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Oral and Maxillofacial Surgery Cases

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Giant cell reparative granuloma of the mandibular condyle: A rare presentation and literature review

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ARTICLE INFO

Keywords:

Giant cell reparative granuloma
Mandibular condyle
Vertical sliding ramus osteotomy
Differential diagnosis

ABSTRACT

Giant cell reparative granuloma (GCRG) is an extremely rare occurrence in the mandibular condyle. Here we describe the case of a 41-year-old man with a GCRG of the right mandibular condyle. Clinical, radiographic, and magnetic resonance imaging was unable to confirm the pathologic process. Surgery was performed, during which 20 mm of vertical height of the condylar head and neck was resected, including the articular discs. A vertical ramus sagittal osteotomy was performed to reposition the neo-condyle into the fossa for reconstruction of the joint. The patient's condition has been stable for 18 months with no evidence of recurrence of the tumor. He has 42 mm of intermaxillary opening with no arthralgia or marked change in occlusion. Histopathologic evaluation of the resected specimen revealed a tumor situated in the superior area of the condyle that contained an abundance of multinucleated cells with eosinophilic collagenous tissue and hemorrhage around the fissure, indicating a diagnosis of GCRG. There are only seven other reported cases of GCRG occurring in the mandibular condyle. The differential diagnoses in these cases were brown tumor (hyperparathyroidism) and cherubism, which were excluded by blood tests, physical signs, and diagnostic imaging, including technetium bone scans and computed tomography. Surgical intervention with resection of the condyle and reconstruction using bone grafts or sliding ramus osteotomy is recommended in such cases.

1. Introduction

Giant cell reparative granuloma (GCRG) of the mandible is classified histologically by the World Health Organization as an odontogenic tumor [1]. It is a rare benign lesion with an annual incidence of 1.1 per million [2]. This tumor is known to occur in the epiphyses of the long bones of the body and was first described by Jaffe, who reported it to be a benign lesion formed mainly by osteoclasts and osteoblasts proliferating in reaction to a hemorrhagic focus caused by trauma [3]. Occurrence of GCRG in the jaw is relatively uncommon and is extremely rare in the mandibular condyle, with only seven previously reported cases [4–10]. Here we report our histopathologic differential diagnosis of GCRG in a patient, the technique used for reconstruction, and a review of the relevant literature.

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<https://doi.org/10.1016/j.omsc.2018.08.003>

Received 19 April 2018; Received in revised form 8 August 2018; Accepted 13 August 2018

Available online 13 August 2018

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2. Presentation of case

A 41-year-old man presented to the Department of Oral and Maxillofacial Surgery of Kumamoto University Hospital with pain in the right temporomandibular joint that had been present for approximately 18 months. After physical examination and diagnostic imaging, he was diagnosed to have a tumor of the right mandibular condyle and referred to the Department of Oral and Maxillofacial Surgery of Kanazawa Medical University. His medical history included Crohn's disease, for which he was receiving medical treatment from an internal medicine clinic. Examination revealed an elastic, slightly hard, and tender swelling in the preauricular region (Fig. 1). His maximum mouth opening distance was 33 mm. His blood test results were normal, with a serum calcium of $9.4 \mu\text{g/dL}$, serum phosphate of 3.5 mg/dL , and alkaline phosphatase of 194 U/L . There was no sign of a tumor or hypertrophy of the parathyroid gland as a presenting illness or in his past history. Diagnostic magnetic resonance imaging revealed a granular shadow in the mandibular condyle that contained an irregular mixture of hyperintense and hypointense regions (Fig. 2a). Computed tomography revealed a circular bone defect in the mandibular condyle (Fig. 2b). Very slight uptake was evident on bone scintigraphy (Fig. 2c). On the basis of these findings, a right mandibular condyle tumor (suspected to be a benign bone tumor) was diagnosed, and surgery was performed to remove it. Diagnostic arthroscopy of the right superior articular cavity was performed first but did not reveal any abnormality. The superior cavity was then opened via a right preauricular incision using the usual approach (Fig. 3a), and the lesion was removed en bloc with the articular disc by exposing the bone of the neck of the condylar process and performing a horizontal osteotomy 20 mm inferior to the condylar head. The resulting condylar defect was repaired by a right vertical sliding ramus osteotomy [11,12], which consisted of an intraoral vertico-sagittal ramus osteotomy [13] with the proximal fragment translated superiorly to reconstruct the condyle and fixation of the bone with three mini-plates. The neo-condyle was fixed temporarily by one miniplate to preserve the proximal bone segment in the vertical dimension (Fig. 3b). Coronoidotomy was performed as a convenient osteotomy procedure. The masseter and medial pterygoid masticatory muscles were stripped as far as possible using periosteal raspatories. No interpositional graft was placed following disectomy. Intermaxillary fixation was released 2 weeks postoperatively, and there was almost no occlusal displacement (Fig. 4a). After 2 weeks of intermaxillary fixation, the occlusal relationship was maintained using mild forced elastic traction for a further 2 weeks. Postoperative physical therapy included conventional manual opening exercises. The patient's progress in the 18 months postoperatively has been generally uneventful with no facial nerve palsy or malocclusion and only mild paresthesia on the right mental area (Fig. 4b). His maximum mouth opening without pain in the temporomandibular joint is 42 mm.

Histopathologic examination revealed trabecular breakdown and the presence of a tumor with high cell density (Fig. 5a). The tumor was well demarcated and contained aggregations of large numbers of giant cells, mainly in foci of hemorrhage (Fig. 5b). Although there was no obvious invasion of the articular disc by the tumor, myxomatous changes were apparent on the inferior surface (Fig. 5c). The pattern of appearance of the giant cells was not the diffuse type seen in tenosynovial giant cell tumor, serum markers of bone activity were normal, and brown tumor or cherubism were ruled out, so the histologic diagnosis was GCRG of the right mandibular condyle.

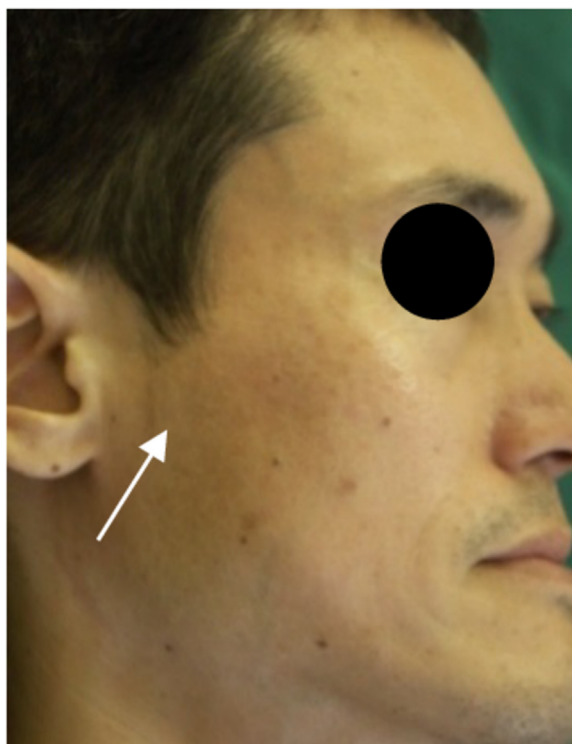


Fig. 1. A photograph of the patient's face shows slight preauricular swelling with tenderness (arrow).

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