Bifid mandibular condyle: a case report

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ABSTRACT

Bifid mandibular condyle (BMC) is an uncommon anomaly that is usually diagnosed as an incidental finding radiographically. The aetiology of this condition is unclear but it may be originated from traumatic or developmental factors. Epidemiology is unknown since there is no adequate data about it. This malformation is frequently asymptomatic or signs and symptoms of temporomandibular disorder (TMD) can be seen. This paper report a case of 51-year old man with asymptomatic unilateral BMC from trauma with clinical, radiographic and tomographic features.

Key words: mandibular condyle; bifid condyle; cone beam computed tomography; temporomandibular joint.

Introduction

Bifid mandibular condyle (BMC) is a rare anomaly. In 1941 Hrdlicka studied on dried skulls and identified 21 cases. This condition may be either unilateral or bilateral. Szentpetery et al. investigated a total of 1882 skulls and detected seven cases with BMC; in two cases, one mandible had bilateral signs of grooving. Interestingly, Artvinli et al. reported a case with trifid condyle. Even though aetiology is unknown, traumatic and developmental origin has been suggested. Generally the condition is asymptomatic, rarely associated with temporomandibular disorder (TMD) signs and symptoms. This report a case of 51-year old man with asymptomatic unilateral BMC from trauma with clinical, radiographic and tomographic features.

Case Report

A 51-year-old male patient referred to the department of Oral and Maxillofacial Radiology, Faculty of Dentistry University of Gazi, complaining of edentulism. The intraoral examination revealed bilateral edentulism of maxillary posterior region, which was considered for rehabilitation by insertion of dental implants. Panoramic radiograph was taken to assess the dentition and contiguous anatomical structures revealed an abnormal left condyle. The radiograph shows a bifid condylar head with normal curvature of the fossa and no evidence of joint space narrowing on the left temporomandibular joint (TMJ) region. For a better evaluation, both the implant recipient areas and morphology of the condyle for differential diagnosis, and other osseous components of the TMJ, axial, coronal, sagittal cone beam computed tomography (CBCT) views and three-dimensional reconstructions were performed. The CBCT images indicated a bifid formation of left mandibular condyle, which was a depression on the superior condylar surface (Figure 1). The head of the condyle orientation was in the antero-posterior direction (Figure 2). TMJ space, articular fossa and eminence were normal and show no degenerative signs. Patient had a history of trauma at his childhood. Also, he hasn’t had any systemic disease and used any medication. Physical examination revealed asymptomatic TMJ. There was no complaining of difficulty of mouth opening or pain during mandibular movements. The patient had no pain on the lateral palpation on TMJ and masticatory muscles. Joint examination did not show any clicking, crepitation and popping. Lateral, retrusive and protrusive movements were normal. Maximum mouth opening distance was 51 mm. Rehabilitation of edentulism and follow up of the TMJ function were decided as treatment.

Discussion

Epidemiology of bifid mandibular condyle is not understood well since there is not sufficient information in literature. However, in recent years the number of reported cases has increased with the widespread usage of panoramic radiographs. The aetiology of bifid mandibular condyle is unclear. Conditions such as genetic and developmental factors, operation of condylectomy and lack of adequate blood supply of the condyle during development in the aetiology have been reported by the investigators. Blackwood has suggested that presence of a fibrous septa, which prevents the mandible ossification, causes the duplication of the condyle. Ramos et al. reported a case of 20-year-old woman who had unilateral BMC and claimed that bifidity was a result of persistence of the septa. Trauma is the most common theory proposed as etiologic factor. It is stated in literature that, in some cases, bifid condyle has been developed after condyle fracture. Artvinli et al. argued that bifid condyle may develop as a result of trauma on TMJ. Stadnicki identified that; a child, who received forceps injury at birth, has bifid mandibular condyle. Szentpetery et al. made a different interpretation to the theory of trauma. They said that the location of the fracture and probably, its connectivity to the insertion of the lateral pterygoid muscle might play a role to determine subsequent development of a normal or bifid condyle. An opinion on the aetiology of BMC by looking at the orientation of the condyle. It is claimed that, while the anterior-posterior direction of the bifidism is related to trauma and medio-lateral direction is associated with other developmental disorders. Sales et al. reported a case of a child who had a trauma and BMC developed after four years. They declared that the condyle orientation of this patient was antero-posterior direction on radiographic examination. Shriki et al. declared that, a patient with hemi facial microsomia and bilateral microtymia had BMC that mediolaterally direction. They concluded that, because of this developmental anomaly, duplicated condylar head may occur. The claimed relation between aetiology and orientation of the condyle is
compatible with these cases reported in literature. In present case, the duplication was on the left condyle and oriented antero-posteriorly. There was a history of trauma during his childhood. However, it is not certain if there had been a condyle fracture or not. In this case, BMC may be developed as a result of trauma. The patients with BMC are frequently asymptomatic but signs and symptoms of TMD such as mandibular deviation, clicking, pain, limitation of mouth opening can be seen as well.\textsuperscript{2,11-14}

Panoramic radiography is used as the beginning level of examination. Although it provides bilateral evaluation of anatomical structures TMJ zone cannot be seen because of skull base and superimposition of zygomatic arch. It is more efficient to evaluate BMC with computed tomography. Tomographic images give us an opportunity to observe osseous components of TMJ and to evaluate orientation of bifikism on axial, coronal and sagittal planes.\textsuperscript{12} To compare with medical CT, CBCT has some advantages such as less radiation dose and being specific for dentomaxillofacial region. In this case report, in addition to panoramic radiography, we scanned CBCT images of patient to evaluate morphology of the condyle and the other osseous components of TMJ. Eventually, there is no sufficient information about incidence of this anomaly since the patients with BMC are generally asymptomatic and it is occurred incidentally in radiographic examination. More epidemiological studies are needed.

Conclusion
In conclusion, the awareness of the Bifid mandibular condyle aid dentist to apply advanced imaging modalities in order to avoid possible misleading interpretations. Even though therapy isn’t necessary owing to a lack of clinical symptoms, but the clinicians must do follow-up and inform the patients about this condylar variation.

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References

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Figure 1. CBCT image showing that bifid formation, which was a depression on the condylar head, Figure 2. Axial CBCT image showing that the antero-posterior direction of the condyle.