



Facial asymmetry secondary to mandibular condylar hyperplasia. A case report

Asimetría facial secundaria a hiperplasia condilar mandibular. Reporte de un caso

Alberto Wintergerst Fisch,* Carlos Iturralde Espinosa,§ Santiago Reinoso Quezada^{||}

ABSTRACT

Mandibular condylar hyperplasia is a rare disease first described in 1836 as an overgrowth of the mandibular condyle leading to facial asymmetry and occlusal alterations. It can be associated to temporomandibular pain and dysfunction. This disorder is self limiting, but as long as it remains active, asymmetry and occlusal changes will remain progressive. The etiology of condylar hyperplasia remains uncertain, although certain factors like arthritis and hormonal disorders have been associated to it. The case of a female patient with facial asymmetry associated to mandibular condylar hyperplasia and treated with high condylectomy and orthognatic surgery is presented.

Key words: Condylar hyperplasia, facial asymmetry, orthognatic surgery, dentofacial deformity.

Palabras clave: Hiperplasia condilar mandibular, asimetría facial, cirugía ortognática, deformidad dentofacial.

RESUMEN

La hiperplasia condilar mandibular es una patología poco común descrita por primera vez en 1836 como un sobrecrecimiento del cóndilo mandibular provocando asimetría facial así como alteraciones oclusales, puede asociarse a dolor y disfunción de la articulación temporomandibular. Esta alteración es autolimitante, sin embargo mientras se mantenga activa, la asimetría y los cambios oclusales serán progresivos. La etiología de la hiperplasia condilar permanece incierta, aunque factores como trauma, artritis y problemas hormonales han sido asociados. Se presenta el caso de un paciente femenino con asimetría facial secundaria a hiperplasia del cóndilo mandibular, el cual fue tratado con condilectomía alta y cirugía ortognática.

INTRODUCTION

Condylar Hyperplasia (CH) is defined as an excessive unilateral growth of the mandibular condyle which elicits facial asymmetry and occlusal alterations. This is a self limiting condition, but while it remains active, asymmetry and malocclusion will remain progressive.¹ CH is the abnormal postnatal growth of the most common TMJ (temporomandibular joint).² Epidemiologically it seems to present similar incidence between males and females, or among ethnic groups. It mainly manifests itself in patients with ages ranging 11-30 years, showing no predilection for either left or right side.¹⁻³ CH etiology remains uncertain, although certain factors like trauma, rheumatoid arthritis, infections and hormonal alterations have been associated to it.^{4,5} CH is the result of the accelerated growth of one of the developing condyles in teenagers, or it can be the result of a continuing growth of the posterior condyle at a point in time when skeletal development as a whole has come to a halt.³ Obwegeser and Makek⁶ classified CH associated facial asymmetries into three categories: Hemimandibular hyperplasia which causes asym-

metry in the vertical plane, hemimandibular elongation which causes asymmetry in the transversal plane, the third category would be a combination of the previous two entities.

The first type is caused by unilateral growth in the vertical plane. It is characterized by oral commissure asymmetry, with little or no deviation of the chin, intra-orally, an increase of the maxillary alveolar bone height can be observed as well as a downward deviation of

* Maxillofacial Surgeon attached to the Maxillofacial Surgery Service Hospital «20 de Noviembre», Professor of Oral Surgery, National School of Dentistry, National University of Mexico.

§ Maxillofacial Surgeon, Professor of Exodontics, Universidad Latinoamericana, Mexico City.

^{||} Resident Maxillofacial Surgeon, Craniofacial and Pediatric Maxillofacial Surgery, Hospital de Niño Morelense (Children's Hospital, Morelos, Mexico).

Received: 4 November 2009.

Accepted: 22 April 2010.

