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Case Report

Unilateral Coronoid Hyperplasia: The Role of Trauma on Coronoid Process in Growing Patient

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Abstract

The elongation and enlargement of the coronoid processes in Coronoid Hyperplasia (CH) are caused by an overgrowth of normal mature bone. The main clinical feature in unilateral cases may not be reduction in mandibular opening but rather progressive facial asymmetry, a mobile lump above the zygomatic arch or mandibular deviation to the affected side during opening. In current report, we are presented a 14 years old boy with unilateral CH without causing limited mouth opening caused by trauma and treated with coronoidectomy. When we compared two 3D CT findings, the length and shape of coronoid process was changed into one year. This might be explained by the active growing period stimulating the obvious changes on the structure of traumatized coronoid process.

ABBREVIATIONS

CH: Coronoid Hyperplasia; CT: Computed Tomography; CBCT: Cone Beam Computed Tomography

INTRODUCTION

The Coronoid Hyperplasia (CH) is a structural alteration in which the increased coronoid process strikes against the zygomatic arch during the mandibular movements [1,2]. This leads to a progressive, painless difficulty in opening the mouth, due to contact of coronoid process with the temporal surface of the zygomatic bone or medial surface of the zygomatic arch [1].

The term CH may refer to subtly different conditions depending on the authors [3-5]. It is used as chondroma or osteochondroma, both enlargements and thickened but not elongated coronoid processes. This condition may occur as a unilateral or bilateral hyperplasia although clear-cut difference between them is obscure because a "unilateral" case often displays minor abnormalities of the contralateral side. Therefore, the condition must be considered as a spectrum ranging from the pure unilateral case to complete bilateral involvement [1]. In pathogenesis of CH, an endocrine origin, reactive to internal derangement of TMJ [6] or trauma [4], genetic inheritance and syndromic associations have been suggested[7]. The unilateral distribution of masticatory forces [8] and sports related injury has also been put forward as one of the etiology for it [9].

The main clinical feature in unilateral cases may not be reduction in mandibular opening but rather progressive facial asymmetry, a mobile lump above the zygomatic arch or mandibular deviation to the affected side during opening. CH show a marked male preponderance (ratio, 5:1) [10].

In current report, we are presented a 14 years old boy with a pure unilateral CH without causing limited mouth opening caused by trauma and treated with coronoidectomy.

CASE PRESENTATION

14 years old boy was referred to our clinic with a complaining of swelling at the right malar region. He is a football player and he confirmed that he had a fall trauma without any fracture on face during practice six months ago. Since then, he felt slightly pain on palpation and gradually marked swelling on right malar region and movement like as joint when he opens his mouth. The slight facial asymmetry was noted on affected site. Mouth opening was 38 mm without restriction and deviation. There were no complaints over both TMJs. Intraorally, there was no occlusal derangement and bony and mucosal alterations on both jaws but mild tenderness on the upper buccal sulcus. After falling, the panoramic radiograph showed no fracture on jaws but Cone Beam Computed Tomography (CBCT) showed that the right coronoid process elongated towards to inner side of zygoma and no enlargement of the tip of coronoid process when compared to contralateral side. There was no fusion between the coronoid process and zygomatic arch (Figure 1a-c). One year later CBCT showed a bony perforation on the zygomatic bone and the elongated, enlarged and condyle like appearance of coronoid process without fusion. There was no radiographic evidence of presence of any neoplastic growth in the coronoid process (Figure 2).

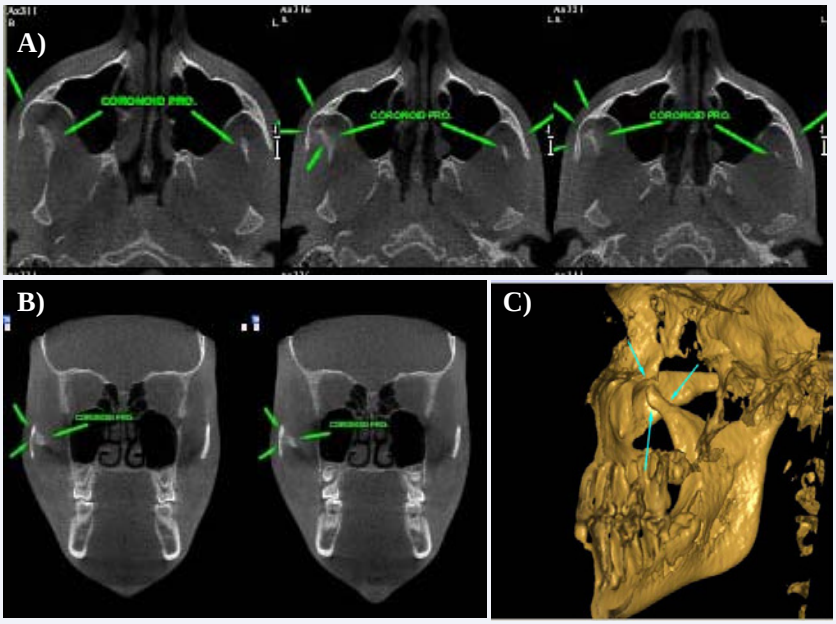

Figure 1 The elongated coronoid process towards to zygomatic bone on axial (a), coronal (b) and 3D CBCT (c).

