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An Unusual Case of Mouth Opening Limitation Caused by Bilateral Coronoid Process Hyperplasia: A Case Report

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ABSTRACT

Background: Coronoid process hyperplasia is the enlargement of the coronoid processes that may lead to their impingement on the zygomatic arch and limitation of mouth opening. It can be unilateral or bilateral and usually affects men in the second decade of life. The etiology of coronoid process hyperplasia is unknown. The aim of treatment is to restore the mouth opening, and the only available treatment is surgery. Intraoral coronoidectomy has been suggested as the treatment of choice. Although the immediate increase in jaw mobility is gained after surgery, proper postoperative rehabilitation and physical therapy are necessary to maintain the mouth opening range.

Case Presentation: This case report is about a 40-year-old male patient with bilateral mandibular coronoid process hyperplasia treated with coronoidectomy followed by intensive physical therapy.

Conclusion: Coronoid process hyperplasia is a rare condition interfering with the patient's normal mouth opening. Dentists should consider this diagnosis in case of painless mouth opening limitations.

Original Article

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Introduction:

One of the functional disorders of the temporomandibular joint (TMJ) is the mouth opening limitation. The normal mandibular range of motion and mouth opening is generally accepted to be 35 mm to 45 mm, which varies with stature, gender, etc.[1,2]

A limited mandibular range of motion results from intracapsular or extracapsular disorders. Intracapsular disorders may include disc displacement without reduction, calcified bodies within the joint space, fibrosis, fracture, ankylosis, and tumors. Extracapsular disorders include dysfunction of the muscles involved in mandibular elevation, hypertrophy of the coronoid processes, fractures, and capsular scarring.[3]

Coronoid process hyperplasia is the enlargement of the coronoid processes, which may lead to their impingement on the zygomatic arch. [3] Coronoid process hyperplasia is a congenital or developmental painless TMJ disorder with a progressive decrease in mouth opening, which is usually bilateral.[4] It often appears during puberty and predominantly affects males. Masticatory muscle fibrosis usually occurs secondarily to hypofunction. Usually, there is facial asymmetry in unilateral cases.[3] Rowe has described the most common symptoms of bilateral coronoid process hyperplasia as painless mouth opening limitation with no occlusal abnormality, which is caused by infringement of the coronoid process on the zygomatic arch. [5]

The panoramic view, oblique posterior-anterior view, and modified Town's view for condyles are the most used conventional radiographic imaging techniques for evaluation of the coronoid processes. Computed tomography (CT) with three-dimensional (3D) reconstructions and cone-beam CT (CBCT) are the best and most accurate techniques that can be used today. [6]

This case report is about a patient with bilateral mandibular coronoid process hyperplasia treated with coronoidectomy followed by intensive physical therapy.

Case Presentation:

A 40-year-old male patient with good general health presented for treatment to our clinic in October 2017, with a complaint of painless mouth opening limitation. In the clinical examination, there was no tenderness upon muscle and TMJ palpation. The cranial nerves were intact. The patient reported no history of facial or cranial trauma. He had never undergone any type of dental treatment because of the mouth opening limitation. The overall shape of the face was symmetric, and the patient had a symmetric maximum mouth opening with 15 mm of inter-incisal distance and no joint sounds present. Right and left lateral movements were 4 mm each. The maximum mouth opening did not increase with assisted mouth opening, and no muscle stiffness was sensed. Based on the above, the initial clinical diagnostic impression was some kind of bony mechanical engagement, and images were requested. The panoramic radiograph showed the bilateral enlargement of the coronoid processes (Figure 1), which was confirmed by CBCT (Figure 2) to be bilateral coronoid process hyperplasia.

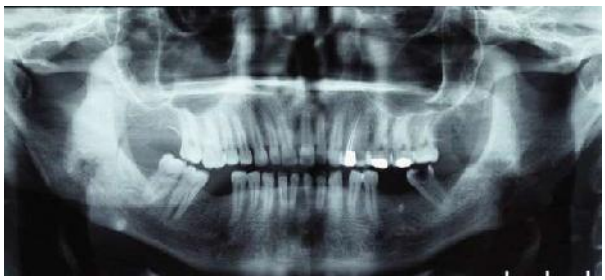

Figure 1. Bilateral enlargement of the coronoid processes (panoramic view)

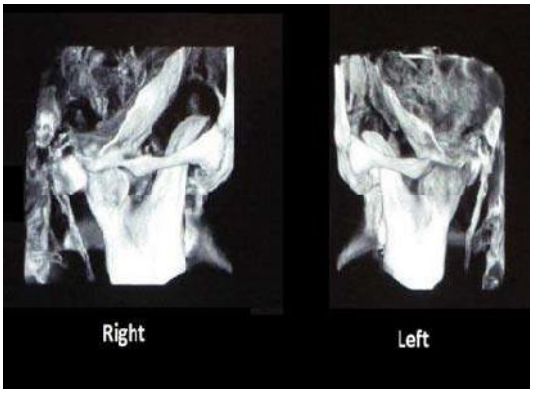

Figure 2. Bilateral enlargement of the coronoid processes (cone-beam computed tomography (CBCT) view with three-dimensional (3D) reconstruction)

In the operating room, the patient was intubated via awake nasal intubation technique using fiberoptic equipment. Under general anesthesia, bilateral intraoral coronoidectomy was performed using a reciprocating saw (Figures 3 and 4), and the heterotopic bone was removed (Figure 5).

