

## A case of Bilateral Bifid condyle

Versha Rani Giroh<sup>1\*</sup>, Manjula Hebbale<sup>1</sup>, Amit Mhapuskar<sup>1</sup>, Priya Agarwal<sup>1</sup>, Bhawana Narla<sup>2</sup>

1. Department of Oral Medicine and Radiology, Bharati Vidyapeeth Deemed University Dental College and Hospital, Pune, India.
2. Department of oral and maxillofacial surgery, Bharati Vidyapeeth Deemed University Dental College and Hospital, Pune, India.

### Abstract

Bifid condyle is a rare developmental anomaly which may be unilateral or bilateral. Hrdlicka was the first to describe the anomaly in 1941. It is characterized by the duplicity of the head of the mandibular condyle; thus it is also known as double-headed condyle and it may be associated with a variety of symptoms<sup>1</sup>. The etiology and pathogenesis is not yet clear but it is generally considered to be developmental. It is generally associated with trauma. Other possible factors includes an obstructed blood supply or other embryopathy, developmental anomalies, condylar fracture, perinatal trauma and surgical condylectomy<sup>2</sup>. Generally, the condition is asymptomatic and is diagnosed as an incidental finding on radiographic examination. Some patients may complaint of pain and discomfort. Due to the invention of newer imaging modalities, the frequency of diagnosing such rare conditions has been increased.

The purpose of this article is to report a case of asymptomatic bilateral bifid condyle and also to make an attempt to add an asymptomatic case of bilateral bifid condyle in the literature.

**Case report (J Int Dent Med Res 2018; 11(3): 1082-1085)**

**Keywords:** Developmental anomaly of condyle, Bifidcondyle, Double-headed condyle.

**Received date:** 06 March 2018

**Accept date:** 25 April 2018

### Case Report

A 58-year-old female patient reported to the Department of Oral Medicine and Radiology with a chief complaint of missing right upper and left lower back teeth since 6 months. She had no difficulty in speech or swallowing. A detailed medical history was taken which failed to identify trauma to the face or jaw. No systemic illness reported. No relevant family and social history reported. No history of eventful extraction of the right and left back teeth. Extra oral examination didn't reveal any abnormality. She reported no pain in response to palpation of the masticatory muscles. She reported a symptomatic temporomandibular joints (TMJs) and denied any symptomatic clicking and popping, trismus, malocclusion, and pain. There was no deviation of the mandible upon maximum opening. She

reported eating a normal diet and denied functional problems with chewing. On intraoral examination, partially edentulous span in upper right and lower left back teeth was seen. A prosthesis was seen in relation to 13-15. Also, a full coverage crown was seen with 34. Root canal treatment with a full coverage crown with 35 was seen. Distal caries was seen with 16 and 43. Multiple restorations were seen in left upper and right lower back teeth. Generalised attrition was seen.

Radiographic evaluation of the TMJs includes panoramic, Transorbital view, Transpharyngeal view and cone beam computed tomography (CT) scan.

#### 1. Orthopantomogram

Patient was noted to have a bilateral bifid mandibular condyle (Figure 1). A magnified view of the radiograph showed a bifid condylar head, with normal curvature of the fossa and no evidence of joint space narrowing. Also, a root stump in the right upper back region was seen.

#### 2. Trans orbital view and Transpharyngeal view showed the presence of bilateral bifid condyles

#### \*Corresponding author:

Dr Versha Rani Giroh

Post graduate student

Dept. of Oral Medicine & Radiology

Bharati Vidyapeeth Dental College & Hospital

Pune, India.

E-mail: vershagiroh98@gmail.com

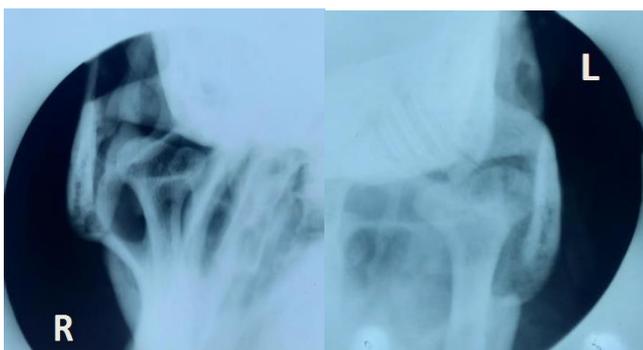


**Figure 1.** Orthopantomogram.

Bilateral Trans pharyngeal view (Figure 2) showed the presence of two overlapping condylar heads in antero-posterior plane, suggesting a bifid condyle. Trans orbital view (Figure 3), in the mediolateral aspect, showed the presence of heart-shaped condyle bilaterally.



