Repetitive Postoperative Infection after Le Fort I Osteotomy in a Patient with a History of Non-allergic Rhinitis

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Abstract

Maxillary sinus infection following Le Fort I osteotomy is rare in patients without a history of preexisting nasal symptoms. A case of a 19-year-old male patient who suffered from preoperative chronic non-allergic rhinitis and developed repetitive postoperative maxillary sinus infection after Le Fort I osteotomy is reported.

Key words: Orthognathic surgery, Complication, Maxillary sinusitis

Introduction

Le Fort I osteotomy is a routine procedure for maxillofacial surgeons, especially in orthognathic surgery. Life-threatening complications are uncommon although damage to the extensive vascular supply of the maxilla may result in intra-operative bleeding[1]. A number of postoperative complications including avascular necrosis of the whole or parts of the maxilla, oronasal communication or fistula formation, loss of tooth vitality, perforation of the nasal mucosa or septum, subcutaneous emphysema, hemorrhage, cavernous sinus thrombosis, and relapse have all been reported[1-4]. The most common complication is infection.

The authors recently treated a patient with an uncommon infection following orthognathic surgery. This report presents a clinical case with repetitive postoperative infections after Le Fort I osteotomy in a patient who suffered from chronic non-allergic rhinitis at irregular intervals, reviews the current literature and proposes management of this condition.

Case Report

A 19-year-old man was referred by an orthodontist for evaluation and correction of mandibular prognathism, malocclusion and anterior open-bite. The patient had a history of inactive tuberculosis. The patient also had a history of chronic intermittent non-allergic rhinitis that was treated with steroids and anticongestants acutely. Vasoconstrictor in a nasal spray was also used for symptomatic treatment.

The patient underwent Le Fort I osteotomy, bilateral sag-
ittal split osteotomy, right lateral angle reduction and right chin contouring under general anesthesia. The maxilla was fixated with four 4-hole metal plates in the piriform rim and zygomatic maxillary buttress areas (Fig. 1). The patient started physical therapy after release of maxillomandibular fixation, five days following surgery.

One month after the operation, the patient complained of discomfort on both sides of the maxilla. Clinical findings included painful swelling of both cheeks, bilateral nasal obstruction, and sensitivity to percussion on the left maxillary first and second premolars and the first molar tooth. A computed tomographic scan of the maxillofacial region showed haziness of both maxillary sinuses (Fig. 2). Based on these findings, a provisional diagnosis of postoperative infection of both maxillary sinuses was suggested. The patient was managed with antibiotics (amoxicillin 500 mg/Clavulanate potassium 125 mg 1 tablet [Ilsung, Seoul, Korea], metronidazole 500 mg [CJ, Seoul, Korea] 3 times a day), non-steroidal antiinflammatory drugs and antacids for two weeks. The symptoms subsided.

However, the patient complained of recurrent discomfort of the left maxilla again two months following Le Fort I surgery. The clinical findings were similar to those noted one month before, and the patient was admitted to hospital for five days. The authors thought that the unusual recurrent maxillary sinusitis after orthognathic surgery was due to secondary infection resulting from chronic rhinitis in his medical history and needed surgical intervention. The patient was treated with intraoral incision and drainage under local anesthesia, sinus irrigation with a gentamycin...
solution, and the same medications that were used one month before for a period of two weeks. During the incision and drainage, the osteotomy line was fully opened so a lateral window opening of the maxillary sinus was not necessary. The patient was discharged after six days with symptoms subsided.

Eight months following Le Fort I surgery, the plates and screws were removed from operative site under local anesthesia. With the exception of a small bony gap, the previously existing osteotomy line had healed with bony union (Fig. 3). The patient remains symptom free a year following the initial maxillary osteotomy.

Discussion

A variety of complications following Le Fort I osteotomies have been described. One commonly reported complication after Le Fort I osteotomy is maxillary sinusitis. Young and Epker[5] in 1972 reported that anterior maxillary osteotomy produced no pathologic changes in maxillary sinus function. Perko[6] in 1972 reported that postoperative radiographic evidence of maxillary sinusitis was uncommon following osteotomies of the Le Fort I and III type, Nustad et al.[7] in 1986 reported that development of sinusitis in patients who had undergone maxillary surgery is uncommon. However, Bell et al.[2] in 1986 reported that preoperative chronic infection of the maxillary sinus may result in an exacerbation during the postoperative period. On the other hand Williams et al.[8] reported that nasal airway function improved after maxillary advancement.

We hypothesize that preexisting chronic non-allergic rhinitis occurring at irregular intervals, even though not a direct sinus pathogen, places patients at risk for secondary maxillary sinus irritation, as in this case.

Rhinitis is irritation and inflammation of the mucous membrane inside the nose and is categorized into three types: i) infective rhinitis; ii) non-allergic rhinitis; iii) allergic rhinitis. In 1996, Sandler et al.[9] reported that these conditions may involve the following: 1) the direct action of acute and late-phase allergic reactions which cause mucosal edema and hypersecretion; 2) repeated exposure to an antigen that lowers the threshold for reactivity of the sinus mucosa to irritants; and 3) nasal polyps, often found in these patients, which can contribute to inadequate sinus drainage. To treat rhinitis, intranasal steroids are the treatment of choice, and allergen avoidance, oral antihistamine, intranasal antihistamine, leukotriene receptors antagonist, and specific immunotherapy are effective. Prophylactic antibiotics used during the osteotomy may help prevent postoperative infections.

The authors initially thought this case represented a postoperative infection in the sinus. However, it seems that secondary infection due to chronic non-allergic rhinitis that the patient suffered at in irregular intervals was the cause. A preexisting history of chronic intermittent non-allergic rhinitis may be an indicator of increased risk for postoperative sinus infection. It was unclear how the nasal infection communicated to the sinuses. However, the altered perinasal bony structures and the healing period may initiate infection from nasal area to antrum. Should prophylactic antibiotics treatment or additional surgical procedures be considered when performing maxillary osteotomy in non-allergic rhinitis patients because of the high risk for postoperative maxillary infection? We thought that prophylactic antibiotics medication routinely postoperatively would not be necessary but it would be helpful for surgeons to recognize the potential of postoperative sinus infection from chronic rhinitis.

The authors suggest that although rhinitis is not a direct sinus disease but a nasal symptom, it could predispose to postoperative sinusitis, an uncommon complication after Le Fort I osteotomy. Management of this case consisted of intraoral incision and drainage, sinus irrigation with a gentamycin containing solution, and antibiotic medi-
This patient with a history of chronic non-allergic rhinitis had maxillary sinusitis induced by secondary infection following Le Fort I osteotomy. One probable explanation for the postoperative maxillary sinusitis is that preexisting rhinitis predisposes the patient to sinus infection and aggravates the condition, creating a vicious cycle. The treatment of this repetitive infection with antibiotics alone was insufficient. The infection resolved after adequate drainage and irrigation with invasive surgery. Therefore, surgeons should be careful to prevent postoperative infections in patients with a history of allergic or non-allergic chronic rhinitis who may be at risk for postoperative maxillary sinusitis following Le Fort I osteotomy.

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References