Case Report

Aspergillosis associated with surgically assisted rapid maxillary expansion

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ABSTRACT

Surgically assisted rapid palatal expansion (SARPE) is one of the most common orthognathic surgery operations for the treatment of maxillary transverse deficiencies. Although this operation is considered technically simple and has low complication rate, predisposing factors can complicate the postoperative period. In this case report, fistula formation and aspergillosis after SARPE operation were presented.

Key words: Aspergillosis, functional endoscopic sinus surgery, surgically assisted rapid maxillary expansion

Introduction

Aspergillosis is the most common fungal infection of the paranasal sinuses and it usually occurs unilaterally in maxillary sinus.[1] On the other hand, *Aspergillus* infection of the maxillary sinus is relatively rare in nonimmunocompromised patients.[2,3]

Transverse maxillary deficiency (TMD) is one of the most common skeletal dysplasias observed in clinical practice.[4] It can be treated with several techniques such as slow orthodontic expansion, rapid palatal expansion, and surgically assisted rapid palatal expansion (SARPE),[5] and the recommended technique for adult patients is SARPE because of limited osteogenic activity of palatal suture.[6]

The use of SARPE to treat TMD decreases adverse effects of orthodontic expansion such as lateral tipping of posterior teeth,[7] extrusion,[8] periodontal membrane compression, buccal root resorption,[9] alveolar bone bending,[10] fenestration of the buccal cortex,[11] palatal tissue necrosis,[12] inability to open the midpalatal suture, pain, and instability of the expansion.[13]

Although SARPE is a relatively easy and an effective operation, complication possibility due to technical sensitivity of surgical approach and patient's systemic condition must be considered.

In this case report, perforation-related fistula formation on inferior meatus and unilateral aspergillosis infection in maxillary sinus associated with SARPE, treated with functional endoscopic sinus surgery (FESS), were evaluated.

Case Report

A 32-year-old systemically healthy woman with TMD was referred from the Orthodontics Department. After clinical examinations and consultations with the Orthodontics Department, SARPE was planned. The patient's medical history was unremarkable.

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The patient was operated under general anesthesia with nasal endotracheal intubation. Before the surgical procedure, expansion device was activated. Following the full-thickness sulcular incision on the deepest level of the vestibular sulcus incision, the lateral surface of the maxilla was exposed with subperiosteal dissection. Nasal mucosa was elevated from the lateral nasal wall without any perforation, and bilateral corticotomy starting from the pyriform aperture to the pterygomaxillary fissure was performed. The medial walls of maxillary sinuses were separated bilaterally using guided osteotomes, and the palatal suture was separated using sharp chisel osteotome.

After splitting of segments, the expansion device was deactivated. The incision was closed primarily, and anterior nasal packs (Merocel standard dressing) were applied. The patient was discharged on the same day, and the 1st week of healing period was uneventful.

After 2 weeks, nasal defluxion complaint was reported. The patient consulted an ENT specialist and computed tomography revealed that the left middle meatus was congested with radiopaque substance [Figure 1]. Besides, endoscopic sinus examination showed that there was pus drainage from maxillary sinus to inferior meatus through fistula [Figure 2], and augmented amoxicillin with clavulanic acid (Augmentin, 1 g) was prescribed for 2 weeks to control sinusitis.

After 2 weeks, a granulation tissue in the maxillary sinus was observed during the endoscopic examination [Figure 3], and FESS was performed for decontamination of the maxillary sinus and correction of ostium function. Augmented amoxicillin with clavulanic acid (Augmentin, 1 g) was prescribed for 2 weeks again after FESS, and histopathological examination of the substance removed from the sinus revealed aspergillosis [Figure 4a-c].

After 3 weeks, it was observed that the ostium was functioning and there was no sign of aspergillosis. In 3 months, no recurrence was defined.

Discussion

TMD is a major component of several malocclusions. Orthopedic and orthodontic forces are used generally to correct a TMD in young patients. Correction of TMD in adult patients is more challenging because of changes in osseous articulations of the maxilla with adjoining bones. Procedures described for the correction of TMD have conventionally been grouped into two categories as segmenting the maxilla during the Le Fort 1 osteotomy in a widened transverse dimension and SARPE. However,

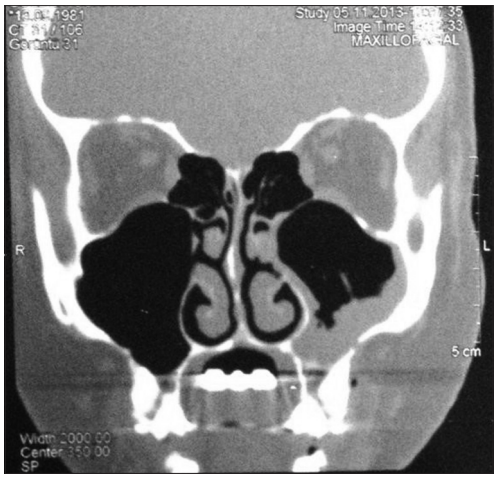

Figure 1: Computed tomography imaging of congested ostium and radiopaque appearance

