

# Condylar hyperplasia treated by simultaneous orthognathic surgery and high condylectomy: A case report

## Hiperplasia condilar tratada com condilectomia alta e cirurgia ortognática simultânea: Relato de caso

### Abstract

**Purpose:** This paper reports a case of severe facial asymmetry secondary to condylar hyperplasia (CH), which was successfully treated by simultaneous high condylectomy and orthognathic surgery, and also reviews the literature concerning the current approaches for treating these combined conditions.

**Case description:** A 34 year-old female patient reported complaints of unsatisfactory facial appearance, pain over her left condyle, and poor chewing function. Clinical examination showed unilateral elongation of the face, facial asymmetry, and increased vertical height of the mandible creating a mild open bite with dental compensations. A 3D Computed Tomography exam showed a severe elongation of the left condyle, indicating the possibility of CH. The treatment included orthodontic corrections of the dental compensations, orthognathic surgery, high condylectomy removing 10mm of the left condyle height, and articular disc repositioning without anchor placement. The orthognathic surgery included bilateral mandibular ramus sagittal split osteotomies to correct the mild Class III dentofacial deformity and the mandibular planes. A follow-up evaluation after 24 months showed good aesthetic and functional results. No changes in occlusion were noted, indicating very stable results using this technique.

**Conclusion:** Condylar hyperplasia usually produces facial asymmetry, and in certain cases both high condylectomy and orthognathic surgery are necessary to correct the dentofacial deformity.

**Key words:** Hiperplasia; temporomandibular joint; surgery, oral

### Resumo

**Objetivo:** Este artigo relata caso de hiperplasia condilar (CH) tratado com sucesso através de cirurgia ortognática e condilectomia alta realizada simultaneamente, além de revisar a literatura recente sobre a forma adequada de tratar esta associação de condições.

**Descrição do Caso:** Uma paciente do sexo feminino, 34 anos, relatou queixa de aparência facial insatisfatória, dor sobre o côndilo esquerdo e função mastigatória comprometida. O exame clínico mostrou alongação unilateral da face, assimetria facial e altura vertical aumentada da mandíbula criando uma moderada mordida aberta com compensações dentais. Uma tomografia computadorizada 3D mostrou severa alongação o côndilo esquerdo, indicando a possibilidade de CH. O tratamento incluiu correções ortodônticas das compensações dentais, cirurgia ortognática, condilectomia alta removendo 10mm da altura do côndilo esquerdo, e reposicionamento do disco articular sem ancoramento. A cirurgia ortognática incluiu osteotomias sagitais do ramo mandibular bilateralmente para corrigir a deformidade dentofacial de Classe III moderada e para corrigir os planos mandibulares. A avaliação de controle após 24 meses mostrou bons resultados estéticos e funcionais. Não foram detectadas alterações na oclusão, indicando um resultado bastante estável com a utilização desta técnica.

**Conclusão:** A hiperplasia condilar normalmente produz assimetria facial e algumas vezes é necessário corrigir a deformidade dentofacial resultante através de condilectomia alta e cirurgia ortognática.

**Palavras-chave:** Hiperplasia; articulação temporomandibular; cirurgia maxilofacial

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## Introduction

Facial asymmetry due to growth disturbances of the jaws almost always requires orthognathic surgical correction, and asymmetries treated by this method have met with success and long-term stability (1). However, in very severe cases of facial asymmetry associated with condylar hyperplasia (CH), a partial or complete condylar resection may be necessary for correction of the condition (2,3).

CH at the temporomandibular joint (TMJ) is a rare pathology that occurs at the head of the condyle and can lead to facial asymmetry in addition to affecting occlusion and possible association with pain and dysfunction. It may occur at any age and it is more prevalent in females. To date, the pathogenesis of CH affecting the TMJ remains obscure, with factors ranging from a reactive growth response, trauma, or a Y-linked or autosomal dominant trait being implicated in the development of CH (4,5). The condyle and ramus can also be affected, showing enlargement caused by hemimandibular hyperplasia (6) and condylar tumors (7,8). Wolford et al. (9), in a retrospective study, evaluated the efficacy of combining high condylectomy and orthognathic surgery for treating CH. Their study presented better results for patients who also had high condylectomy compared to those who had orthognathic surgery alone, indicating that the combination of both procedures is beneficial for patients with active CH.

This is a case report of a severe facial asymmetry secondary to CH, which was successfully treated by simultaneous high condylectomy and orthognathic surgery.

