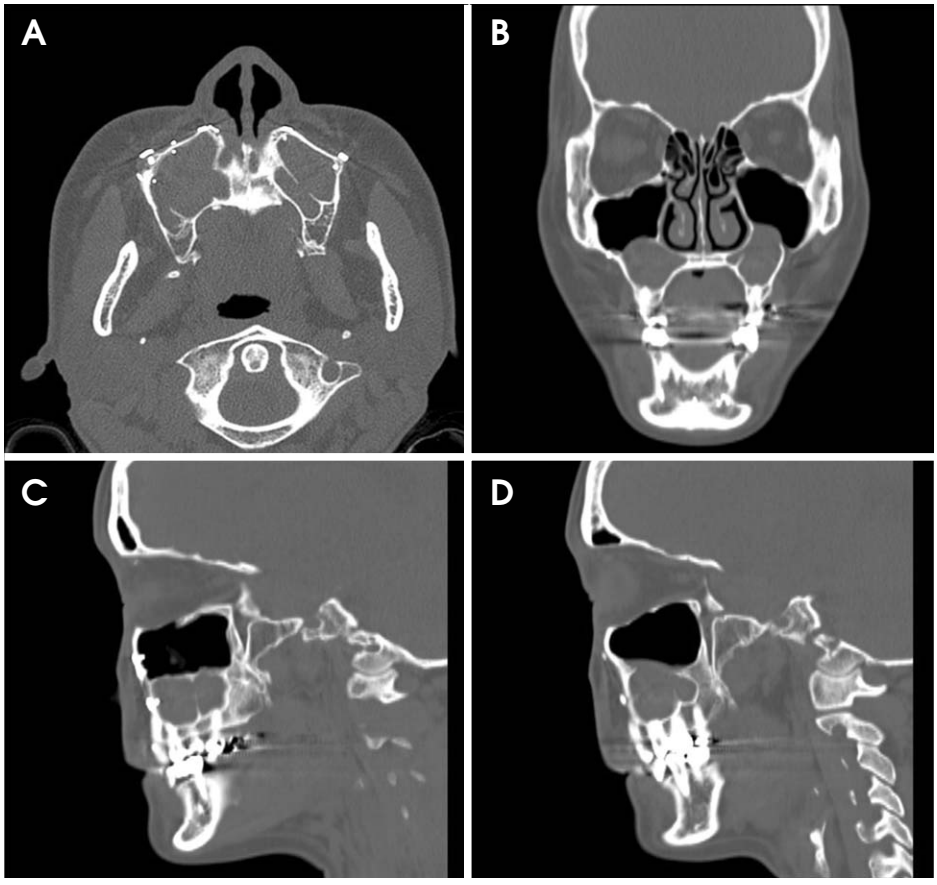

Fig. 2. Computed tomography images show low-attenuation lesions in both maxillary sinuses. A. Axial image reveals no distinct expansion and bone destruction of the lesions. Postoperative signs such as antral wall thickening, sclerotic change, and loss of continuity of the cortical antral wall lining are not seen. B. Coronal image shows that the lesions extended slightly below the floor of both nasal sinuses. C and D. Sagittal images of right (C) and left (D) maxillary sinuses reveal the undulated margins, which were discontinuously corticated.

orthognathic surgery on both the maxilla and the mandible performed about 21 years prior to this visit. Panoramic and Waters' radiographs revealed increased haziness and dome-shaped homogeneous radiopacities in the lower regions of both maxillary sinuses (Fig. 1). Endodontic retreatment was performed on the upper-right second premolar because it was thought that radiologically, the origins of the pain were not in the maxillary sinuses but in the teeth, resulting in only a temporary reduction of pain that later intensified.

