

## Mandibular condyle aplasia: case report

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**Abstract: Introduction:** The temporomandibular joint (TMJ) is one of the most complex joints of the human body. Abnormal development and growth of TMJ may lead to condyle aplasia present in several syndromes expressions, but extremely rare when not connected to any syndrome. **Objective:** A rare case of aplasia of the mandibular condyle is presented, along with cone beam computed tomography (CBCT) findings. **Conclusion:** Based on clinical and radiological findings we suggest the abnormal development of the TMJ as the origin. The CBCT has provided high quality images, what made diagnosis possible.

**Keywords:** *Mandible; condyle; aplasia; cone beam computed tomography; temporomandibular joint.*

**Resumo: Introdução:** Desenvolvimento e crescimento anormais da articulação temporomandibular podem levar a aplasia da cabeça da mandíbula e normalmente está relacionada a uma síndrome, mas é extremamente rara sem tal associação. **Objetivo:** Mostrar um caso raro de aplasia da cabeça da mandíbula em paciente não-sindrômica e a utilização de achados em tomografia computadorizada por feixe cônico (CBCT). **Conclusão:** Baseando-se nos achados clínicos e radiográficos, sugere-se o desenvolvimento anormal da articulação como origem da anomalia. A CBCT proporcionou imagens de boa qualidade, possibilitando o diagnóstico.

**Palavras-chave:** *Mandíbula; cabeça da mandíbula; aplasia; tomografia computadorizada por feixe cônico; articulação temporomandibular.*

### Introduction

The temporomandibular joint (TMJ) is one of the most complex joints of the human body. It develops from separate temporal and condylar branchial arch that grow towards each other at eighth week of fetal stage, with the ossification process starting at tenth week. The TMJ initial functions start at twentieth week during the fetal stage, when mouth-opening movements appears, it is before of the development of the definitive joint. The development process will not be complete until twelfth year of life.<sup>1</sup>

Varying degrees of condylar hypoplasia, from minimal to complete absence named as condylar aplasia, may occur due to abnormal development and growth of TMJ.<sup>1</sup> The most common causes of condyle alterations are inflammatory process in the area, rheumatoid arthritis and radiotherapy.<sup>2</sup> The parathyroid hormone-related protein also affects the bone formation and chondrocyte differentiation and, consequently, the condyle formation.<sup>3,4</sup>

A rare case of aplasia of the mandibular condyle is presented, along with cone beam computed tomography (CBCT) findings.

### Case report

A 27 year old Caucasian woman with facial asymmetry required imaginological examination for later treatment. The patient's chief complaint was the facial asymmetry, first noticed in childhood and gradually progressed (Figure 1a). The patient mentioned no significant diseases, but a trauma in area, on delivery. Additionally, there was no family history of this condition.

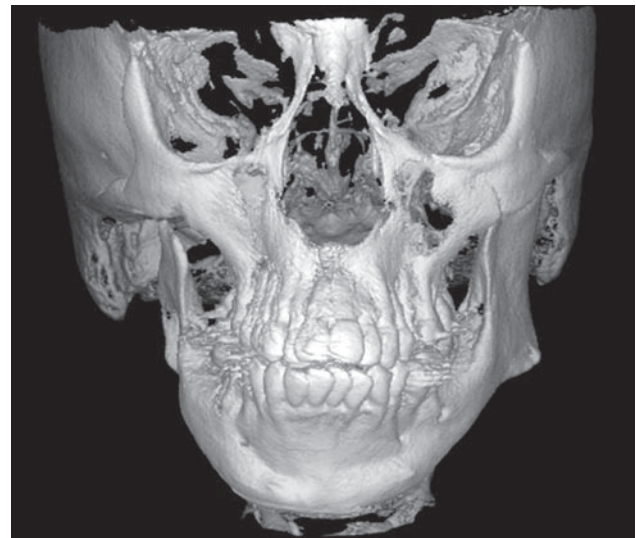
The clinical exam revealed a facial asymmetry, a deviation of the mandible midline to the right side, inducing malocclusion (Figures 1b and 2) and the right condyle is not palpable. Besides that, the condylar movements were



**Figure 1.** (a) Patient's photography. The facial asymmetry is showed and the deviation of the mandible midline to the right side; (b) Intraoral view showing the malocclusion.

not affected by the condition. No other important clinical findings were observed.

