Case Report

Ortho-surgical management of condylar hyperplasia: Rare case reports

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ABSTRACT

Condylar hyperplasia of the mandible is a clinical condition of over-development and growth because of excessive cellular growth of one condylar part of the mandible leading to facial asymmetry, mandibular deviation and enlargement of condyle. The elongation of the condylar neck in turn leads to malocclusion and articular dysfunction. In the past the interceptive and corrective procedures of growth and deformity in condylar hyperplasia were either condylectomy or high condylotomy. However, the deformity ceases after growth is completed. Therefore, other surgical procedures have to be undertaken to correct the manifested deformity of condylar hyperplasia. Further it has to be stressed that no single procedure can completely correct the deformity. So in addition to condylectomy, other orthognathic surgical procedures both on body and ramus and also on maxilla can be undertaken to correct the canting of occlusion. Two rare cases of unilateral hyperplasia encountered in our hospital are presented which required different lines of treatment. Key words: Condyle, condylar hyperplasia, facial asymmetry

INTRODUCTION

Condylar hyperplasia of the mandible is a clinical condition of over-development and growth because of excessive cellular growth of one condylar part of the mandible leading to facial asymmetry, mandibular deviation and enlargement of condyle. The elongation of the condylar neck in turn leads to malocclusion and articular dysfunction. Further the associated occlusal slanting and posterior open bite in condylar hyperplasia (CH) is an important feature, which may dictate the treatment plan. The facial asymmetry at a growth age may lead to slanting of occlusion while posterior open bite becomes conspicuous after completion of growth.

May occur even after maturity. The cause of this hyperplasia is unknown, but local circulatory problems, endocrine disturbances, and trauma have been suggested as possible etiologic factors. The radiographic features are quite variable. Some patients have an irregular enlargement of the condylar head; others show elongation of the condylar neck. Many cases also demonstrate hyperplasia of the entire ramus, suggesting that the condition sometimes affects more than just the condyle.

In the past the interceptive and corrective procedures of growth and deformity in CH were either condylectomy or high condylotomy. However, the deformity ceases after growth is completed. Therefore, other surgical procedures have to be undertaken to correct the manifested deformity of CH. Further it has to be stressed that no single procedure can completely correct the deformity.

So in addition to condylectomy, other orthognathic surgical procedures both on body and ramus and also on maxilla can be undertaken to correct the canting of occlusion. The presurgical orthodontic treatment along with orthognathic surgery can achieve rewarding results both aesthetically and functionally.
To substantiate and reinforce the above statement two case reports are presented which required different lines of treatment.

**Case Reports**

**Case 1**
A Male patient aged 24 years presented to the Department of Oral and Maxillofacial Surgery, Postgraduate Institute of Dental Sciences, Rohtak, with pain in the right preauricular region, which, exaggerated during chewing. The patient further felt shifting of the lower jaw towards opposite side. On clinical examination there was obvious facial asymmetry with deviation of chin to the contralateral side and associated angulation of labial commissure and lateral tilting of mandibular incisor teeth, which accentuated the nasolabial fold over the unaffected side [Figure 1]. Further, there was slight but conspicuous posterior open bite on the affected side and associated anterior cross bite over the uninvolved side [Figure 2].

**Radiograph**
The OPG showed increase in the size of right mandibular condyle. CT scan confirmed the finding of conventional radiography. Further both coronal as well as transverse sections on CT scan also showed the deformed condyle and medial extension of the bony mass [Figure 3].

**Surgical treatment**
The impressions of upper and lower jaws were taken and casts were articulated in most acceptable intercuspation. The premature contacts of teeth were systematically rounded off, both on the casts as well as on the teeth of patient to achieve the most satisfactory dental occlusion.

The patient was admitted in the hospital and the required investigations were carried out which were found to be within normal limits.

The right bony mass which consisted of fractured malunited condyle and an extra bony extension [Figure 4], was excised through preauricular approach under general anesthesia. After complete excision of the condylar head, temporal fascia was interposed and the desired occlusion was achieved by intermaxillary wire ligation [Figure 5]. The guiding elastics were used extensively in the first two weeks to correct mandibular deviation and to improve the dental occlusion. Results were found satisfactory [Figure 6].

**Histology**
There was increased activity of active cartilage cells within thick fibrocartilage layer on condylar head. There was a regular pattern on the surface with no sign of neoplasia or dysplasia [Figure 7]. On the basis of histological examination diagnosis of condylar hyperplasia was made.

**Case 2**
A male aged 20 years presented with symptom of facial disfigurement. There was deviation of chin toward the
left side with flattening of face along with shifting of facial midline and associated malocclusion [Figures 8 and 9].

Being a BDS student, the patient was very conscious of facial asymmetry.

Radiograph
In the Reverse Towne’s view of TMJ there was an obvious elongation of the condylar neck [Figure 10]. This elongation was calculated on the radiograph by measuring the distance from top of the condyle to the line drawn through base of the sigmoid notch on each side and the difference between the two sides was conclusive.

Presurgical orthodontic treatment was carried out to decompensate the compromised alignment of teeth. To confirm the correction of alignment and decompensation, upper and lower dental impressions were taken for articulation of teeth after three months of presurgical treatment.