Este artículo puede ser consultado en versión completa en <http://www.medigraphic.com/facultadodontologiaunam>

the ipsilateral occlusal plane. If the maxillary plane does not follow the mandibular plane, on that side, an open bite will develop. In most cases, the mandibular line is adequate but can show certain ipsilateral deviation. Upon radiographic examination, Obwegeser and Makek⁶ describe the enlargement of the condyle, with a deformed, generally irregular head and a thinned and elongated condylar neck. The mandibular angle is typically rounded and presents the mandibular canal in a lowered position. The mid mandibular elongation is associated to a deviation of the chin to the contralateral side and does not present vertical asymmetry. Intraorally, the midline is deviated to the non affected side while contralateral lower molars move in a lingual direction in an attempt to achieve occlusion. Nevertheless a crossbite can appear on that same side. The occlusal plane is maintained free of deviations.

The condyle is of normal shape and size, but the neck can be elongated or remain normal with elongation of the ascending ramus.

The third type of CH is a combination of the former two types.

Basic requirements for CH treatment must include control of the growth process to achieve proper facial balance. This can be accomplished by performing a high condylectomy or condylar shaving in cases where the growth process is active.^{6,7} Facial asymmetry treatment depends on whether the growth has been vertical or transversal, on the position of midlines or on whether the position of the upper or lower occlusal plane has been affected.

Orthodontic treatment before the operation is of the utmost importance. There should be no attempt to bring the teeth to the facial midline. If this were to happen, surgical movements would result impaired, therefore compromising the potential of success. It is important to be cognizant with the type of surgery to be performed as well as all expected changes, to perform presurgical dental movements. The aim to strive for is that after surgery, the dental midline will conform to the facial midline.

CASE REPORT

Female patient, 37 years of age (*Figure 1*). The referral was due to the fact that this patient was in orthodontic presurgical protocol for laterognathia correction through orthognathic surgery. There was onset of pain in the left preauricular region as well as a decrease of oral opening, which was 20 mm when the patient arrived at the hospital. Clinically, facial asymmetry was observed at the expense of the lower third. Intraorally there was maxillary and mandibular vertical discrep-

ancy of the occlusal plane with a decrease in the maxillary vertical height of the left side and dental midlines with deviations to the same side. The mandibular midline was deviated 5 mm with respect to the maxillary midline. There was also a posterior open bite on the right side (*Figure 2*). Simple radiographic studies were carried out. They showed an approximately 2 x 2 cm translucent zone in the anterior medial portion of the condylar head (*Figure 3*). From the tomographic point of view, a hyper dense mass could be observed in the left condylar head (*Figure 4*). A bone Gammagraphy was performed with technetium-99 phosphate. In it, an abnormal augmented deposition of the drug was observed; this confirmed the presence of a blastic lesion (*Figure 5*). For these reasons, it was decided to perform a high condylectomy.

The patient underwent balanced inhalation general anesthesia, having previously observed a protocol of asepsis and antisepsis. Lidocaine with 2% epinephrine was infiltrated in the preauricular region. A preauricular incision was performed with a temporal extension to approach the temporomandibular joint; performing a blunt dissection, the articular capsule was located, and then incised in a «T» shape. When viewing the condylar head, an intact articular disk could be appreciated, therefore it was preserved. Following this, an osteotomy on the lower base of the condylar deformation was performed (*Figure 6*). After that, the remaining bone tissue was remodeled, the articular disk was



Figure 1.
Initial front
photograph.

recaptured to the lateral portion of the condyle, and a suture by planes was performed. The patient evolved satisfactorily, and presented a complete correction of