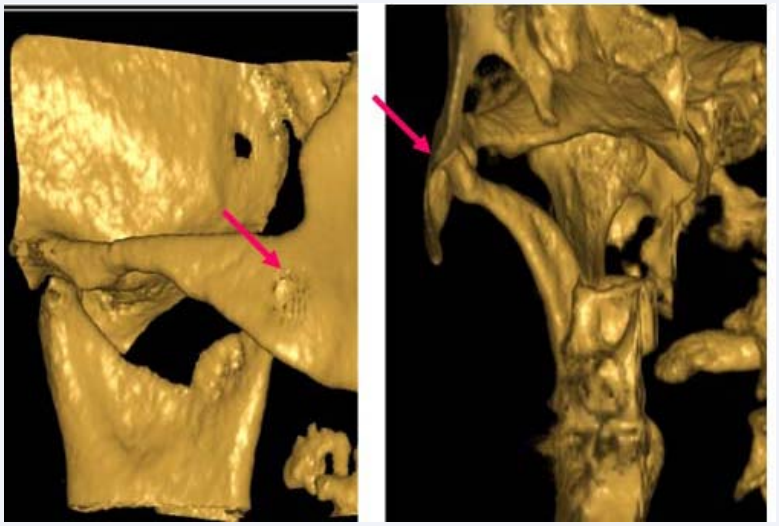

Figure 2 The appearance of bony perforation on zygomatic bone (a), the elongated and condyle shape coronoid process towards to zygomatic bone without fusion and perforation (arrow), (b) on 3D CT after one year diagnosis.

The diagnosis of left unilateral coronoid hyperplasia was made and decided to remove the elongated coronoid process by intraoral approach because mouth opening was not a problem and to avoid any external scars. The hyperplastic bone resembled a condylar head with a pearly white structure resembling cartilage (Figure 3a,b).

The mouth opening exercises were started immediately on the third postsurgical day. At the 1.5 years follow up, the patient did not have any complaints or discomfort when opening the mouth. CBCT was taken to confirm there is no re-growth of the coronoid process (Figure 4).

DISCUSSION

The pathogenesis of CH remains unknown. An endocrine origin was proposed based on the belief that the disorder tends to develop around puberty; however, there is no biological support for this [11]. Studies have indicated that there is a significant relationship between TMJ disorders and CH. The dysfunction of the joint leads to an increased pull or activity of the temporalis muscle without a counter balance from the condylar region resulting in an increase in the size of the coronoid process [6]. There are a few reports of CH associated with facial trauma and sports related trauma [4,9,12]. In our case both TMJ was normal on CBCT and the etiologic factor based on patients' history was trauma but when we compared two CT findings, the length and shape of coronoid process was changed into one year. This might be explained by the active growing period stimulating the obvious changes on coronoid process.

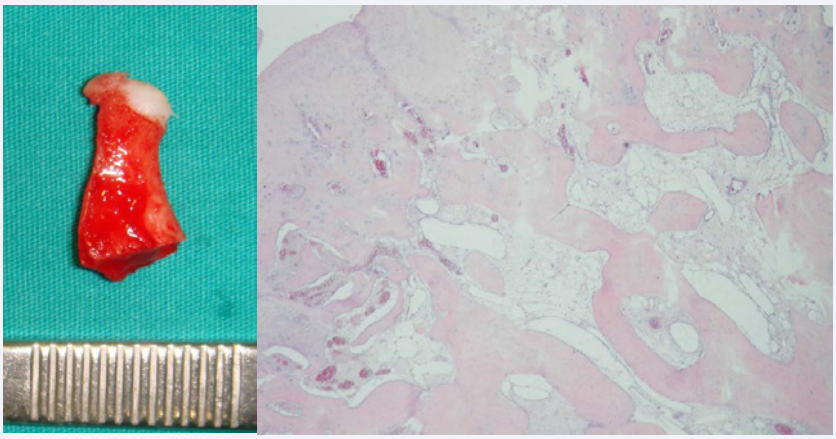

Figure 3 Condyle like speciemen (a) and focal degeneration in cartilage tissue and normal bone structure (Hex40) (b).

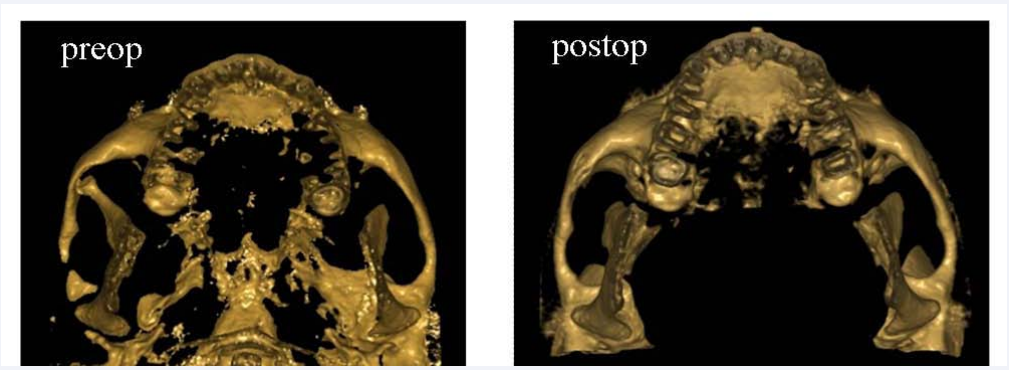

Figure 4 Postoperative view of coronoid process after coronoidectomy (a) and no sign of regrowth (b).

The elongation and enlargement of the coronoid processes in CH are caused by an overgrowth of normal mature bone [1]. It is known that bone compression at the coronoid-malar point of contact, can induce development of chondrocytes [13] but these cannot be considered expressions of neoplastic growth. In our case there is no sign of regrowth after 1.5 years follow up, although there have been reports of regrowth and surgically induced fibrosis in the literature [14].

CONCLUSION

Unilateral CH can cause facial asymmetry with or without limitation in mouth opening. We agree with Iqbal et al [9] stated that trauma caused by sports activities has been put forward as one of the etiology in puberty period. Clinician should be considered to the proper radiographic evaluations, treatment and postoperative rehabilitation as well as long term follows up in unilateral CH case.

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