Introduction

Cyst of temporomandibular region is rare entity. These cystic structures are of 2 types according to the presentation: 1. Synovial cysts are true cysts lined by synovial cell (synoviocytes) which produce gelatinous fluid within cystic space. It may or may not communicate with joint cavity [1]. Gaisford et al. [2] reported the first synovial cyst of the TMJ in 1969 [2]. 2. Ganglion cysts are pseudocysts lined by fibrous connective tissue, with viscoid fluid or gelatinous material and do not communicate with the joint cavity [3]. Heydt in 1977 first reported case of a ganglion cyst of TMJ. These cysts are predominantly found in the extensor surface of the wrist, the dorsal surface of foot and lateral aspect of knee [4]. In the present article, a case of synovial cyst of the TMJ is presented; meanwhile, cases reported from 1978 to 2014 are also discussed.

Case Report

A 42 years old Chinese woman reported a right preauricular painless mass 1 cm anterior to the tragus for 2 months (Figure 1). Her medical history was unremarkable and no history of allergy, no traumatic injury to mandible or ear was reported. She denied any previous TMJ dysfunction. Clinical examination revealed a 2 cm mass in the preauricular region. Magnetic resonance imaging (MRI) showed a cystic mass with abnormal intensities in the lateral region of the right TMJ. A preauricular approach was carried out and a surgical excision of the cyst from the lateral surface of the TMJ capsule was completed. Histological examination and immunohistochemical staining shown that the cyst lined by synovial cells. The clinical and radiological follow-up (after 4 months) showed no sign of recurrence. Meanwhile, total of 20 cases including the present case reported in the literature from 1978 to 2014 with the differential diagnosis and management of cysts are discussed. Surgical removal is the recommended treatment. Few other treatments like aspiration, compression of the cyst, and injection of a sclerotic agent have also been reported but all of these are associated with high recurrence rate so not recommended.

Abstract

Synovial cyst in the Temporomandibular joint (TMJ) is rare entity but predominant in dorsum of the wrist, foot and knee. It develops by the increase of intracapsular pressure due to trauma, or inflammation which causes capsular herniation or by displacement of synovial tissue during embryogenesis. Here we report a case of synovial cyst in TMJ. A 42 year Chinese woman with synovial cyst in right TMJ is presented. Clinical examination revealed 2 cm mass in the preauricular region. Magnetic resonance imaging (MRI) showed a cystic mass with abnormal intensities in the lateral region of the right TMJ. A preauricular approach was carried out and a surgical excision of the cyst from the lateral surface of the TMJ capsule was completed. Histological examination and immunohistochemical staining shown that the cyst lined by synovial cells. The clinical and radiological follow-up (after 4 months) showed no sign of recurrence. Meanwhile, total of 20 cases including the present case reported in the literature from 1978 to 2014 with the differential diagnosis and management of cysts are discussed. Surgical removal is the recommended treatment. Few other treatments like aspiration, compression of the cyst, and injection of a sclerotic agent have also been reported but all of these are associated with high recurrence rate so not recommended.

Keywords: Synovial cyst; Temporomandibular joint; Ganglion cyst

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Magnetic resonance imaging (MRI) showed a cystic mass with abnormal intensities in the lateral region of the right TMJ (Figure 2). T1-weighted images (WI) and T2-WI indicated low-intensity and high-intensity areas, respectively.

Under general anesthesia, a preauricular incision on the right side was made and carried down to the mass. A small cystic lesion of approximately 2 cm was identified outside the capsule of TMJ closely adhere with capsule, but not to the parotid gland. The mass was then dissected carefully from the lateral surface of the TMJ capsule without breaking the capsule (Figure 1). The wound was then sutured in layers. The postoperative course was uneventful without damage to the facial nerve.
The histological examination of the excised mass showed cyst wall tissue, lining with simple cuboidal epithelium, colonization of lymphocytes and plasma cells in part of the cyst wall tissue (Figure 2). The histological findings were consistent with the diagnosis of a synovial cyst.

The clinical and radiological follow-up (after 4 months) showed no sign of recurrence.

**Discussion**

TMJ cysts are rare entities. It can be either synovial cyst or ganglion cyst. These two lesions are indistinguishable clinically and radiographically so both are considered as same entity but the histological profile and origin are completely different [5]. Mainly they are differentiated by two different types of cellular lining.

