

# Bilateral Bifid Mandibular Condyle

DR.AVINASH TEJASVI, DR.LAXMIKANTH CHATRA, DR.PRASHANTH SHENAI.K

## ABSTRACT

The bifid condyle is a rather uncommon condition that is diagnosed radiographically. It is characterized by the duplicity of the head of the mandibular condyle and thus, it is also known as double - headed condyle. The bifid condyle's aetiology and pathogenesis are not known. It is said that it may be a

developmental abnormality or that it may occur due to trauma. In the literature, only 30 cases of bilateral bifid mandibular condyle have been reported. The present case is a 23-year-old young male patient with bilateral bifid mandibular condyle, which was diagnosed during a panoramic radiographical examination.

**Key Words :** Mandibular Condyle, Bifid Condyle, Bilobed Condyle, Panoramic Radiograph, and Double TMJ Radiographic view.

## INTRODUCTION

Bilobed Mandibular Condyle is an uncommon anomaly. Hardlicka was the first person to describe this condition in 1941 and he reported 21 cases (18 unilateral and 3 bilateral) in a series of skull specimens from the Smithsonian Institute.[1] The first report on this condition in a living individual was made in 1948 by Schier.[2] The bilobed condyle's aetiology and pathogenesis is not known. It is said that it may be a developmental abnormality[3] due to trauma and endocrinological, pharmacological and nutritional disorders. Although it is not confirmed, infection, irradiation, and genetic discrepancy may also play a role.[4] This condition is asymptomatic and can be recognized only by routine radiographical examination. Some cases are found in patients with TMJ clicking, ankylosis and trauma.

The bifidism of the condylar head can be found unilaterally or bilaterally. On reviewing the literature, it was found that only 30 cases of bilateral bilobed condyle have been described so far.

## CASE REPORT

A 23 -year-old male patient reported to the Department of Oral Medicine and Radiology with a chief complaint of forwardly placed teeth in his upper and lower jaw and he aspired for orthodontic treatment. The clinical examination revealed mild mandibular micrognathia and a convex facial profile. The skeletal relationship was bilaterally Angle Class II, division 1 with traumatic occlusion. No deviation or deflection in his jaws was observed. However, his mouth opening and his jaw movements were normal. On further questioning, the patient revealed a previous history of trauma to his jaws during his childhood and said that no treatment was taken at the time of trauma. The intra oral examination revealed a dentition with four missing maxillary and mandibular premolars, six impacted teeth, five amalgam restorations, and one endodontically treated teeth. The patient had not received regular dental care for many years.

The diagnostic panoramic radiograph [Table/Fig-1] incidentally revealed bilateral bifid condyles. Further, an open-closed double

TMJ view of the condyle was taken in the lateral position [Table/Fig-1], and a transpharyngeal radiograph [Table/Fig-2] was taken, which confirmed the diagnosis. No findings were noted in either the history or the clinical examination that could account for the possible aetiology of the bifid condyle, except for a history of trauma long back in his childhood.

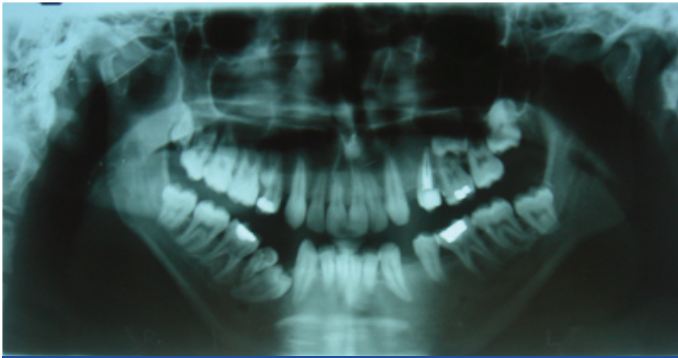
## DISCUSSION

The bilobed mandibular condyle is rarely seen, although a number of cases have been reported. The observation of bilateral, bifid mandibular condyles is even rarer. The fact that the condition is asymptomatic it is less likely to be noticed.