Surgical treatment
Unilateral sagittal split procedure was carried out on the right side and after achieving the occlusion and immobilization of the upper and lower jaws with inter occlusion, the acrylic wafer and intermaxillary fixation was applied to achieve the desired occlusion to approximate mid incisor line. The osteotomized fragments were immobilized with positional screws. Results were satisfactory [Figures 11 and 12].

Discussion
The presentation of above two cases stressed on the facts that management of CH has to be carried out keeping in mind various factors.

The unilateral CH can be differentiated from hemifacial hypertrophy, where all the hard and soft tissues of the face are unilaterally enlarged. Unilateral macrognathia presents as the total unilateral enlargement of the mandible which may mold the teeth also and exaggerate the growth of affected condyle thus presenting the
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total unilateral enlargement with downward bowing of affecting mandibular body and deviation of the chin.\textsuperscript{[3,4,8,9]}

The condition of deviation prognathism (laterognathia) can be promptly differentiated radiologically because in this the condyles are equal in size as opposed to condylar hyperplasia and hypertrophic situation. Lastly osteoma and osteochondroma have distinct and definite clinical features because of their neoplastic nature.

It is imperative that the following clinical entities must be differentiated both clinically as well as radiologically, so that the correct treatment objectives are achieved.\textsuperscript{[4,8,9]}

Obwegeser and Makek\textsuperscript{[15]} described the various clinical patterns and histological findings seen in condylar hyperplasia. Yu-Ray Chan et al. has defined the Condylar Hyperplasia (CH) is the condylar overgrowth with elongation of the condylar neck, which causes a variable displacement of normal sized and shaped mandibular ramus and body without an associated tilting of the occlusal plane.\textsuperscript{[16-18]} They have further suggested that term CH be used before mandibular deformity occurs.

There seem to be different views to the management of CH. As it has been put forward that if this condition is managed at an early stage, the mandibular and facial deformity seems to be arrested. On the other hand some authors believe that CH may ultimately progress to hemimandibular hyperplasia or hypertrophy, however no scientific study has yet been able to confirm such views (Yu-Ray Chan 1995).\textsuperscript{[19]}

The duration of this condition may be obtained from history and photographs. While hyperplastic activity can be confirmed by using 99-technetium phosphate radioisotope scan of condyle,\textsuperscript{[11]} it is presumed that abnormal rapid growth process remains for 4-7 years. 4 In spite of excessive mandibular growth and deviation, the maxillary and mandibular arches remain almost symmetrical. However, no attempt must be made to shift the teeth orthodontically to correct the midline.

\textbf{Figure 8: CASE 2- Pre-op. frontal photograph}

\textbf{Figure 9: Pre-op. occlusion}

\textbf{Figure 10: Radiograph showing condylar hyperplasia (Right side)}

\textbf{Figure 11: Post-op. frontal photograph}
Radiographic and clinical examination may suggest the conversion to pathological conditions such as chondroma, osteoma and other neoplasms which may warrant tissues histological diagnosis.[1‑4,13,20]

Condylectomy not only restores the symmetry in such cases but also provides an opportunity for the histological examination of the tumor.[4,9,11] On the other hand R. Bruse[7] had suggested that a more satisfactory occlusal relationship can be obtained by using other surgical procedures in some situations. Nevertheless in majority of the instances, the resected condyle has been identified as normal bone on the basis of microscopic examination. Therefore the surgical procedures on hyperplastic condyle are normally carried out after completion of growth.

The various proceedings put forward for the management of unilateral condylar hyperplastic asymmetry are unilateral sagittal split, bilateral sagittal split ramal osteotomies, maxillary osteotomy and condylectomy.

Sheffer et al. treated CH by simultaneous orthognathic and high condylectomy.[21] On the other hand Dr. Wolford has addressed several important questions regarding the combined approach of orthognathic and TMJ surgery.[22] “Why consider performing TMJ and orthognathic surgery at the same time when a patient has coexisting TMJ pathology and a dentofacial deformity? Isn’t that too aggressive? How could the condylar position be controlled? Wouldn’t orthognathic surgery alone correct the TMJ problems?” His simple response to these concerns is that the procedure provides a better treatment for the patients, resulting in improved effectiveness and outcomes.[23‑27]

A surgical procedure has to be decided after thorough clinical examination, cephalometric facial analysis and mock surgery on dental models.

It has also been observed that treatment of the affected side of the mandible may only be necessary to restore the symmetry and function. To establish smooth interdental relationship, the interarch coordination is the first key in the preoperative planning. This may indicate presurgical orthodontic treatment, which should be carried out, being mandatory.

**Conclusion**

Two cases of condylar hyperplasia have been presented. In case-1, there were condylar morphologic changes itself, while in Case-2, the condyle was normal but there was elongation of the condylar neck.

In both these cases there was obvious facial deformity due to hyperactivity of the condyle. In one case the condylectomy was carried out to correct the bony deformity as well as occlusion. The other case was treated with unilateral sagittal split on the side of the deformity, which not only corrected the facial asymmetry but also restored the occlusion.

It is obvious that definite diagnostic parameters should be used to conclude whether only condylectomy should be done or other orthognathic procedures like unilateral sagittal split, bilateral sagittal split ramal osteotomies and maxillary osteotomies to correct the associated dentofacial have to be carried out.

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