For further information, the patient was submitted to a cone beam computed tomography (CBCT) exam at iCAT (Imaging Sciences International, Pennsylvania, USA), and the Tridimensional Volume Rendering Software (3DVR) at an independent workstation. The images revealed the complete absence of the right condyle (Figures 3a, 3b, 4b and 4c). The patient was referred to a maxillofacial surgeon for evaluation.



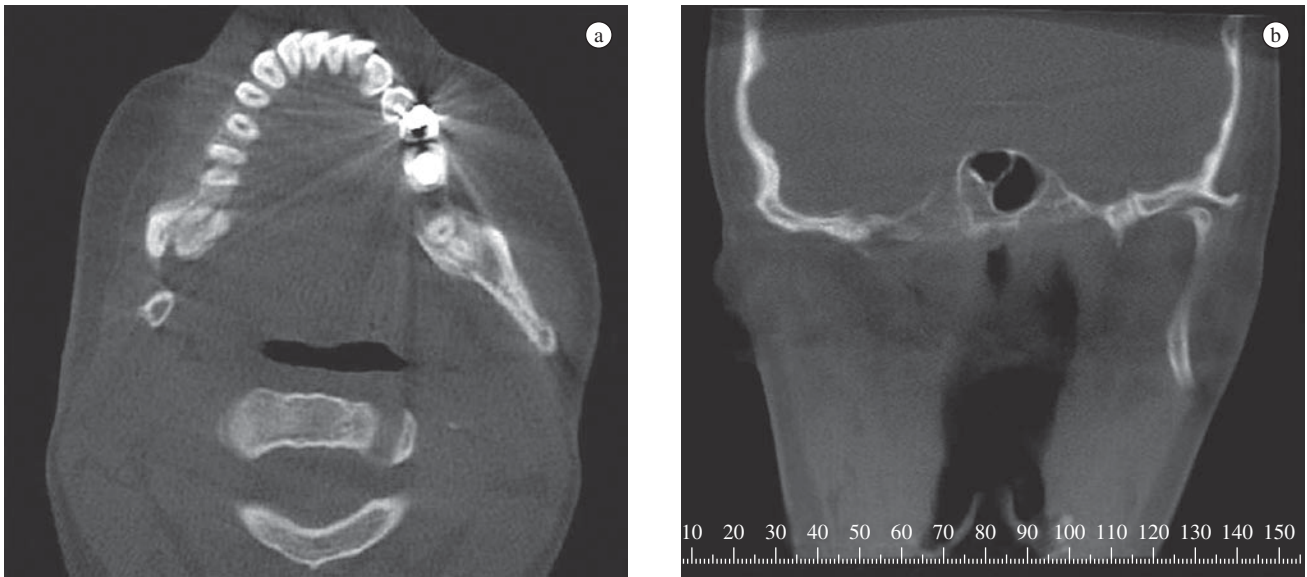
**Figure 2.** 3D-CT reconstruction showing the complete absence of the right condyle, facial asymmetry and the deviation of the mandible midline to the right side.

