

Temporomandibular Joint Cyst Causing
MalocclusionRuben W Renkema^{1,2*}, Cory M Resnick¹ and Bonnie L Padwa¹¹Department of Plastic and Oral Surgery, Boston Children's Hospital, USA²Department of Oral and Maxillofacial Surgery, Erasmus MC, Sophia's Children's Hospital, Netherlands

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Introduction

Synovial and ganglion cysts are fluid-filled lesions within joints, most often occurring in the periarticular areas of the wrist, knees, and feet [1]. These cysts occur in the Temporomandibular Joint (TMJ), although they are rare [2]. A review of the literature by Steen et al. found thirty-six ganglion and thirteen synovial cysts in the TMJ (3). The distinction between a synovial and ganglion cyst can only be made by histological examination [2,4].

The primary clinical presentation of a TMJ cyst is pain and swelling. Other possible findings include paresthesia, difficulty with mastication, limited mouth opening, click or pop during movement, and acute facial paralysis [3]. Although malocclusion due to cysts, masses and tumors in the TMJ have been reported [5-7], to the best of our knowledge, acute onset malocclusion as a manifestation of a TMJ cyst has not been described.

The purpose of this report is to present an unusual case of a TMJ cyst presenting as sudden onset of malocclusion after trauma.

Case

An otherwise healthy 12-year-old patient presented with bilateral facial pain after being struck in the face with a shoulder during a basketball game. She reported restricted mouth opening and inability to occlude normally. A panoramic radiograph showed a dislocated mandible, but no fracture. The patient was discharged with a soft diet and rest; the pain and malocclusion spontaneously resolved.

Nine months later, the patient presented with acute onset of jaw pain, trismus and mandibular deviation after being hit in the face with a volley ball. Examination demonstrated minor left preauricular swelling with associated tenderness to palpation. The mandible was deviated to the right resulting in a lateral cross bite (Figure 1). Active maximal incisive opening was 10 mm and passive opening with finger pressure was 25-30 mm with pain. A panoramic radiograph showed inferior displacement of the left condyle out of the glenoid fossa without mandibular fracture. An MRI with gadolinium contrast demonstrated an anteriorly subluxed mandibular condyle and a non-enhancing lesion measuring 12 x 8 x 8 mm at the medial aspect of the left condylar neck communicating with the articular space (Figure 2). The imaging appearance of this lesion was consistent with a ganglion or synovial cyst.

The patient subsequently underwent a CT guided aspiration and steroid injection of the left TMJ cyst, under general anesthesia. Under biplane fluoroscopic guidance, a 21-gauge EchoTip needle was advanced into the cyst. Attempts to aspirate fluid from the cystic lesion had no yield. Ten milligrams of triamcinolone hexacetonide (steroid) and 1 mL of 1% lidocaine was instilled gently into the cyst. The malocclusion resolved 10 days after the procedure. No malignant cells were identified on cytology.

Seven weeks later, after again being hit in the face with a dodge ball, the patient presented with a recurrent malocclusion. Examination showed deviation of the mandible to the right without facial swelling. Active maximum incisive opening was 6 mm and the mandibular dental midline was deviated 10 mm to the right of the midsagittal plane. MRI demonstrated anteroinferior subluxation of the left condyle and a residual or re-accumulated non-enhancing cyst measuring 6 mm x 5 mm at the medial side of the glenoid fossa. Open surgical excision of the cyst was recommended, but the patient declined intervention. The patient was discharged with conservative treatment including soft diet, rest, moist heat, massage, physical therapy, and nonsteroidal anti-inflammatory medications. The pain and malocclusion resolved over the following 2 weeks. The patient has not had recurrence of these findings over 2-year follow-up.

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Figure 1: Photo of the malocclusion with deviation of mandible to left.



Figure 2: MRI axial T1 coupe with gadolinium contrast demonstrating cyst medial to TMJ.

Discussion

The differential diagnosis for acute onset of malocclusion includes fracture, disc displacement, mandibular dislocation, primary and metastatic tumors of the TMJ, benign vascular or neural lesions, and joint effusion [6-8].

To our knowledge, there has been only one other report of a TMJ cyst causing malocclusion, and that lesion was ultimately found to be a ganglion cyst [7]. Steen et al. found that swelling and pain were the most common presenting findings of TMJ synovial and ganglion cysts in 49 cases [3]. Both ganglion and synovial cysts of the TMJ occur more frequently in females than males (3:1), at a median age of 46 years [3]. The differential diagnosis of a TMJ cyst should also include synovial chondromatosis, parotid cyst, bone cyst, sebaceous cyst, osteochondroma, osteoma, osteoblastoma, sarcoma, plasma cell myeloma, pigmented villonodular synovitis, hemangioma, nonossifying fibroma, and Langerhans cell histiocytosis [2,9].

Ganglion and synovial cysts can be differentiated by histological evaluation and immune histochemistry [2]. A synovial cyst is a true cyst lined with cuboidal or flattened synovial cells [2]. The cyst forms due to displacement or herniation of synovial tissue from trauma or an inflammatory process [9]. Synovial cysts can be connected to the joint cavity, whereas ganglion cysts are not [10]. A ganglion cyst is a pseudocyst with a fibrous connective tissue wall without synovial cell lining. It forms due to myxoid degeneration of the collagenous tissue of the joint capsule [2]. Identifying synoviocytes in the lining of the cyst is essential to distinguishing between a ganglion and synovial cyst [4]. Differentiation between these cysts may be difficult due to limited knowledge of the immune histochemistry architecture of the synovial membrane and morphological plasticity of the synovial cells [11].

In this case, histological evaluation could not be performed because the cyst was instilled with steroids, not excised. However, given that the cyst formed after trauma and was connected to the joint cavity, it is most likely to be synovial. Four cases of a TMJ cyst after trauma have been described in the literature, three of which were synovial [9,12-14]. In the single patient with a ganglion after trauma, the trauma had occurred 10 years before presentation [14].

In the literature, cysts of the TMJ are more often reported as ganglion than synovial [3,7,15-16]. However, the largest single center study of 12 patients with TMJ cysts found that synovial cysts are more common than ganglion cysts [17]. According to Partridge et al, poor accuracy of the histological evaluation may be responsible for this discrepancy [17].

Surgical excision is the recommended treatment for both ganglion and synovial cysts. Complete excision if possible is recommended since these cysts may recur [18]. In this case the patient and family chose to attempt percutaneous drainage after the first onset of findings and non-interventional treatment thereafter. Although this is not the most commonly recommended management, Bonacci et al. suggested arthroscopic treatment and injection of anti-inflammatory for synovial cysts may lead to resolution of the synovitis with minimal joint injury [15].

This case demonstrates a unique presentation of a presumed synovial cyst of the TMJ that occurred after trauma. Injection of steroids in the cyst resulted in resolution of symptoms and malocclusion.

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