

## Unilateral Condylar Aplasia and Hypoplasia: Case Reports of two Cases on Radiological Perspective

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### Abstract

Aplasia / hypoplasia of condyle is a rare entity when such condition are not seen conjunction with syndrome without defined etiology. Aplasia / hypoplasia of condyle indicates failure in the development of condyle. It can be either congenital or acquired. Disturbances during growth and development of the temporomandibular joint causes the deformity. The Early the onset of this condition results in severe symptoms. This paper presents the diagnosis of two patients of condylar aplasia and hypoplasia clinically and radiographically. Accurate diagnosis and appropriate management to the patient gives a better quality of life.

**Keywords:** Condylar Aplasia; Agnesis of Condyle; Hypoplasia Condyle.

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### Introduction

Temporomandibular joint is a joint on each side of the head between temporal bone and mandible that allows for the movement of the mandible for speech and mastication. No movement can occur without the concomitant movement of the other joint. Any disturbances during the development and growth period of the temporomandibular joint (in utero, late in the first trimester) results in abnormalities [1]. The various deformities of the condyle includes condylar aplasia condylar aplasia/hypoplasia, hyperplasia and bifidity. Hypoplasia or Aplasia of the mandibular condyle indicates under development or non-development of condyle. It can be either congenital or acquired [2]. Its incidence is 1 in 5600 births [3]. It is extremely rare when condylar aplasia or hypoplasia when not associated with any syndrome but there are few documentations present [4]. This paper present two such cases of condylar aplasia and hypoplasia.

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### Case Report 1

A 23 year old female reported to the Department of Oral Medicine and Radiology with the chief complaint of proclined upper front teeth with facial asymmetry. From the history it was elicited that the patient noticed the facial asymmetry from her childhood, which gradually resulted to the present condition. Because of unfavorable socioeconomic status she did not seek for any treatment until her marriage. As she was getting married in about 1 year from the day she reported to us for the study No history of trauma. Her past medical, past surgical, past dental history and family history were not contributory. On general examination no abnormalities elicited. Extra oral examination revealed obvious facial asymmetry with severe chin deviation to the right side and her lower one third of facial height was reduced. Her chin throat angle was increased on left side compared to right side with convex facial form (Figure 1a). On palpation condylar movement was not palpable on right side Mouth opening was within normal limits with severe chin deviation to the right side (Figure 1b). Intraorally she had proclined upper and lower anterior teeth with increased overjet and overbite. She also had spacing between upper anteriors and there was also shift in the midline.

On Radiographical examination OPG revealed complete absence of condyle with decreased width and height of the ramus of mandible on right side when compared to the left side. Under development of the articular eminence and the glenoid fossa was

noted on the right side. And the length of the body of the mandible was less when compared to the left side (Figure 2). Axial CT (Figure 3a) and sagittal CT section (Figure 3b) with 3D reconstruction (Figure 3c) also revealed absence of right condyle with underdeveloped glenoid fossa with decreased width of the ramus of the mandible. Prominent antegonial notch and deviation of the mandible to the right side was evident.

On the basis of clinical and radiographical features the case was diagnosed as condylar aplasia on right side. The patient was then referred to the department of oral surgery and orthodontics for best possible treatment.

Profile view of the patient and the Normal mouth opening with deviation of mandible to the right side.



Fig. 1a and 1b: Profile view of the patient and normal mouth opening with deviation of mandible to the right side



Fig. 2: OPG reveals complete absence of condyle, underdeveloped glenoid fossa and prominent antegonial notch on the right side



Fig. 3a and 3b: CT scan in axial and coronal section reveals absence of right condyle on right side



Fig. 3c: CT with 3D reconstruction reveals absence of right condyle on right side

## Case Report 2

A 20 year old female reported with the chief complaint of proclined upper front teeth with facial asymmetry. History revealed that she noticed the facial asymmetry from childhood. No history of trauma. Her past medical, surgical, dental history, and family history were not contributory. On general examination, no abnormality was found. On extra oral examination she had facial asymmetry with deviation of chin to the left side. Mouth opening was adequate but there was deviation towards left on opening the mouth. Intraorally she had proclined upper anteriors with spacing and increased overjet with midline shift. On palpation, condylar movement was not felt on left side. On radiographical examination OPG revealed missing condyle on left side with shortened condylar neck. Steep mandibular body with decreased width and reduced height of the ramus of mandible on left side was seen. Underdeveloped condylar head and glenoid fossa was evident along with pronounced antegonial notch (Figure 4). Axial CT section (Figure 5a) and coronal CT section (Figure 5b) and 3D reconstruction (Figure 5c) revealed, hypoplasia of condyle on left side with distorted angle of mandible, decreased length of body of mandible with deviation of mandible to left side. The distance from the condyle to angle of mandible was 3.4 cm on left side when compared to



Fig. 4: OPG reveals missing condyle on left side with shortened condylar neck

4cm on right side and the distance from the angle to symphysis was 6.6cm on left side and 7cm on right side. Suggestive of condylar hypoplasia. Based on the clinical and radiographical finding the case was

diagnosed as condylar hypoplasia on left side and distraction osteogenesis of left mandible was her treatment plan.



Fig. 5a, 5b and 5c: CT scan in axial, coronal and 3D reconstruction reveals hypoplasia of condyle on left side with distorted angle of mandible

### Discussion

Any disturbance during the 8<sup>th</sup> and 12<sup>th</sup> week after conception, which is the crucial period for the temporomandibular joint development, results in abnormalities [5]. The developmental causes are inflammatory process in that area, juvenile rheumatoid arthritis, radiotherapy [6] and parathyroid hormone related proteins which affects the bone formation, condylar differentiation and consequently the condylar formation [7]. Recently various matrix protein like transforming growth factor- $\beta$  have been found to play important role in mandibular cartilage.

Regarding the treatment modalities the timing of treatment and possibility of influencing mandibular growth is most important. The factors that can influence the treatment are the severity of the damage to the head of the condyle, age and the potential for facial growth. The surgical treatment is usually taken up after growth period and during surgery the mandibular dental base will be brought to its correct relationship with the maxillary dental base. Early procedures can prevent facial asymmetries & functional disorders. For those with completed growth cosmetic corrective surgery either by orthognathic surgery or distraction osteogenesis are advocated. In some cases combined modalities can also be taken up (i.e) orthodontic treatment plus corrective surgery.

Several authors confirmed that mandibular deficiency can occur without any defined etiology [8]. Aplasia of the mandibular condyle without any other facial malformations is an extremely rare condition [9]. The two cases reported in this report, had no history of trauma particularly during the first two years of age, infection, no relevant surgical and family

history indicating that the condylar aplasia can be because of unknown etiology and also apart from the condylar deformity both of them did not have any other craniofacial features. This paper documents two cases of condylar aplasia and hypoplasia with undefined etiology.

In both the cases, patient had unilateral deformity and as the growth center was affected there was severe facial asymmetry and mandibular hypoplasia and temporomandibular joint dysfunction which gives us a clue of early onset of the defect. So this is in accordance with the statement that early the onset of the defect, more severe the condition. This paper is also an evidence to prove that radiographical evaluation plays a major role for definite diagnosis.

### Conclusion

Condylar aplasia and hypoplasia with undefined etiology is a rare entity, so this paper documents two such cases with facial asymmetry and TMJ dysfunction severe. Proper accurate diagnosis and treatment plan is vital. Thus diagnosis and treatment at the appropriate time as early as possible not only decreases the incidence of the symptoms but also help the patient to have a more normal appearance.

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