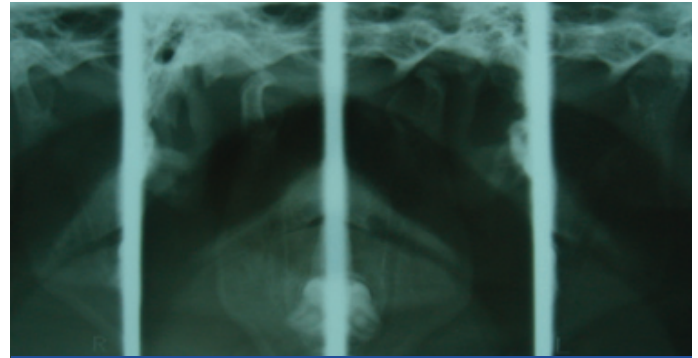
Hardlicka was the first person to describe this condition in 1941 and he reported 21 cases (18 unilateral and 3 bilateral) in a series of skull specimens from the Smithsonian Institute.[1] The first report on this condition in a living individual was in 3 bilateral. [2] Szentpetery[5] et al in 1990, surveyed 1882 prehistoric and historic skulls with 2077 condyles. They found 7 bilobed

|  |                                     |
|--|-------------------------------------|
| Shaber et al <sup>6</sup> 1987             | Reported 1 case                     |
| McCormick et al <sup>7</sup> 1989          | Reported 3 cases                    |
| Stefanou et al <sup>8</sup> 1998           | Reported 4 cases                    |
| Artvinli and Kansu <sup>9</sup> et al 2003 | Reported 1 case                     |
| Antoniades et al <sup>10</sup>             | Reported 1 case                     |
| S Alpaslan et al <sup>11</sup> 2004        | Reported 1 case                     |
| Shriki et al <sup>12</sup> , 2005          | Reported 1 case                     |
| Espinosa - Femenia M <sup>13</sup> et al   | Reported 1 case                     |
| Agarwal et al, <sup>14</sup> 2006          | Reported 1 case                     |
| Acikgoz et al <sup>15</sup> 2006           | Reported 1 case                     |
| Dennison J <sup>16</sup> et al 2008.       | Reported 1 case                     |
| Menezes AV <sup>17</sup> et al 2008.       | Reported 2 cases                    |
| Rehman TA <sup>18</sup> et al 2009         | Reported 4 cases with Tmj Ankylosis |
| O Miloglu <sup>19</sup> et al 2010         | Reported 8 cases.                   |

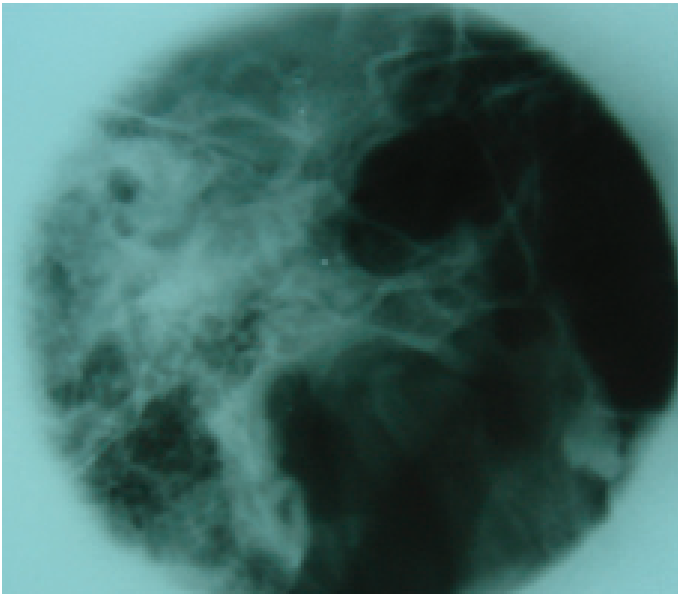
The number of cases of Bilobed Mandibular Condyles in live patients, which were reported in the literature till date.



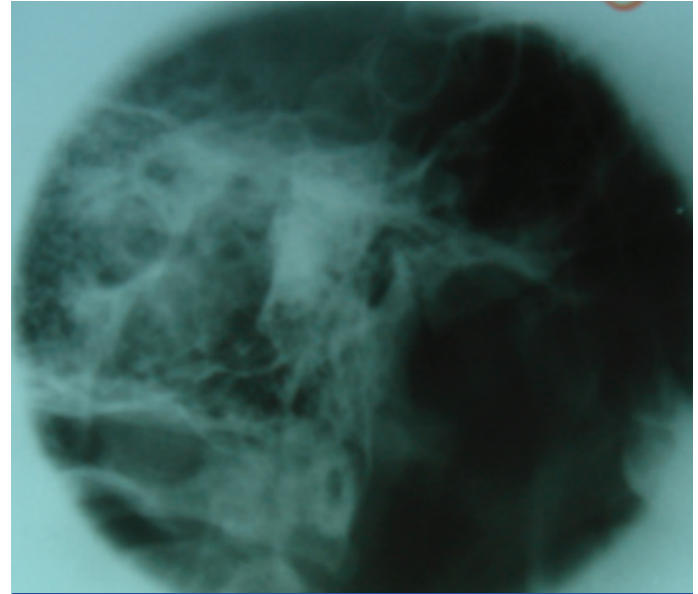
[Table/Fig-1] : Orthopantomogram showing bilateral Bilobed condyles.