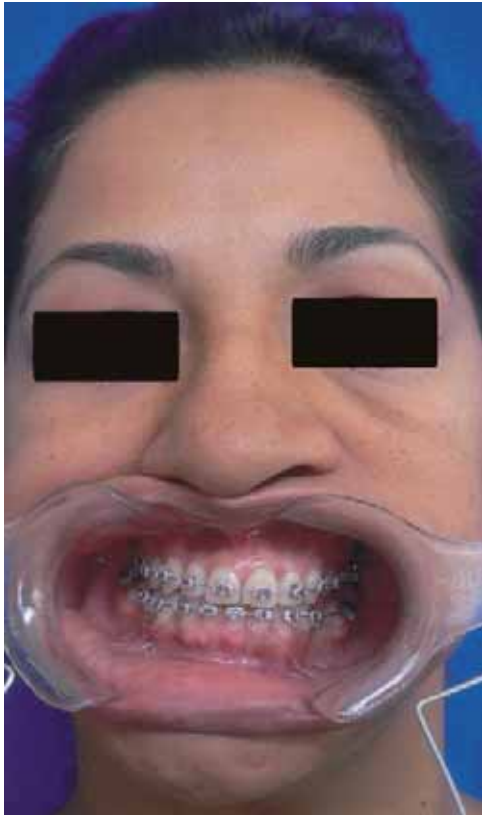


Figure 2. Initial front photograph in occlusion.

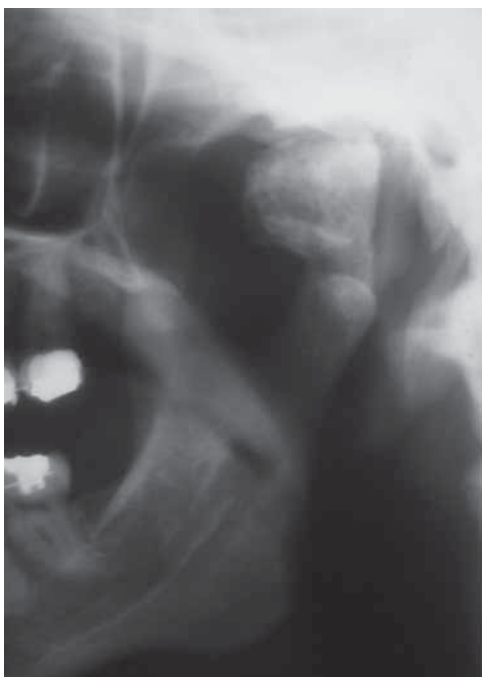


Figure 3. Well defined radiopaque tumor which caudally displaces caudally the mandibular condyle from the glenoid fossa.

the facial asymmetry. Nevertheless occlusal discrepancy and maxillary vertical discrepancy of the occlusal plane became evident (*Figure 7*). Therefore, it was decided to perform, in a second surgery, an antero-lateral descent Lefort I osteotomy, an occlusal guide was placed to stabilize the mandible. One month after the previous surgery, the patient was brought to the operating theater under balanced inhalation general anesthesia and nasotracheal intubation; an incision

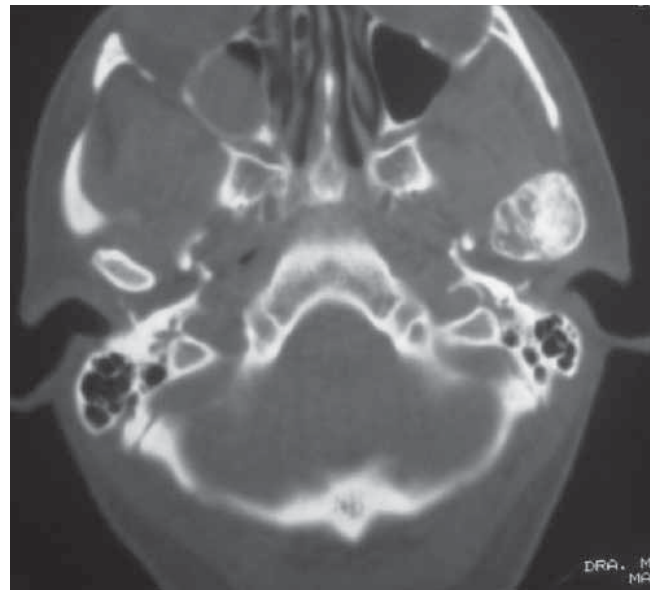


Figure 4. Axial cut of computerized tomography, where a hyperdense left tumoration can be observed in what corresponds to the position over the mandibular condyle.