**Figure 2.** Transpharyngeal view (right and left side).



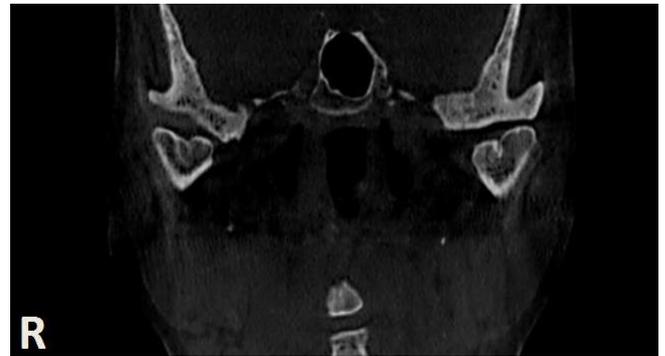
**Figure 3.** Trans orbital view (right and left side).

### 3. Cone beam computed tomography

Cone beam computed tomography scan was advised for planning the prosthetic rehabilitation.

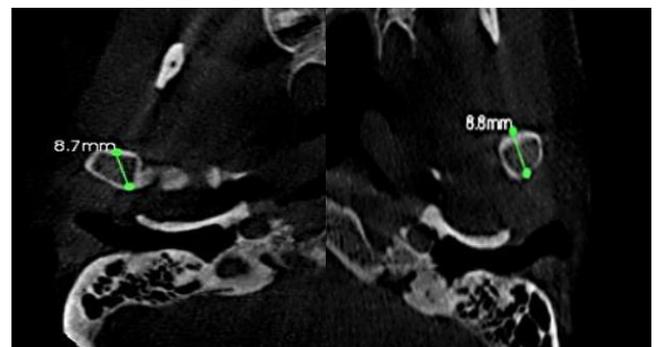
CBCT scan of slice thickness 1mm and fov 10x10, showed the varied morphology of the both the right and left TMJs.

In the coronal section, the right side (Figure 4) and left side TMJ showed a central notch and altered morphology of the condylar head. Also, there was a steepening of glenoid fossa was seen on the right sagittal section.



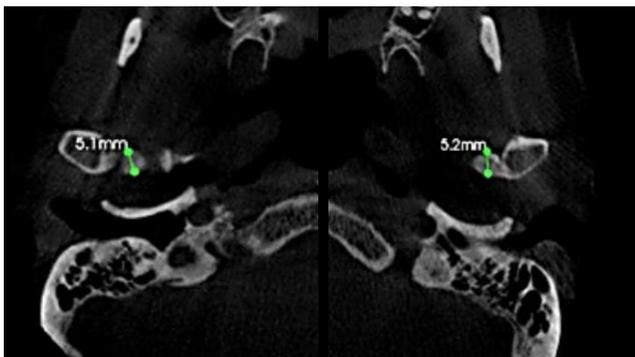
**Figure 4.** CBCT images showing the coronal section.

The right and left secondary condyles measures 5.1 mm and 5.2 mm antero-posteriorly respectively. The right and left condyles measures 20.2 mm and 20.5 mm medio-laterally respectively (Figure 5).

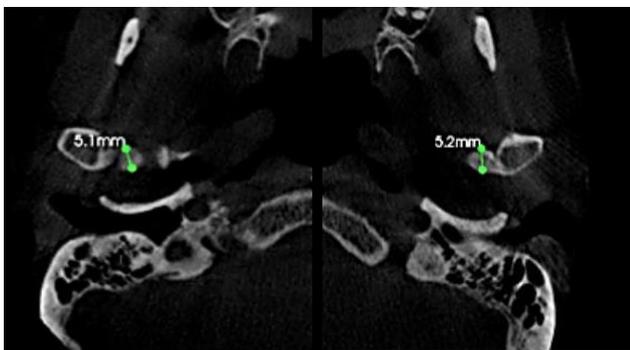


Right side left side  
**Figure 5.** CBCT images showing antero-posterior dimensions of primary condyle in axial section.