## Case description

A 34 year-old female patient reported complaints of unsatisfactory facial appearance, pain over her left condyle, and poor chewing function. The clinical examination showed unilateral elongation of the face responsible for the facial asymmetry, which had been present for approximately 14 years, an increased vertical height of the mandible on the involved side creating a mild open bite with dental compensations, and also the presence of a total maxillary prosthesis (Fig. 1A). A 3D Computed Tomography (3D-CT) exam showed a severe elongation of the left condyle, indicating the possibility of CH. The patient underwent a standardized clinical and radiographic examination (9) both at the initial appointment and immediately prior to surgery. The treatment plan also included orthodontic corrections of the dental compensations. At the end of the orthodontic corrections, the casts were mounted on a semiadjustable articulator, and a stereolithographic model (Fig. 1B) was made to assist in the planning of the orthognathic surgery and the amount of condyle resection. The left TMJ was accessed, a high condylectomy removing 10mm of the condyle height was performed, and the articular disc repositioning was performed without anchor placement. The orthognathic surgery included bilateral mandibular ramus sagittal split osteotomies to correct the mild Class

III dentofacial deformity and mandibular planes. Class III vector light elastics were used for 7 days postoperatively to control the occlusion and minimize TMJ intercapsular edema. The surgery progressed without any postoperative problems, and no damage to the facial nerve was detected. A follow-up evaluation after 24 months showed good aesthetic and functional results (Fig. 2), ending the pain and aesthetic complaints. No occlusion changes were noted, indicating a very a stable result using this technique.

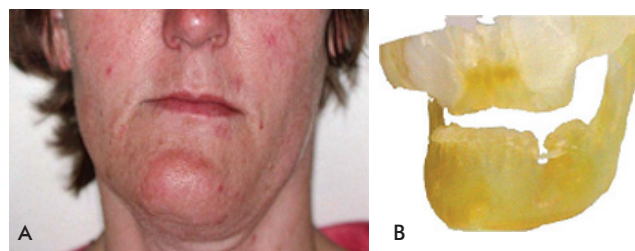


Fig. 1. A. Preoperative frontal view of the dentofacial deformity. B. Stereolithographic model showing the severe condylar elongation.

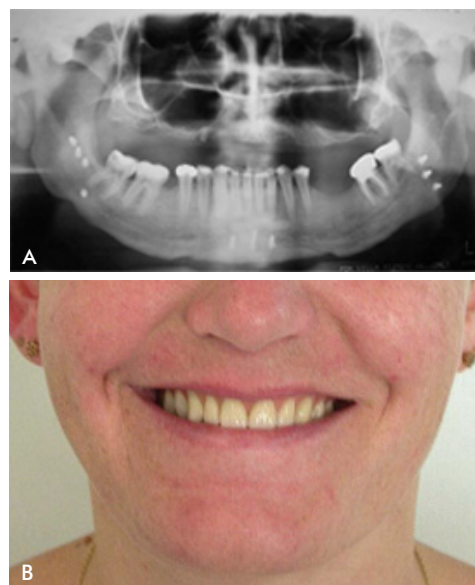


Fig. 2. A. Postoperative panoramic radiography. B. Late postoperative frontal view.

## Discussion

It has been reported that performing isolated orthognathic surgery on patients with coexisting TMJ pathology can lead to unsatisfactory results, such as relapse, malocclusion, jaw and facial deformities, TMJ pain, headaches, myofascial pain, and masticatory dysfunction (10,11). One solution advocated to avoid these follow-up problems is to perform the TMJ and orthognathic surgeries during the same operation (12,13). Recently, Wolford (13) described the clinical implications for simultaneous TMJ and orthognathic surgery

for patients suffering from articular disk dislocation, reactive arthritis, adolescent internal condylar resorption, condylar osteochondroma or osteoma, end-stage of TMJ pathology, and condylar hyperplasia. The surgical procedures can also be done separately, beginning with the TMJ surgery and then conducting the orthognathic surgery about six months later, but this requires increased expenses and a second term of hospitalization.

In some services, plain radiography and bone scintigraphy (BS) are used for the standard evaluation of patients suspected of having CH. The addition of BS to the diagnostic evaluation of patients suspected of having CH is useful since it identifies patients with an active condylar growth center who should undergo high condylectomy. Failure to recognize this condition can result in unfavorable functional and aesthetic treatment results (9,14). In the present case report, BS was not included in the evaluation because active CH usually develops during puberty and rarely begins after the age of 20 year-old (9). The clinical findings, in addition to the CT scans, guided us to the diagnosis of no active CH. The decision to perform high condylectomy was made due to the signs and symptoms of end-stage TMJ pathology resulting from CH and to assist in the correction of the mandibular plane.

CH activity as demonstrated by BS is also strongly correlated with histological findings (4,6). The histological findings of the presented case are compatible with those for a normal condyle, confirming the clinical findings of no active CH. When active, the histopathology of CH shows the presence of abnormal large masses of hyaline cartilage surrounding large cells and new cartilage formation, along with the constant presence of mesenchymal germinal cells and cartilage islands in the bone under the fibrocartilage. In the vertical type of active CH, cartilage maturation layers and increased growth are also noticeable, and inclusions of

cartilaginous tissue with glove fingers extending into the underlying cancellous bone have been described (6).