Synovial cysts are true cysts whereas ganglion cysts are pseudo cysts. According to literature, the occurrence rate of ganglion cyst is more than synovial cyst. Exact etiologies for synovial cyst are uncertain but 3 theories have been postulated for the etiology of synovial cyst. 1) Trauma or an inflammatory process like rheumatoid arthritis, osteoarthritis or synovitis is considered as main etiologic factor. It increases intra articular pressure, which in turn causes a capsular herniation of the TMJ into the surrounding tissues. This herniation may act as a protective response to avoid pressure-related damage within the joint [6]. 2) Displacement of synovial tissue during embryogenesis [7] and 3) an abnormal force on the joint resulting from a dysfunction of the TMJ [8]. In this case no history of trauma and no TMJ dysfunction were reported. These cysts are lined by synovial cells that may or may not communicate with the joint capsule. In 1969 Gaisford et al. [2] reported the first synovial cyst of the TMJ [2]. Although the symptoms vary, local pain, tenderness, and swelling are the most frequently associated symptoms. Hossein Ansari reported a case of synovial cyst causing local compression or irritation of the auriculotemporal nerve, leading to Auriculotemporol Neuralgia [9]. Albright et al. [10] reported a patient with a synovial cyst arising from the TMJ who had erosion of the temporal bone into the external auditory canal [10].

On the other hand Ganglion cyst occur due to the myxoid degeneration or cystic softening of the collagenous tissue of the joint capsule or tendon sheath [3] and these degeneration of the connective tissue is caused by an irritation or chronic damage, inducing the mesenchymal cells or fibroblasts to produce mucin. Ganglion cyst usually measures about 1.5cm- 2.5cm in diameter usually as unilocular or multilocular masses. They contain a viscous substance and are lined by dense connective tissues. They do not connect with the joint cavity and do not contain synovial cells. Both ganglion and synovial cysts may arise as a result of trauma but only synovial cysts are caused by a primary inflammatory process. Reychler and Fievez described a postraumatic cyst occurring 3 days after a motor vehicle accident, which on histological examination showed changes consistent with a synovial cyst secondary to trauma [11].

Due to the rarity of such lesion in TMJ and its location, the preoperative diagnosis is often difficult. CT and MRI are two main diagnostic tool used to access TMJ pathology with MRI images being the most valuable investigation, especially preoperativly in delineating the extensions of the synovial cyst [12]. However Okochi et al. [6] evaluate the MRI of synovial and ganglion cyst and concluded that no difference could be identified between the MRI findings of these two cysts. Ultrasound was first recommended by Lopes et al. [6] can be alternative especially in the pregnant woman and carries the most important information regarding preauricular pathology, whether it is of parotid origin or not. Doppler studies may be considered if there is suspicion of a vascular lesion. FNAC can contribute to rule out the differential diagnosis. Arthroscopy is useful to directly visualize...
intracapsular pathology, perform joint lavage and obtain biopsy specimens [8].

However histopathology examination and immunohistochemical staining of the lining of the cyst may be helpful for correct diagnosis. Nahlieli et al. [13] study suggest that, when TMJ lesion is lined by cells that are positive to cytokeratin immunohistochemically should be considered as a synovial cyst because the lining is probably of synovial origin, and when negative to cytokeratin and positive to vimentin it should be considered as ganglion cyst [13].

TMJ arthroscopic procedures are conservative surgical modalities that can be used to successfully manage inflammation and thus synovitis and the synovial cyst [8]. However histopathology examination and immunohistochemical staining of the lining of the cyst may be helpful for correct diagnosis.

Due to anatomic location these lesion are usually diagnosed as parotid mass. Its peculiar features are that it locates at the superior border of the parotid gland (high preauricular area) and often decreases in size when the mouth is opened, owing to a retraction of the lesion into the masseter muscle. It usually leads to TMJ disorders (limitation of jaw movement, sound in the TMJ and chewing discomfort). The differential diagnosis include parotid cyst or neoplasm, sebaceous cyst, retention cyst, hypertrophy of the masseter muscle, chondromatosis and type 1 brachial cysts, lymphangioma, vascular tumors, and Kimura’s disease [14].

The authors reviewed 20 cases including the present case of synovial cyst of TMJ that have been reported in the literature (Table 1) out of which 10 were females and 10 were males. Unlike ganglion cyst which is more common in women. Out of 20 cases, only 1 case reported in bilateral region, 8 in right TMJ, 9 in the TMJ and 2 were not specified. The patient age ranged from 22 to 65 years, with an average age of 42.85 years. Our patient was 42 years of age. Out of 20 patients 19 were treated surgically and 1was treated by arthroscopic surgery. No recurrence of the lesion was reported in all patients with follow up duration 6 months to 5 years. Few other treatments like aspiration, compression of the cyst, and injection of a sclerotic agent have also been reported but all of these are associated with high recurrence rate so not recommended.

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References

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