CASE REPORT

Acquired Unilateral Condylar Hypoplasia: A Case Report

Amit Basannavar[1], Madhumati Singh[1], Vijayanand[2], Piyush Prakash[2]

ABSTRACT

Introduction: Mandibular condyle plays a crucial role in the development of the face. mandibular condylar malformations are of three types aplasia, hypoplasia and hyperplasia and they have their respective etiology, clinical and radiological features.

Case Report: This paper highlights a case of post traumatic acquired unilateral condylar hypoplasia associated with facial asymmetry, trauma occurred at the age of 9 years which was not treated. At the age of 19 years he developed facial asymmetry and case was treated by Bilateral sagittal split osteotomy and sliding lateral genioplasty.

Conclusion: Bilateral sagittal split osteotomy with sliding lateral genioplasty will correct malocclusion, facial midline and fullness of the face on affected side and and is suitable for correction of the dentofacial deformities.

Key-words: Acquired, BSSO, Condylar hypoplasia, Genioplasty.

How to cite this article: Amit Basannavar, Madhumati Singh, Vijayanand, Piyush Prakash. Acquired Unilateral Condylar Hypoplasia: A Case Report. International Journal of Contemporary Medical Research 2015;2(3): 647-649

[1]Department of OMFS, RRDCH, [2]Department of OMFS, RRDCH, Bangalore, India

Corresponding author: Dr. Amit Ashok Basannavar, Post Graduate Student, Department of oral and maxillofacial surgery, Rajarajeswari dental college and hospital, Bangalore-560060.

Source of Support: Nil

Conflict of Interest: None

INTRODUCTION

The development of the Temperomandibular joint starts at 7 th week of intrauterine life Development of Tmj continues till 12 years of life and the mouth opening movements appear by 20 th week of foetal life. Serious disorders of mandibular growth are frequent whenever there is condylar unit defect. Anamolies of the mandibular condyle are generally classified in terms of Aplasia,hypoplasia and hyperplasia.[1] Congenital (primary) condylar hypoplasia is generally associated with some systemic condition that originate from first and second branchial arches, such as Treacher Collins syndrome, Goldenhar syndrome, Hemifacial microsomia, Hurler's syndrome, Proteus syndrome, Morquio syndrome and Auriculocondylar syndrome.[2] Acquired (secondary) condylar aplasia or hypoplasia may occur due to mechanical trauma during active growth. Other causes may include inflammation in the TMJ area, rheumatoid arthritis and radiotherapy.[3] Defect in the condyle formation may happen due to deficiency in the parathyroid harmone realed protein which affects the bone formation and chondrocyte differentiation. Recent reports have shown that various extracellular matrix proteins, such as transforming growth factor-b (TGF-b), play important roles affecting Meckel's cartilage for normal mandibular development. Importance of the head of the condyle as the main growth centre of the mandible was first fully realized by Wilson Charles (1925). Rushton (1944) and Greer Walker (1957) described facial deformity can happen due to the interference of TGF-b at the growth centre due to trauma or infection.[5]

CASE REPORT

A 19 year old male patient reported to our department with a chief complaint of difficulty in chewing, chin deviation towards the left side. The patient was in good general health and gave a history of trauma to the craniofacial region at the age of 9 years. History of presenting illness revealed that the patient was apparently normal till the age of 9 years, his father noticed a deviation of chin to the left side of face and consulted a dentist who suggested an orthodontic treatment. Extra orally there was marked deviation of the facial midline towards the left side and flattening on the right side of the face and intra orally there was shift in the dental midline with posterior crossbite. The asymmetry worsened with maximum mouth opening. The range of mandibular movements was normal despite the fact that the mandibular condyle was not palpable on the left side.