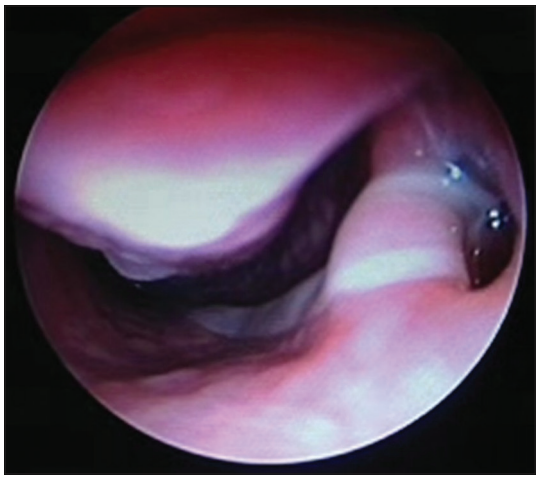

Figure 2: defluxion from fistula

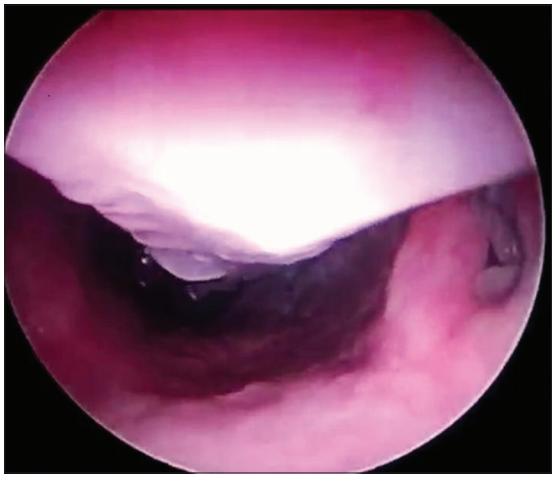

Figure 3: granulation formation

SARPE has become a common procedure and it has been considered as the procedure which has the lowest morbidity incidence, especially when compared with other orthognathic surgery procedures.[14]

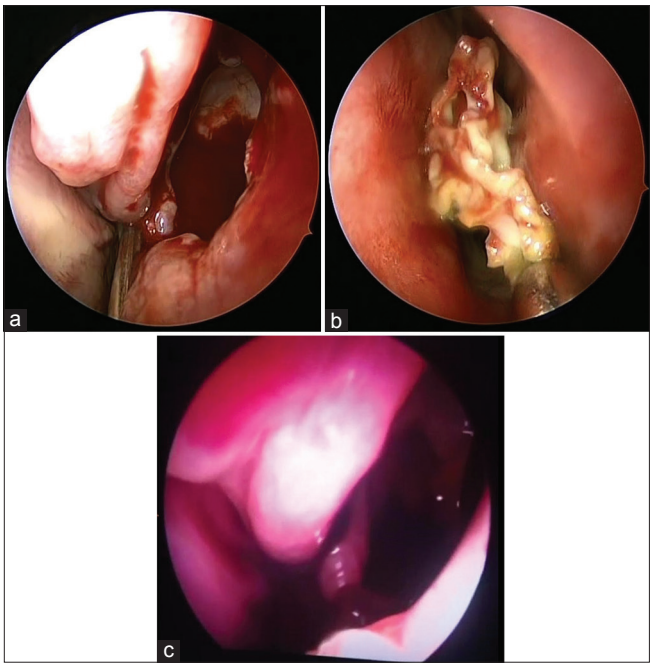

Figure 4: (a) middle meatal antrostomy, (b) removal of substance located in the maxillary sinus, (c) postoperative appearance of the middle meatus

SARPE allows clinicians to achieve satisfactory maxillary expansion in a skeletally mature patient and it decreases adverse effects of orthodontic expansion.[15] Although SARPE is a relatively simple procedure among other orthognathic surgery techniques, complications related with surgical technique and systemic condition of the patient must be considered.

In this case, fistula formation between the maxillary sinus and the inferior meatus occurred during osteotomy step of SARPE procedure, and the alteration of the sinus ventilation was complicated by the presence of aspergillosis. It is well-known data that the use of wide broad spectrum antibiotics in a long period can cause fungal infection.[16] However, unilateral aspergillosis cannot be considered only with antibiotherapy.

The middle meatus dysfunction and the operation trauma are other reasons of aspergillosis formation in this case. Although potential association between aspergillosis and SARPE was not described before in literature, it must be noted that SARPE causes perforation and fistula formation between the nasal cavity and maxillary sinuses. Consequently, this possibility can increase the risk of aspergillosis formation.

Conclusion

Despite the frequent use of the procedure, only limited data on the prevalence of postoperative complications after SARPE are available in literature. On the other hand, some severe and unusual complications have been reported.[15]

It should be noted that fistula formation and meatus dysfunction related with SARPE operation cause fungal infection development. Careful preoperative planning and technical sensitivity is necessary to avoid complications.

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Conflicts of interest
There are no conflicts of interest.

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