Figure 5. Craneofacial region bone Gam-magrapthy with technetium-99 phosphate where the drug augmented abnormal deposition on the TMJ level can be observed.

was made around the vestibular mucosa to perform a Lefort I osteotomy with maxilar anterolateral descent to correct occlusal plane discrepancy. With this procedure, a stable dental occlusion was achieved, and was then fixed with titanium mini plates (*Figure 8*). For aesthetical purposes an advancement genioplasty was performed. It was sutured by planes, and the operation was accomplished without incidents or accidents. The patient experienced satisfactory evolution and was dismissed from the hospital. One month after the operation, the patient presented facial symmetry (*Figure 9*), stable occlusion, as well as matching dental and facial midlines (*Figure 10*). For all the aforementioned reasons she was sent home to continue with post surgical orthodontic management.

DISCUSSION

Facial asymmetry secondary to condylar hyperplasia is not merely an aesthetic problem, it can represent functional alterations such as pain and oral opening impairment. The growth of the condylar head causes the downward and forward displacement of the mandibular body,^{1,6,7} causing maxillary vertical discrepancy of the occlusal plane, crossbite, as well as interferences in the TMJ movements. Besides all the aforementioned, there is pain caused by compression and displacement of peripheral structures.^{1,6-8}

Condylar Hyperplasia causes have not been established. The reasons why the condyle starts growing and becomes hyperplastic are unknown.^{1,3,6,7} To all the aforementioned reasons the fact must be included that it is difficult to predict the length of time the condyle

has experienced abnormal growth. To decipher this, references from the patient as well as previous photographs are needed.

When choosing proper treatment, a precise diagnosis is very important, as well as the knowledge of whether CH is active. To achieve this we employ complementary diagnosis methods like bone Gam-magraphy with 99m technetium phosphate, which is a tracking method based on the infiltration of phosphates marked with a radionuclide.^{2,4,8} Phosphates are metabolized by bone cells in approximately 2 hours, and are incorporated in areas of new bone formation. The amount of tracking material distributed in an area is determined by the metabolic activity range or by the vascular contribution to a region, and is translated in the radiographic plates of condylar heads.⁸

Basic considerations in the treatment of facial asymmetry secondary to condylar hyperplasia must include



Figure 6. Macro view of the tumor being dissected as a whole through pre-auricular approach.



Figure 7. Maxilar occlusal discrepancy immediately after resection of condyle tumor.



Figure 8. Fixation Lefort I type osteotomy with L shaped mini plates. System 2.0.



Figure 9. Front photograph after surgery with proper symmetry and facial harmony.



Figure 10. Stable dental occlusion after surgery.

a control in the growth process to allow balanced facial development. This can be achieved performing a high condylectomy or condylar remodeling in cases of active growth.^{7,8} In cases where CH is mild to moderate and self-limiting, it is better to avoid TMJ surgery and resolve the asymmetry through the osteotomy of the mandibular ramus upon completion of the growth period.⁸

Presurgical orthodontic treatment is of the utmost importance. In it, the objectives are to achieve a good relationship of both jaws, and to accomplish, after surgical reposition, an Angle Class I canine occlusion.⁹ For the aforementioned reasons it is necessary to ascertain the type and extent of the surgery to be performed, so that teeth can be surgically aligned and dental midlines end up matching facial midlines.^{1,7}

Decision to perform a condylectomy is made based on evidence of active changes in the hyperplastic condyle, or when observing clinical or radiographic suggestions of pathological conditions like: chondroma, osteoma, or other alterations which require a histopathological diagnosis.^{1,6,7,9} It must be taken into account that an osteochondroma of the mandibular condyle can be easily confused with CH.^{7,10} Condylectomy not only restores asymmetry in many cases, it also allows histological examination of the tumor mass.⁷⁻¹¹ Surgical procedures to correct asymmetries will depend on the mandible deviation and maxillary vertical discrepancy of the occlusal plane. To achieve the aforementioned, the most used procedures are

unilateral or bilateral mandibular osteotomies, as well as Type Lefort I maxillary osteotomies to correct the occlusal plane.¹⁰⁻¹²