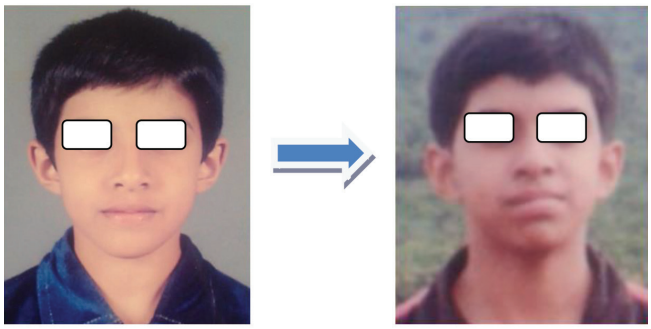

Figure-1: Before trauma (9 Yr); **Figure-2:** After trauma (11 Yr)

Computed tomography showed hypoplastic condyle on left side, narrow bifid condyle on the left side with antigonial notch on the left side of the mandible. Posteroanterior view radiograph of skull suggested facial asymmetry. A provisional diagnosis was acquired unilateral condylar hypoplasia.

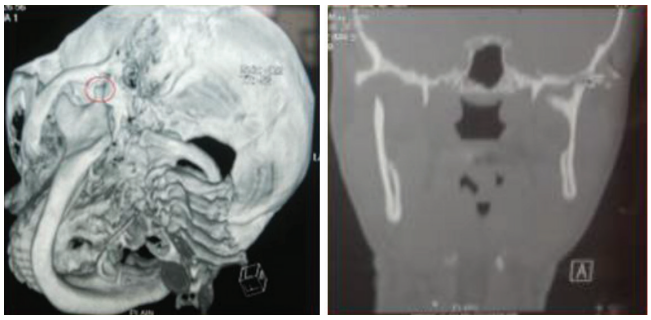

Figure-3: Hypoplastic left mandibular condyle; **Figure 4:** Bifid condyle

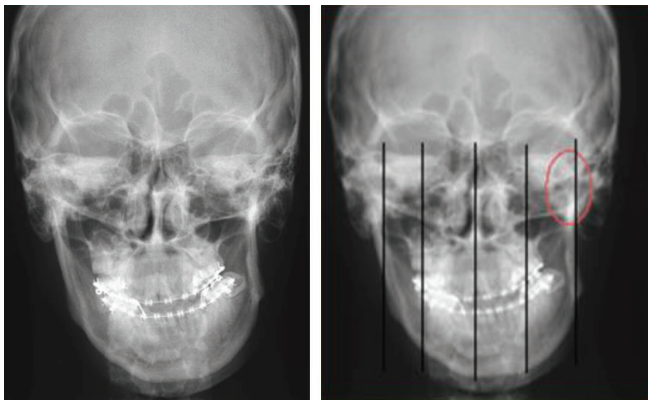

Figure-5A: Facial deformity (PA VIEW SKULL); **Figure-5B:** Facial deformity (PA VIEW SKULL)

Treatment

Limited growth potential (due to the patient age) ruled out the possibility of growth modification treatment; as there was no neurophysiologic deficit, it indicated a good prognosis.[6] Depending on the discrepancy a bilateral sagittal split osteotomy with lateral sliding genioplasty was planned and performed eventually.

Pre operative

Figure-6: Extra oral; **Figure-6A:** Intraoral

Post operative

Figure-7: Extra oral; **Figure-7A**: Intraoral

Surgical Procedure

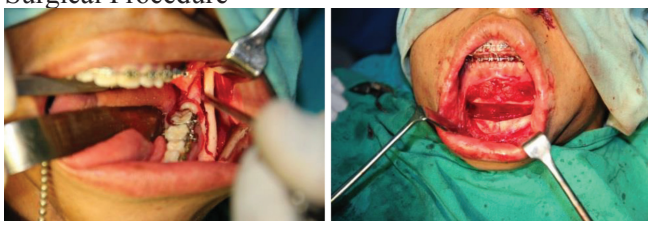

Figure-8: BSSO (Bilateral Sagittal Split Osteotomy; **Figure-9:** Sliding Genioplasty