The right and left primary condyle measures 8.7mm and 8.8mm respectively (Fig.5) whereas the right and left secondary condyles measures 5.1mm and 5.2mm antero-posteriorly respectively (Figure 6). The right and left condyles measures 20.2mm and 20.5mm medio-laterally respectively (Figure 7).



Right side left side  
**Figure 6.** CBCT images showing antero-posterior dimensions of secondary condyle in axial section.



Right side Left side  
**Figure 7.** CBCT images showing mediolateral dimensions of right and left condyle in axial section.

The uniqueness of this case report lies in the absence of any symptom of pain or discomfort. There was no history of trauma, no disc displacement, and no decreased function or range of motion.

No treatment was advised for the bilateral bifid condyle as the patient was asymptomatic. Although, she was advised for the extraction of the root stump and full mouth rehabilitation. Root canal treatment with 16,43 was advised. Patient is under regular follow up.

## Discussion

Bifid condyle is a unique anatomical alteration in the morphology of the condyle characterized by duplication of the condylar head. There is a presence of a groove that divides the articulating surface mediolaterally or anteroposteriorly.<sup>1,2,3</sup> Schier in 1948 reported the first case of bifid condyle in a living population.<sup>4</sup>

The cause is still undiscovered but is associated with two theories-developmental and traumatic origin. The theory of developmental origin is based on obstruction of blood supply and fibrous septa in embryologic period.<sup>5</sup> Blackwood suggested the idea of a retained well-vascularized fibrous septum embedded on the mandibular condyle in the anteroposterior direction that divides the condylar head into 2 parts mediolaterally during the developmental process.<sup>6</sup> The morphology of bifid condyle may range from shallow groove to distinct condylar heads and the orientation may be in mediolateral or anteroposterior direction.<sup>7,8</sup> Szentpétery et al proposed that the condylar heads in the sagittal plane (antero posteriorly) indicates the trauma, associated with early childhood fractures, whereas those with a coronal plane (mediolaterally) indicates the persistence of a septum. e the developmental origin.<sup>9</sup> He also suggested that the type of injury (direct or indirect, high or low fracture), the extent of damage to the joint structures (disc, capsule, and articular surfaces), the presence or absence of inflammation, hemarthrosis, and the patient's age also influence the emergence of altered morphology of the condyle. Gundlach et al. found a bifid condyle that did not contain fibrous septa and found no evidence related to the developmental origin.<sup>10</sup> They suggested the other causes for the bifidism as Infection, irradiation, nutritional disorders, genetic, endocrinological, and pharmacological factors. Cho and Jung, in their retrospective study found that the developmentally originated bifid condyles were not associated with any TMD.<sup>11</sup>

Another important theory is related to trauma, causing bifid condyle. Walkar, in his animal study showed that bifid condyle can result from trauma.<sup>12</sup> Poswillo, in his study was able to generate a new condylar head following condylectomy in Macacamonkeys.<sup>13</sup> Li et al. reported a case of mediolateral bifid condyle following a sagittal fracture of the condylar head.<sup>14</sup> He emphasized on the severity of trauma, site of fracture and the muscular relationship (lateral pterygoid muscle) of the condyle. Fuentes et al in 2009 proposed that micro trauma due to malocclusion or TMJ might be a reason for bifidism of condylar head.<sup>15</sup>

Dennison in 2008, suggested that antero posteriorly oriented bifid condyle must be considered as "true" and mediolaterally

positioned should be termed as “condylar notching, cleft or gap.”<sup>16</sup> Lopez-Lopez et al suggested that to consider a bifid condyle as “true”, both the normal and secondary condylar heads have to emerge from the condylar neck.<sup>17</sup> Diagnosis of Bifid condyle is generally incidental finding on radiographic examination. But, symptoms such as pain, restriction of mandibular movements, trismus and facial asymmetries have been described.<sup>18</sup> A panoramic radiograph is the first radiograph useful for the diagnosis of bifid condyle. Due to its limitations such as its inability to show the mid-sagittal grooves of the condylar head, superimposition of the adjacent anatomical structures and inherent radiographic distortion, CT or CBCT is considered as the gold standard diagnostic tool for bifid condyle.