## Discussion

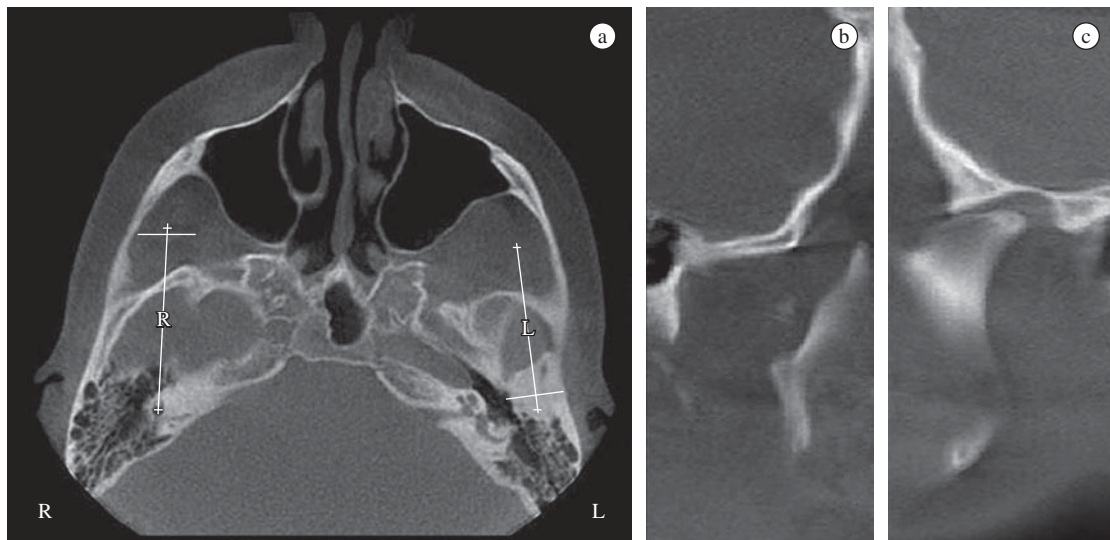
Alterations, including condyle aplasia, are present in several syndromes expressions as observed in hemifacial microsomia, Goldenhar syndrome, Treacher Collins syndrome, Proteus syndrome, Morquio syndrome and auriculocondylar syndrome. But, the condyle aplasia is extremely rare when not connected to any syndrome.<sup>5,6</sup> Facial asymmetry, deviation of the midline and malocclusion are the consequences of the TMJ abnormality<sup>5</sup>, as a syndrome expression or not (Figures 1 and 2).

The case reported expressed the condyle aplasia without connection to any syndrome, and that highlights the rarity of the case. The condyle malformation occurred due to abnormal development of the TMJ, probably at the fetal stage, before the tenth week. The trauma during delivery, as related, may not be the cause of the malformation; otherwise, there would not be a complete absence of the condyle, since its formation and ossification start at fetal stage.

With the arrival of computed tomography (CT) and magnetic resonance imaging (MRI), diagnostic imaging of the TMJ has improved tremendously.<sup>7</sup> The CT examination enable accurate surgical planning and provides quantitative information from skeletal and muscular parameters.<sup>8</sup> Cone beam CT (CBCT) is a new technique for maxillofacial imaging which provides reconstructed images of high diagnostic quality, with a shorter examination time and lower dose of radiation.<sup>9</sup> Is increasingly being used as an imaging modality, particularly in the assessment of the TMJ<sup>10</sup> as an alternative to helical CT for diagnostic evaluation of osseous abnormal-



**Figure 3.** (a) CBCT axial reconstruct image presenting the right condyle aplasia; (b) CBCT coronal reconstruct image presenting the right condyle aplasia.



**Figure 4.** (a) CBCT axial reconstruct image presenting a marked area from the cross-sectional reconstructions. (b) Right cross-sectional reconstruction showing the complete absence of the right condyle. (c) Left cross-sectional reconstruction showing the normal condyle.

lities of the mandibular condyle.<sup>11</sup> The TMJ malformation can be well observed at CBCT reconstruct images, as evident in Figures 2, 3 and 4.

### Conclusion

In conclusion, we report a rare case of unilateral condyle aplasia with no relation to any syndrome. Based on clinical and radiological findings we suggest the abnormal development of the TMJ as the origin. The CBCT has provided high quality images, what made diagnose possible.

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