[Table/Fig-2] : Double TMJ view



[Table/Fig-3] : Transpharyngeal view of the Left side



[Table/Fig-4] : Transpharyngeal view of the Right side

mandibular condyles, 2 of which in one mandible had bilateral. There are multiple aetiologies of the bifid condyle, for example, endocrine disturbances, exposure to teratogens, nutritional deficiencies, infection, radiation, trauma and genetically induced factors. Bilateral bifidism can result from a primary aberrancy in the embryological or postnatal development.[4]

There are many postulates regarding the pathogenesis of bilobed mandibular condyles, which are as follows. Hardlicka[20] postulated that obstructed blood supply to the condyle during its development caused the division of the condyle. Blackwood 21 reported that the condylar cartilage, during the early stages of development, is divided by well-vascularized fibrous septa. He suggested that the persistence of this type of septum in the exaggerated form within the growing cartilage, might lead to an error in the development, that would, in turn, give rise to the bifidism of the condyle.

Gundlach[22] et al experimentally induced bifid condyles in animals by injecting teratogenic substances such as N-methyl-N-nitrosourea and formhydroxamic acid in different concentrations at various stages of pregnancy, and they concluded that the bifid condyle is a form of embryopathy which is caused by a combination of a teratogenic agents and the misdirection of the muscle fibres, which then influences bone formation.

Walker et al [23] stated from their experiments on monkeys, that the bifidism of the condyle could also be due to trauma. Poswilllo et al [24] stated that bifidism occurs as a result of changes in

the position or form of the disc, leading to the formation of intraarticular septa across the joint space. This, in turn, influences the pattern of condylar regeneration. Post fracture healing and remodelling of the mandibular condyle, if they involve the lateral and medial fragments, have also been linked to the development of ankylosis or bifid mandibular condyles. Szentpetery [25] et al stated that the site of fracture and most probably, its relationship to the insertion of the lateral pterygoid muscle, may determine the future development of a normal or bifid condyle. Several case reports of unilateral bifidism suggest that trauma, such as the condylar fractures birth trauma or surgical condylectomy, can result in bifid condyles. The possible aetiology in this presented case was trauma.

In the literature, it has been said that in the developmental bifid mandibular condyle, there is a separate glenoid fossa for each of the two parts and that in the traumatic bifid mandibular condyle, there is only one glenoid fossa. In the reported case, there was only one glenoid fossa as the bilobed condyle had a traumatic origin.

Bilobed Condyles have been reported in the literature with a mean age of 35 years. Our patient was a male patient and he was 23 years of age. Although this condition is asymptomatic, some cases show symptoms which vary from case to case, but in most instances the symptoms are absent. The most common and predominant symptom is TMJ sounds. Pain, restriction of mandibular movements, trismus, swelling, ankylosis, and facial asymmetries have also been described[26]. The present case was asymptomatic.

The treatment of bifid condyles depends on the presenting complaints of the patient. The most common symptoms include TMJ sounds, pain, restriction of mandibular movements, trismus, swelling, ankylosis and facial asymmetry. As bifid condyles do not present any symptoms, treatment is not required. Bilateral condylectomy and arthroplasty have been reported to restore the function in cases of ankylosis which are accompanied by bifid condyles [26].

It can be concluded that bilateral, bifid mandibular condyles are associated with or without symptoms. The diagnosis of a bilobed condyle usually rests on radiological rather than clinical evidence. So, the diagnosis of this anomaly has become incidental for dentists. Due to advanced imaging modalities, many more cases will be highlighted in future and so, the dental professionals should have appropriate knowledge about this anatomical abnormality as well as its implications, for a potential diagnosis.

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### AUTHOR:

1. DR AVINASH TEJASVI
2. DR LAXMIKANTH CHATRA
3. DR PRASHANTH SHENAI.K

### NAME OF DEPARTMENT(S)/INSTITUTION(S) TO WHICH THE WORK IS ATTRIBUTED:

Kamineni Institute Of Dental Sciences , Narketpally, Andhra Pradesh, India.

### NAME, ADDRESS, TELEPHONE, E-MAIL ID OF THE CORRESPONDING AUTHOR:

Dr.Avinash Tejasvi.M.L, SENIOR LECTURER  
Department of oral medicine and radiology.  
Kamineni Institute Of Dental Sciences,  
Narketpally, Nalagonda Dist, Andhra Pradesh.  
Telephone – 09246916062  
E mail: avinash\_tejaswi@yahoo.co.in

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