CONCLUSION

In the case presented in this article, pain and mouth opening impairment, as well as the size of the condyle, mandated the performance of a high condylectomy and the remodeling of the remaining bone, achieving thus the complete correction of the facial asymmetry. Nevertheless, lack of maxillary lateral growth became evident, therefore it was decided to perform a Lefort I type osteotomy, gaining thus stable Angle Class I molar and canine occlusion, with dental and facial midlines in proper relation.

We deem of the utmost importance in all patients presenting facial asymmetries to carry out a comprehensive study of its causes, and to consolidate a diagnosis that be not only dental, since TMJ alterations can be found like CH or other type of neoplasia.

REFERENCES

1. Nitzan DW, Katsnelson A, Bermanis I, Brin I, Casap N. The clinical characteristics of condylar hyperplasia: Experience with 61 patients. *Journal of Oral and Maxillofacial Surgery* 2008; 66: 312-318.
2. Saridin CP, Raijmakers P, Becking A. Quantitative analysis of planar bone scintigraphy in patients with unilateral condylar hyperplasia. *Oral Surgery Oral Medicine Oral Pathology Oral Endodontology* 2007; 104: 259-263.
3. Eslami B, Behnia H, Javadi H, Savojbolaghchi KK, Saffar AS. Histopatologic comparison of normal and hyperplastic condyles. *Oral Surgery Oral Medicine Oral Pathology Oral Endodontology* 2003; 96: 711-717.

4. Gray RJM, Sloan P, Quayle AA, Carter DH. Histopathological and scintigraphic features of condylar hyperplasia. *International Journal Maxillofacial Surgery* 1990; 19: 65-71.
5. Pripatnanont P, Vittayakittipong P, Markmanee U, Thongmak S, Yipinstoi T. The use of SPECT to evaluate growth cessation of the mandible in unilateral condylar hyperplasia. *International Journal Oral Maxillofacial Surgery* 2005; 34: 364-368.
6. Obwegeser HL, Makek MS. Hemimandibular hyperplasia hemimandibular elongation. *Journal Maxillofacial Surgery* 1986; 14: 183-208.
7. Slootweg PJ, Muller H. Condylar hyperplasia. A clinic-pathological analysis of 22 cases. *Journal Maxillofacial Surgery* 1986; 14: 209-214.
8. Kalantar MMH. Treatment of condylar hyperplasia of the mandible using unilateral ramus osteotomies. *Journal of Oral and Maxillofacial Surgery* 1996; 54: 1161-1169.
9. Matteson SR, Proffit W, Terry BC, Staab EV, Burkes EJ. Bone scanning with technetium phosphate to asses condylar hyperplasia. *Oral Surgery Oral Medicine Oral Pathology* 1985; 60: 356-367.
10. Ianetti G, Cascone P, Belli E, Cordaro L. Condylar hyperplasia: Cephalometric study, treatment planning, and surgical correction (our experience). *Oral Surgery Oral Medicine, Oral Pathology* 1989; 68: 673-681.
11. Yang J, Lignelli J, Ruprecht A. Mirror image condylar hyperplasia in two siblings. *Oral Surgery Oral Medicine Oral Pathology Oral Endodontology* 2004; 97: 281-285.
12. Pogrel MA. Quantitative assessment of isotope activity in the temporomandibular joint regions as a means of assessing unilateral condylar hypertrophy. *Oral Surgery Oral Medicine, Oral Pathology* 1985; 60: 15-17.

Address correspondence:
Alberto Wintergerst Fisch,
Escolta Num. 45,
Col. San Jerónimo Lídice,
México, D.F. 10200, México
E-mail: agerst@hotmail.com