DISCUSSION

Various treatment modalities have been proposed for the treatment of condylar hypoplasia, Most of the time it is treated by multimode with the help of oral surgeon, general surgeon, plastic surgeon, and orthodontist.[7] The timing of treatment and possibility of influencing mandibular growth has been the topic of numerous clinical and experimental studies. Mandibular condyle deficiency can happen without any defined etiology.[4] Clinical evaluation and procedures may prevent facial asymmetries and other facial disorders. To correct the relationship of mandibular base to maxillary dental base may be achieved by osteotomy and bone grafting operations during mixed dentition stage to achieve satisfactory occlusion in the permanent dentition. Other treatment objectives which involve orthodontic treatment can be carried out during mixed or permanent dentition which may be followed by masking procedures such as epithelial inlays or onlay bone grafts.[5] The severity of the damage to the head of the condyle,

age of the patient, the potential for facial growth of the patient are some of the factors to be considered when making this decision. In this case, The entire condylar process seems to be hypoplastic, especially the condylar neck. There is disturbed growth of the condyle in its posterior part, which leads to the Y-shape. This seems to be in accordance with the hypothesis of different growth regulators within the condyle.[8] A well defined fossa or tubercle may be absent due to the absence of condyle.[9] Bilateral sagittal split osteotomy was chosen in this particular case because of its versatility, aids in immediate correction, lesser chances of infection and an intra-oral procedure compared to distraction osteogenesis which needs a distraction device, longer time for correction, chances of infection are more and difficult to maintain if an extraoral distractor was to be used. Unilateral surgical lengthening of the ramus in growing patients through distraction osteogenesis is successful in the short term but has been disappointing in the long term.[10]

CONCLUSION

Integration of surgical treatment with orthodontic treatment is required for a good prognosis and predictable outcome. The timing of the treatment is, however, very important and should start before the pubertal growth spurt, but depends entirely on the age when the patient first reports. In present case bilateral sagittal split osteotomy (BSSO) with lateral sliding genioplasty proved to be beneficiary in correction of the skeletal and dental midline.

REFERENCES

1. Buchbinder D, Kaplan AS (1991) Biology. In: Kaplan AS, Assael LA(eds). Temporomandibular Disorders Diagnosis and Treatment. Saunders, Philadelphia, PA, pp. 11–23.
2. Kaneyama K, Segami N, Hatta T. Congenital deformities and developmental abnormalities of the mandibular condyle in the temporomandibular joint. Congenital Anomalies, 2008; 48: 118–125.
3. Neville BW, Damm DD, Allen CM, Bouquot JE. Developmental defects of the oral and maxillofacial region. Oral and maxillofacial pathology (2nd edn). Philadelphia, PA: WB Saunders, 2002, pp 17–18.
4. Santos KCP, Dutra MEP, Costa C et al. Aplasia of mandibular condyle: case report. Dentomaxillofac Radiol 2007; 36: 420–22.
5. Burke P H. A Case of Acquired Unilateral Mandibular Condylar Hypoplasia. Proceedings of the Royal Society of Medicine 1961 54: 507-510.
6. Agarwal et al. Non syndromic aplasia of mandibular condyle. UJMDS 2014;2:43-45.
7. K. Vargervik and L. B. Kaban. Hemifacial microstomia diagnosis and management in Modern Practice in Orthognathic and Reconstructive Surgery, W.H.Bell, Ed.,vol.2,pp.1533–1560,WB Saunders Company, Philadelphia, Pa, USA, 1992.
8. Obwegeser HL, Makek MS. Hemimandibular hyperplasia hemimandibular elongation. J Maxillofac Surg 14: 183, 1986.
9. Sperber GH. Temperomandibular joint. In: Craniofacial developmental, Hamilton, Ontario: BC Decker inc; 139-43.
10. McCarthy JG, Schreiber J, Karp N, Thorne CH, Grayson BH. Lengthening the human mandible by gradual distraction. Plast Reconstr Surg 1992;89:1-8.