Figure 3. Right side coronoidectomy using a reciprocating saw

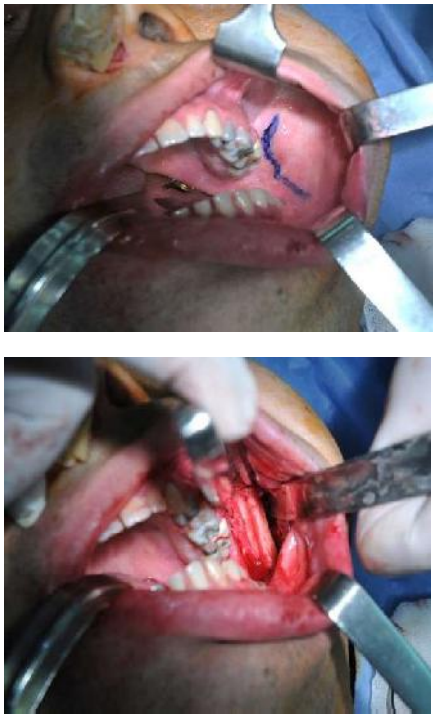

Figure 4. Left side coronoidectomy using a reciprocating saw

Figure 5. Removal of the heterotopic bone of the coronoid processes

Figure 6. Immediate postoperative maximum mouth opening in the operating room

Immediately after surgery, the maximum mouth opening increased to 38 mm in the operating room (Figure 6). Physical therapy was initiated two weeks postoperatively to help the recovery of the mandibular normal range of motion by stretching the masticatory muscles and intra-capsular fibrosis created due to years of mandibular hypofunction. After 6 months, the patient had 35 mm of mouth opening and left and right lateral movements of 7 mm each without any pain or TMJ sounds (Figure 7).

Figure 7. Maximum mouth opening range before and 6 months after surgery

Discussion:

The most common causes of mouth opening limitation are temporomandibular disorders (TMD) which are characterized by restrictions, deviations, and hypomobility.[7,8] Coronoid process hyperplasia is another cause of mouth opening limitation; it was described for the first time in 1853 by Von Langenbeck.[9] Since then, unilateral and bilateral cases have been described in both men and women although bilateral cases are more frequent in men. It has been reported that coronoid process hyperplasia usually affects men in the second decade of life.[3,10] Because of its uncommonness, it is usually overlooked or misdiagnosed. This is especially true in unilateral cases which are usually caused by anterior disc displacement without reduction[11] although one of the main characteristics of anterior disc displacement is pain, which is not common in coronoid process hyperplasia.

Mandibular hypomobility can lead to secondary problems such as malnutrition, speech problems, poor oral hygiene, dental problems, facial deformity and asymmetry, masticatory muscle atrophy, and psychosocial problems.[12,13]

The etiology of coronoid process hyperplasia is unknown. Hyperactivity of the temporalis muscle is one of the theories that is based on the reactive elongation response of the coronoid process to the extreme forces exerted by the muscle. [14,15] Because coronoid process hyperplasia is more common in young men, endocrine stimuli may contribute to the development of this condition. [5] A history of trauma may also be associated with this condition. (16) Genetic components and familial factors are also involved in coronoid process hyperplasia.[17]

The easiest and most affordable radiographic examination for this condition is panoramic radiography which depicts a good overall view of the mandible and the coronoid processes.[7] After the diagnosis is confirmed, CBCT can be ordered for better detailed 3D evaluation of the region.

The main aim of treatment is to restore mouth opening by resolving the mechanical engagements in a stable and long-term manner. The only treatment is surgery. Most authors have suggested intraoral coronoidectomy as the treatment of

choice, [3,18-20] which decreases facial nerve injury and avoids extraoral scarring. The submandibular approach has also been proposed for cases with zygomatic-coronoid ankylosis.[21] In case of a very long coronoid process, the coronal approach has also been suggested.[22,23]

Although an immediate increase in jaw mobility is gained after surgery, proper postoperative rehabilitation and physical therapy are necessary to maintain the mouth opening range; this has been emphasized by many authors.[10,18,22] Mouth opening can become limited again by fibrosis formation secondary to hematoma in the area.[3,24] McLoughlin et al have suggested inadequate rehabilitation as a possible cause of the recurrence of mouth opening limitation.[3]

Conclusion:

Coronoid process hyperplasia is a rare condition interfering with the patient's normal mouth opening. Dentists should consider this diagnosis in case of painless mouth opening limitations.

Conflict of interest: The authors declare that they do not have any conflict of interest.
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