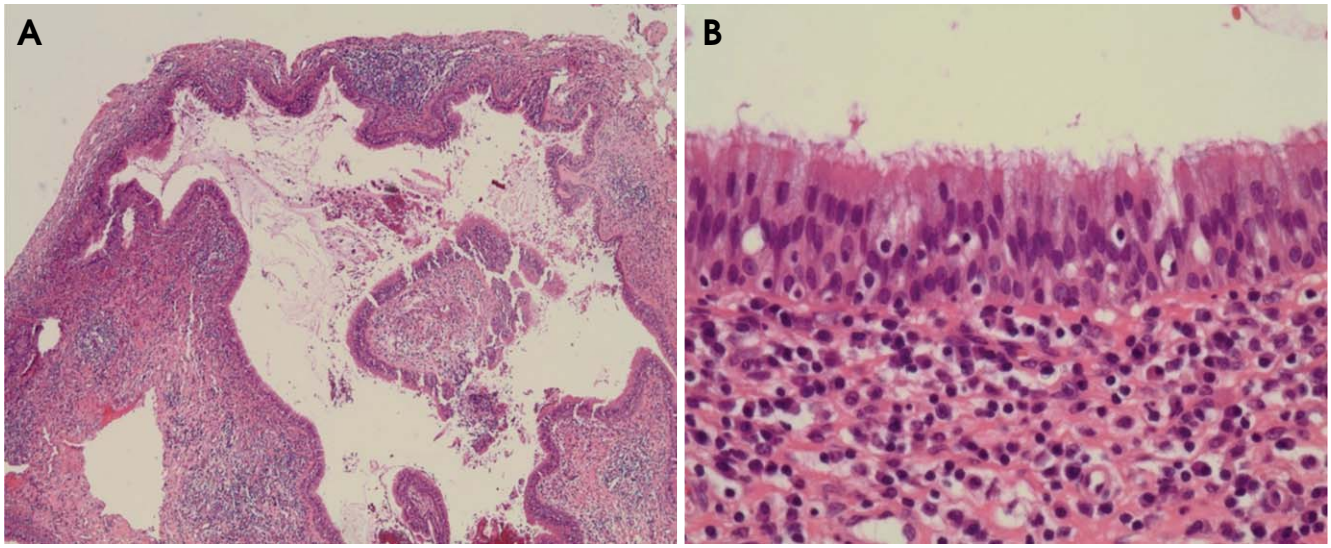

Fig. 3. A. Histopathological examination shows the inflammatory cells infiltrating around the cystic cavity (H&E stain, 40 ×). B. The cyst is lined by ciliated, pseudostratified columnar cells (H&E stain, 400 ×).

Computed tomography (CT) was performed for finding other origins of the pain, and low-attenuation lesions were detected in both maxillary sinuses. The lesions measured approximately 36 mm × 27 mm × 20 mm in the right maxillary sinus, and 30 mm × 21 mm × 25 mm in the left maxillary sinus. The margins were undulated, while corticated discontinuously. The lesions extended slightly below the floor of both nasal sinuses. No internal calcifications were present. Postoperative signs including antral wall thickening, sclerotic change, and loss of continuity of the cortical antral wall lining[10,11] were not observed on the CT images. Furthermore, there were no characteristic features of distinct expansion or bone destruction of soft tissue (Fig. 2). The lesions were eventually diagnosed as retention pseudocysts formed between septa.

The origins of the pain seemed to be not odontogenic lesions but the low-attenuation lesions in both maxillary sinuses. In order to resolve the patient's severe pain, enucleation of the cysts with the removal of the plates and screws on both maxillary sinuses was performed, and biopsy specimens were obtained for histopathological examination.

Photomicrographs showed that inflammatory cells had infiltrated around the cystic cavity (Fig. 3A). The lesions had true cystic structures lined by ciliated, pseudostratified columnar epithelium (Fig. 3B). These findings of the microscopic examination were consistent with the postoperative maxillary cysts. Finally the lesions were diagnosed with them in both maxillary sinuses.

At 21 months of follow-up, the lesions healed uneventfully and there was no evidence of local recurrence.

Discussion

Postoperative maxillary cysts are mainly complications that occur after radical surgery for sinus disease.[3] In Japan, they occur in up to 20% of patients who undergo radical maxillary sinus surgery.[12]

They may also occur after Le Fort I osteotomy. The maxillary sinuses, nasal sinuses, and mucosa of nasopalatine duct can be damaged during Le Fort I osteotomy. At the time of such damage, the mucosal cells are inserted between bony edges of the osteotomies[6] and result in cystic degeneration.[5] The present case of postoperative maxillary cysts might have occurred due to this mechanism.

There have been a few reports of postoperative maxillary cysts after orthognathic surgery.[5-8] These cysts occurred on various regions of the maxilla or the mandible, mostly 3-7 years after the surgery. In Korea, only two cases have been previously reported; one occurred between the left paramedian side of maxillary alveolar process and hard palate 3 years after the surgery,[13] and the other on the anterior region of maxilla 6 years after.[14] The patients complained of pain, tenderness, and swelling similar to other patients with postoperative maxillary cysts.

This report might be the first reported case of postoperative bilateral maxillary cysts following orthognathic surgery. Radiologically, none of the typical postoperative

symptoms, or distinct expansion or bone destruction, appeared on either maxillary sinus. The lesions occurred in both maxillary sinuses and had a similar appearance. The lesions extended slightly below the floor of both nasal sinuses; however, the sinuses were considered to be not pathologic but normal maxillary sinuses. In addition, they occurred as long as 21 years after the surgery and did not seem to be aggressive. Therefore, postoperative maxillary cysts could be excluded, and the initial diagnosis was retention pseudocysts formed between septa in both the maxillary sinuses.

However, the cystic cavities were histopathologically lined by ciliated, pseudostratified columnar cells with infiltrations of inflammatory cells, establishing the diagnosis of bilateral postoperative maxillary cysts.

On the CT images, it was supposed that the origins of these lesions were the screws on the lower area of the anterior walls of both maxillary sinuses because the screws were the only surgical evidence around the lesions.

Postoperative maxillary cysts after orthognathic surgery have not been reported often; however, their prevalence might increase and the lesions might be located in various areas of the jaw because of the recent rapidly increasing number of the cases of orthognathic surgery for cosmetic purposes.[13]

In order to prevent this complication after orthognathic surgery, complete removal of respiratory mucosa, minimization of bleeding, prevention of maxillary ostium obstructions, and avoidance of irritation of the surrounding tissues are needed during the surgery.[14] However, it is difficult to prevent the formation of postoperative maxillary cysts in the maxillary sinus even when the surgeons pay attention to the abovementioned factors.

Panoramic and Waters' radiographs are of value in the detection of maxillary sinus diseases;[15-17] however, CT is superior to plain films[18] and improves the ability to evaluate postoperative maxillary cysts.[9] Therefore, although periodic plain radiographic follow-up is required for patients who have undergone orthognathic surgery, these patients may also need to undergo CT depending on the circumstances, for finding the location, size, and extent of the lesions and making an accurate diagnosis.

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