Treatment is not required if asymptomatic, but a long term follow up is necessary. In symptomatic case, the treatment depends on presenting complaints of patient.

### Declaration of Interest

The authors report no conflict of interest and the article is not funded or supported by any research grant.

### References

1. Antoniadis K, Hadjipetrou L, Antoniadis V, Paraskevopoulos K. Bilateral bifid mandibular condyle. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod.* 2004;97:535-8.
2. Sala-Pérez S, Vázquez-Delgado E, Rodríguez-Baeza A, Gay-Escoda C. Bifidmandibular condyle: a disorder in its own right? *J Am Dent Assoc.* 2010;141:1076-85.
3. Miloglu O, Yalcin O, Buyukkurt E, Yilmaz M, Harorli A. The frequency of bifidmandibular condyle in a Turkish patient population. *Dentomaxillofac Radiol.* 2010;39:42-6.
4. Schier MBA. The temporo mandibular joint: a consideration of its probable functional and dysfunctional sequelae and report: condyle-double in a young person. *Dent Items Interest* 1948; 70: 1095-1109.
5. Faisal M, Ali I, Pal US, Bannerjee K. Bifid mandibular condyle: Report of two cases of varied etiology. *Natl J Maxillofac Surg* 2010;1:78-80.
6. Blackwood HJ. The double-headed mandibular condyle. *Am J Phys Anthropol.* 1957;15:1-8.
7. De Sales MA, do Amaral JI, de Amorim RF, de Almeida Freitas R. Bifid mandibular condyle: Case report and etiological considerations. *J Can Dent Assoc* 2004;70:158-62.
8. Rehman TA, Gibikote S, Ilango N, Thaj J, Sarawagi R, Gupta A. Bifid mandibular condyle with associated temporomandibular joint ankylosis: A computed tomography study of the patterns and morphological variations. *Dentomaxillofac Radiol.* 2009;38:239-44.
9. Szentpetery A, Kocsis G, Marcsik A. The problem of the bifid mandibular condyle. *J Oral Maxillofac Surg* 1990;48:1254-7.
10. Gundlach KK, Fuhrmann A, Beckmann-Van der Ven G. The double-headed mandibular condyle. *Oral Surg Oral Med Oral Pathol.* 1987;64:249-53.
11. Cho BH, Jung YH. Nontraumatic bifid mandibular condyles in asymptomatic and symptomatic temporomandibular joint subjects. *Imaging Sci Dent.* 2013;43:25-30.
12. Walker RV. Traumatic mandibular condylar fracture dislocations. Effect on growth in the Macaca rhesus monkey. *Am J Surg* 1960;100:850-63.
13. Poswillo DE. The late effects of mandibular condylectomy. *Oral Surg Oral Med Oral Pathol.* 1972;33:500-12.
14. Li Z, Djae KA, Li ZB. Post-traumatic bifid condyle: the pathogenesis analysis. *Dent Traumatol* 2011; 27: 452-4.
15. Lubambo de Melo L, Barbosa JMN, Peixoto AC, et al. Bilateral bifid mandibular condyle: a case report. *Int J Morphol.* 2011;29:922-6.
16. Dennison J, Mahoney P, Herbison P, Dias G. The false and the true bifid condyles. *Homo.* 2008;59:149-59.
17. Lopez-Lopez J, Ayuso-Montero R, Jane-Salas E, Rosello-Llabres X. Bifid condyle: review of the literature of the last 10 years and report of two cases. *Cranio.* 2010;28:136-40.
18. Miloglu O, Yalcin O, Buyukkurt E, Yilmaz M, Harorli A. The frequency of bifidmandibular condyle in a Turkish patient population. *Dentomaxillofac Radiol.* 2010;39:42-6.