Conducting orthognathic and TMJ surgery simultaneously is still controversial. Panula et al. (15) carried out a prospective study in 60 subjects on the effects of orthognathic surgery on signs and symptoms of TMJ dysfunction. These authors reported a significant reduction in pain levels with the orthognathic treatment, and the risk for a new TMJ dysfunction was reported to be extremely low (6.7% or 4 patients), with all the occlusion parameters remaining stable through the follow-up period. In their short review, Stavropoulos and Dolwick (16) concluded that TMJ surgery should be reserved for the small number of patients whose TMJ symptoms do not resolve with conventional orthognathic surgery, and TMJ surgery should be performed only when indicated.

On the other hand, the senior oral surgeon Dr. Wolford has addressed several important questions regarding the combined approach of orthognathic and TMJ surgery (12): “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 this procedure provides a better treatment for the patients, resulting in improved effectiveness and outcomes (9).

The authors of this case report believe that the combined technique can be safely and predictably performed during the same operation, and should be conducted when active growth at the condyle is noted or when there is strong evidence of severe TMJ pathology, *i.e.*, when the criteria for orthognathic surgery meets the criteria for TMJ surgery, as presented in this case. For these specific situations, the hospitalization costs and time of treatment can be reduced significantly.

## References

1. Decker JD. Asymmetric mandibular prognathism: a 30-year retrospective case report. *Am J Orthod Dentofacial Orthop* 2006;129:436-43.
2. Muñoz MF, Monje F, Goizueta C, Rodríguez-Campo F. Active condylar hyperplasia treated by high condylectomy: report of case. *J Oral Maxillofac Surg* 1999;57:1455-9.
3. Obwegeser HL. Hemimandibular hyperplasia. In: Obwegeser HL (Ed.). *Mandibular growth anomalies*. Berlin: Springer, 2001. p.145-98.
4. Nitzan DW, Katsnelson A, Bermanis I, Brin I, Casap N. The clinical characteristics of condylar hyperplasia: experience with 61 patients. *J Oral Maxillofac Surg* 2008;66:312-8.
5. Corbacelli A, Cutilli T, Marinangeli F, Ciccozzi A, Corbacelli C, Necozone S et al. Cervical pain and headache in patients with facial asymmetries: the effect of orthognathic surgical correction. *Minerva Anesthesiol* 2007;73:281-9.
6. Lippold C, Kruse-Losler B, Danesh G, Joos U, Meyer U. Treatment of hemimandibular hyperplasia: the biological basis of condylectomy. *Br J Oral Maxillofac Surg* 2007;45:353-60.
7. Martinez-Lage JL, Gonzalez J, Pineda A, Alvarez I. Condylar reconstruction by oblique sliding vertical-ramus osteotomy. *J Craniomaxillofac Surg* 2004;32:155-60.
8. Ortakoglu K, Akcam T, Sencimen M, Karakoc O, Ozyigit HA, Bengi O. Osteochondroma of the mandible causing severe facial asymmetry: a case report. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 2007;103: e21-8.
9. Wolford LM, Mehra P, Reiche-Fischel O, Morales-Ryan CA, García-Morales P. Efficacy of high condylectomy for management of condylar hyperplasia. *Am J Orthod Dentofacial Orthop* 2002;121:136-50.
10. Yamada K, Hanada K, Fukui T, Satou Y, Ochi K, Hayashi T, Ito J. Condylar bony change and self-reported parafunctional habits in prospective orthognathic surgery patients with temporomandibular disorders. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 2001;92:265-71.
11. Wolford LM, Reiche-Fischel O, Mehra P. Changes in temporomandibular joint dysfunction after orthognathic surgery. *J Oral Maxillofac Surg* 2003;61:655-60.

12. Wolford LM. Concomitant temporomandibular joint and orthognathic surgery. *J Oral Maxillofac Surg* 2003;61:1198-204.
13. Wolford LM. Clinical indications for simultaneous TMJ and orthognathic surgery. *Cranio* 2007;25:273-82.
14. Saridin CP, Raijmakers P, Becking AG. Quantitative analysis of planar bone scintigraphy in patients with unilateral condylar hyperplasia. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 2007;104:259-63.
15. Panula K, Somppi M, Finne K, Oikarinen K. Effects of orthognathic surgery on temporomandibular joint dysfunction. A controlled prospective 4-year follow-up study. *Int J Oral Maxillofac Surg* 2000;29:183-7.
16. Stavropoulos F, Dolwick MF. Simultaneous temporomandibular joint and orthognathic surgery: the case against. *J Oral Maxillofac Surg* 2003;61:1205-6.