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## Case Report

# Central giant cell granuloma of the mandibular condyle: a case report, literature review, and discussion of treatment



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## ABSTRACT

Benign and malignant neoplasms of the temporomandibular joint are uncommon. Their presence poses a diagnostic and therapeutic challenge for clinicians. The central giant cell granuloma is a relatively common lesion of the jaws; however, it has been reported rarely to originate from the mandibular condyle. To date, only 5 such cases have been documented. We report a case of a large central giant cell granuloma of the condylar head with extension into the infratemporal fossa in a 29-year-old male. The patient was treated with resection and reconstruction using a costochondral graft. The signs, symptoms, and radiographic features are described and compared with the previous reports in the literature. The therapeutic options detailed in the literature have been focused mainly on lesions occupying the dentate regions of the maxilla and mandible. As such, we will review the surgical and pharmacologic options available to the surgeon and discuss their appropriateness with regard to this unique presentation of the central giant cell granuloma. © 2015 The Authors. Published by Elsevier Inc. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

## 1. Introduction

Neoplasms of the temporomandibular joint (TMJ) are uncommon and often confused in the early stages for the more common TMJ dysfunction or derangement [1]. The presence of a central giant cell granuloma (CGCG) in the mandibular condyle has been reported rarely. The purpose of this study is to provide clinicians with a description of the clinical features of a CGCG presenting in the mandibular condyle as well as an analysis of the literature and discussion of the therapeutic strategies available and appropriate for this unique location.

## 2. Presentation of case

A 29-year-old healthy Caucasian male with a history of a painless left preauricular mass of 6 months' duration was referred by his dentist to the Department of Oral and Maxillofacial Surgery at the Montreal General Hospital for evaluation (Figure 1). A panoramic radiograph taken by the patient's dentist demonstrated a large radiolucent mass of the left condylar process (Figure 2).

The patient noted a progressive enlargement of the mass since its onset and in the days preceding the consultation a new finding of hypoesthesia over the distribution of the mandibular division of the trigeminal nerve while sleeping on his left side. The patient reported no changes in his occlusion but some resistance and mild discomfort on maximal opening. On physical examination, the patient was found to have a firm, nontender, palpable mass in the left preauricular region. Clicking or crepitus of the TMJs bilaterally was absent. The maximal mouth opening, left and right lateral excursive movements were found to be 38 mm, 5 mm, and 5 mm, respectively. There was no deviation of the mandible on opening or closing movements. Trigeminal nerve function was normal when no pressure was applied to the left preauricular region. With prolonged pressure to the left preauricular area, the patient reported hypoesthesia over the distribution of the mandibular nerve.

The computed tomography scan of the facial bones demonstrated a 5.5 × 3.8 × 3.4-cm radiolucent mass emanating from the left condylar head (Figure 3). The condyle was displaced inferiorly in the fossa to accommodate the mass. The outline demonstrated a thin cortex with a few breaks at the periphery. There were no signs of invasion of the surrounding soft tissues. The radiographic appearance of a well-defined, corticated mass without soft tissue invasion or skull base resorption was suggestive of a benign aggressive tumor.

An open biopsy of the left condylar mass was performed under general anesthesia. An intraoperative frozen section analysis favored

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**Figure 1.** Frontal photograph showing a left preauricular mass.



**Figure 2.** Panoramic radiograph displaying a thinly corticated radiolucent lesion of the left mandibular condyle.

a benign entity but was inconclusive. The final pathology was consistent with a CGCG (Figure 4). Intact parathyroid hormone (4.00 pmol/L) and total calcium (2.42 mmol/L) studies were determined to be within normal limits, ruling out a brown tumor of hyperparathyroidism.

A decision was made to resect the condylar mass and reconstruct the defect with a costochondral graft under general anesthesia. Given the extension of the tumor into the ramus of the mandible, infratemporal fossa, and medially toward the pterygoid plates, 2 incisions were employed for resection: a preauricular and a trans-oral incision. First, a modified preauricular incision [2] was completed, with dissection down to the lateral aspect of the tumor. Once the latero-anterior and posterior aspects were exposed, the left zygomatic arch was pre-plated then osteotomized to facilitate access for superior dissection into the infratemporal fossa. Access to the medial aspect of

the tumor was facilitated by a trans-oral mandibular vestibule incision, allowing for gentle dissection up to the pterygoid plates. Once circumferential dissection was complete, the inferior mandibular resection margin was osteotomized, thus allowing for delivery of the tumor in an inferolateral direction in one segment with the articular disc attached (Figure 5). Access through the trans-oral and preauricular sites facilitated complete and safe dissection of the tumor, while a submandibular incision was used to allow access and placement of the costochondral graft into the proper anatomic site.

The final histopathologic diagnosis was a CGCG with some areas of aneurysmal bone cyst-like features. At the 12-month follow-up appointment, the patient’s maximal mouth opening and left and right lateral excursive movements had increased to 45 mm, 8 mm, and 8 mm, respectively, while his preoperative occlusion remained intact.

**3. Discussion**

To date, 5 cases of CGCGs centering on the mandibular condyle have been published in the English literature (Table 1) [3–7].

**Table 1**  
Comparison of published cases of CGCGs originating in the mandibular condyle.

	Shensa and Nasser [3]	Tasanen et al. [4]	Abu-El-Naaj et al. [5]	Jadu et al. [6]	Munzenmayer et al. [7]	Current study
Age at presentation	15	59	15	31	19	29
Gender	Male	Male	Female	Male	Female	Male
Clinical findings	Expansile mass	Firm, preauricular swelling; 20-mm mouth opening with deviation to ipsilateral side	Preauricular swelling; no restriction in mandibular movements or occlusal changes	Firm, nodular, preauricular swelling	Examination was normal; incidental radiographic finding	Firm, nodular, preauricular swelling; nontender; no change in occlusion
Imaging features	Well-defined radiolucency	Well-defined, multilocular radiolucency	3 × 2-cm well-defined unilocular radiolucency with cortical expansion	Well-defined, multilocular radiolucency with granular bone pattern	Well-defined, multilocular radiolucency with granular bone pattern	Thinly corticated, 5.5 × 3.8 × 3.4-cm multilocular mass
Symptoms	Asymptomatic	Noted painless, slow growing preauricular lump	Asymptomatic	Dull aching pain and progressive limitation in mouth opening over 2 y	Asymptomatic	Mild discomfort and resistance on maximal opening; mandibular nerve hypoesthesia when sleeping on ipsilateral side
Management	Enucleation	Resection and reconstruction with costochondral graft	Enucleation	Enucleation	Resection and reconstruction with nonvascularized fibula graft	Resection and reconstruction with costochondral graft
Outcome	N/A	No evidence of recurrence at 21 mo	No evidence of recurrence at 6 mo	Recurrence requiring resection and alloplastic total joint replacement	No evidence of recurrence at 24 mo	No evidence of recurrence at 6 mo

N/A, not applicable.

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