Post-traumatic-Zygomaticocoronoid Ankylosis: A Rare Clinical Case Report

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Fusion of the zygomatic bone to the coronoid process of the mandible is a rare phenomenon reported in the literature and commonly called as zygomaticocoronoid ankylosis. It can be sequel of trauma or infection in the midfacial region, mimicking a wide range of problems including the common temporomandibular joint ankylosis and dysfunction. Maxillofacial trauma involving the displaced fracture of zygoma can obstruct the movement of coronoid and if not treated can cause ankylosis between both bones. It is very difficult to identify zygomaticocoronoid ankylosis on conventional radiographs and requires the through clinical and advanced radiological evaluation like cone-beam computed tomographic (CBCT) to diagnose it. CBCT can be a great help to identify the size and extension of ankylotic mass and decide the approach to remove it. Zygomaticocoronoid ankylosis can be approached intraorally by Keen's incision, and extraorally through a hemicoronal approach we have approached intraorally. Here, we present surgical management of post-traumatic zygomaticocoronoid ankylosis in 42-year-old male patient who had trismus for 18 years.

Keywords: Ankylosis, Coronoid process, Temporomandibular joint ankylosis, Trismus, maxillofacial trauma, Zygomaticocoronoid ankylosis

INTRODUCTION

Difficulty in mastication and/or limitation in mouth opening is usually encountered because of the disorders of temporomandibular joint (TMJ), zygomatic bone fractures, hyperplasias, tumors of the coronoid process, or infections.¹ Ankylosis of TMJ is the common cause of trismus, producing functional, and esthetic disability in the form of limited mouth opening and deformity of face.² It may be extra-oticular or intra-oticular even mouth opening can be reduced due to oral submucous fibrosis and few fascial space infections involving maxilla-mandible region. In case of maxillofacial trauma, involving the zygomatic complex where it is displaced downward and backward direction can obstruct the jaw movements causing trismus. These fractures should be reduced into their anatomic location and fixed with osteosynthesis. In case of restricted mouth opening, coronoid process locking might be overlooked, because the attention is generally focused on general care of the patient and restricted mouth opening is ignored. If not treated properly, restricted mouth opening can lead to fibrous or bony adhesion between the coronoid process and the zygomatic arch, which is a rare type of extracapsular ankylosis.³ A limited number of such cases are reported in the literature so far and it was first described by Jacob in 1853.³ The purpose of this article is to present a case of post-traumatic zygomaticocoronoid ankylosis and its management.

CASE REPORT

A 42-year-old male patient reported to the Department of Oral and Maxillofacial Surgery with the chief complains of nil mouth opening since 18 years (Figure 1). History of the patient revealed a road traffic accident before 18 years and got injured at right craniofacial region. He got operated and after surgery had gradually decrease in mouth opening which became nil within a time period of 3 months. Since then, the patient had difficulty in chewing, mastication and speech (Figure 2).

On extraoral examination, facial asymmetry was present due to depression on right side of midface region. On TMJ examination no any movement was elicited on either side.

On radiological examination, orthopantomogram showed a bony ankylosed mass at right coronoid process. For
more detailed analysis three-dimensional computed tomographic imaging (cone-beam computed tomographic) was performed, it revealed a bony union between right zygomatic arch and coronoid process. An elongated coronoid process on left side was also noted (Figure 3).

Surgical treatment was carried out under general anesthesia, intraoral Keen’s approach was used to expose ankylosed mass, zygoma, zygomatic arch, and coronoid process, which was then resected and the inner aspect of zygomatic arch was smoothed (Figure 4). Along with that left elongated coronoid process was also removed. Intraoperatively 42 mm mouth opening was achieved. After the operation, patient was encouraged to do mouth opening exercises thoroughly. 6 months after the operation, satisfactory mouth opening was achieved (Figure 5).

**DISCUSSION**

In the case of long history of restricted mouth opening one has to consider following conditions: TMJ ankylosis, coronoid hyperplasia, Jacob’s disease, TMJ dysfunction, myositis ossificans, hyperplasia. Zygomaticocoronoid ankylosis is a rare clinical condition in which union between the coronoid process and zygomatic arch.
occurred either may be due to bony ankylosis or fibrous ankylosis.\textsuperscript{1,3,5}

In 1861, Von Langenbeck described unilateral overgrowth of the coronoid process of the mandible resulting in a diminished range of mandibular movements. Then in 1899 Jacob described the union of the coronoid process of the mandible with the zygoma with a structure anatomically similar to a joint. In literature, reports relating to cases of extra-articular ankylosis in the form of union of the coronoid process of the mandible with the zygomatic arch are scarce.\textsuperscript{5}

The mechanisms by which the ankylosis develops are unclear, since the heterotopic bone is rarely encountered in the maxillofacial region. It may result from metaplastic changes in connective tissue elements that do not ordinarily have osteogenic potential, following trauma, infection or surgery.\textsuperscript{6,9} Histological examination generally reveals proliferating connective tissue with fibroblasts in transition to osteoblasts and areas of cartilage, osteoid, and bone.\textsuperscript{10} According to Rikalainen \textit{et al.} post-traumatic zygomaticocoronoid ankylosis can be prevented if midfacial fractures are treated properly.\textsuperscript{6}

There is a diversity of opinion as to whether the coronoidectomy should be performed intraorally or extraorally. Intraorally, there is no scar mark on the face and no facial nerve injury, but access is difficult. Extraorally coronal approach gives good access, but approach is less esthetic, and there are always chances of facial nerve injury.\textsuperscript{11} Fuzioka \textit{et al.} had inserted free abdominal flap following coronoidectomy to prevent reoccurrence of zygomaticocoronoid ankylosis.\textsuperscript{12} Early post-operative mouth opening exercise and strict follow-up is required to prevent post-operative readhesions.\textsuperscript{7,10} In the presented case coronoidectomy was done through intraoral approach. Complete removal of ankylosed mass on right side as well as resection of elongated coronoid process on left side was done. Early post-operative physiotherapy was started after 3 days. The mouth opening was adequate in subsequent follow-up. Mandibular function was adequate and protrusive and lateral movements of the jaw were restored.

\textbf{CONCLUSION}

Post-traumatic zygomaticocoronoid ankylosis is a rare clinical condition. Only few cases have been reported so far. Hence, the oral surgeons should have a thorough knowledge of clinical and radiographic coordination for appropriate diagnosis of these rare cases. Early post-operative mouth opening exercise, strict follow-up are essential to overcome post-operative adhesions that might develop.

\textbf{REFERENCES}


\textbf{How to cite this article:} Managutti A, Patel N, Menat S, Kamala R, Patel H. Post-traumatic-Zygomaticocoronoid Ankylosis: A Rare Clinical Case Report. IJSS Case Reports & Reviews 2015;1(12):4-6.

\textbf{Source of Support:} Nil, \textbf{Conflict of Interest:} None declared.