



Synovial Cyst of the Temporomandibular Joint: A Case Report and Literature Review

Dwa S, Chen Q, Gong Z*, Bajracharya K and Lin Z

Department of Oral and Maxillofacial Surgery, The First Affiliated Hospital of Xinjiang Medical University, China

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 2cmx 2cm 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

OPEN ACCESS

*Correspondence:

Zhongcheng Gong, Oncology
Department of Oral & Maxillofacial
Surgery, The First Affiliated Hospital
of Xinjiang Medical University,
Stomatology School of Xinjiang Medical
University, Stomatology Research
Institute of Xinjiang Province, Urumqi,
830054, Xinjiang, P. R. China, Tel:
+0086-991-4366081; Fax: +0086-991-
4360051;

E-mail: gump0904@aliyun.com

Received Date: 10 Jun 2016

Accepted Date: 01 Jul 2016

Published Date: 04 Jul 2016

Citation:

Dwa S, Chen Q, Gong Z, Bajracharya
K, Lin Z. Synovial Cyst of the
Temporomandibular Joint: A Case
Report and Literature Review. *Clin
Surg.* 2016; 1: 1046.

Copyright © 2016 Gong Z. This is an
open access article distributed under
the Creative Commons Attribution
License, which permits unrestricted
use, distribution, and reproduction in
any medium, provided the original work
is properly cited.

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 viscid 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 2cmx2cm mass in the preauricular region. The mass was smooth, hard and no tender on palpation. No deviation of mandible when she opened her mouth and the mass did not appear to interfere with full range of mandibular movement. NO clicking, no crepitus or subluxation was appreciated. There was no enlarged cervical lymph node. The rest of her head and neck examination was unremarkable. The preoperative blood biochemistry was normal. The overlying skin was normal in color. No facial paralysis or paresis was reported.

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 2cmx2cm 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.

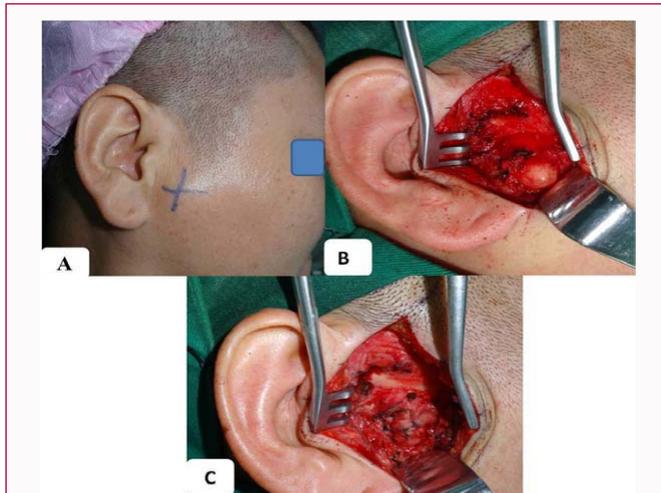


Figure 1: A 42 years woman with synovial cyst in the right TMJ. synovial cyst in the right TMJ region measuring 1cmx1cm(preoperative) (a); surgical exposure of the lesion (b); complete removal of the lesion without breaking the capsule of TMJ (c).

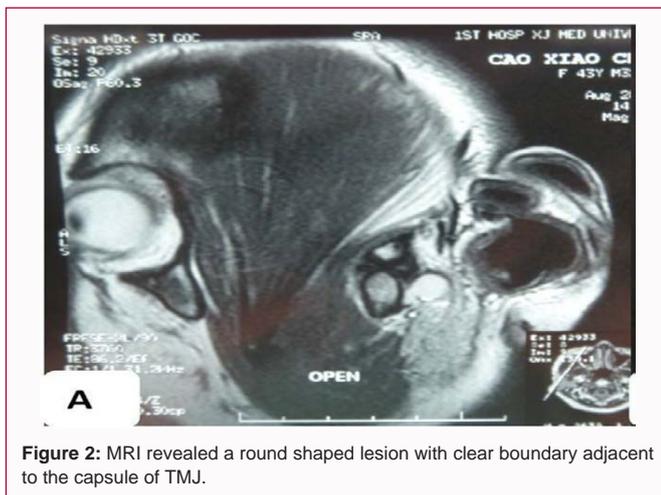


Figure 2: MRI revealed a round shaped lesion with clear boundary adjacent to the capsule of TMJ.

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

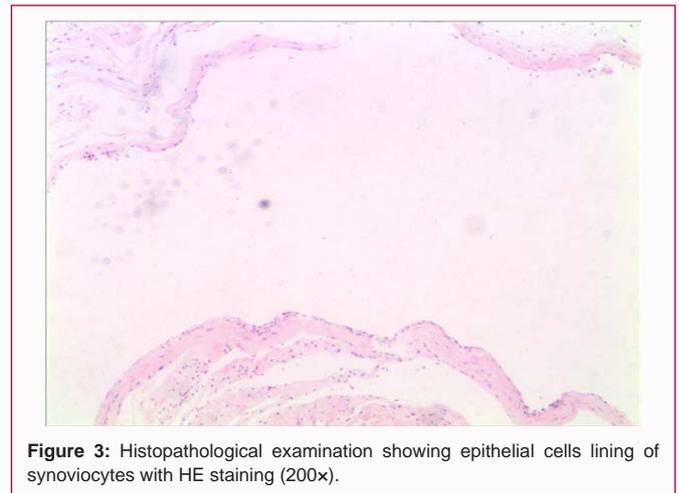


Figure 3: Histopathological examination showing epithelial cells lining of synoviocytes with HE staining (200x).

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 Auriculotemporal 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 preoperatively 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

Table 1: Demographic presentation of 20 patients with TMJ synovial cyst.

No	First author	Published year	Case	Age	Gender	Side	Chief complaints	Treatment	Follow up	Recurrence
I	Janeca and Conley	1978	1	50	M	R	Swelling	Surgical	Not stated	Not stated
II	Rahcyler et al	1983	1	30	F	R	Swelling	Surgical	Not stated	Not stated
III	Farole and Johnson	1991	2	22	M	Bilateral	Swelling, pain	Surgical	12	No
IV	Lopes et al.	1994	1	33	F	L	pain	Surgical	Not stated	Not stated
V	Bonacci et al.	1996	1	46	M	R	Swelling, pain	arthroscopic	12	No
VI	Chang et al.	1997	1	38	M	R	Swelling, pain	Surgical	18	No
VII	Chang et al.	1997	1	32	F	L	Swelling, pain	Surgical	24	No
VIII	Chen et al.	1998	1	58	M	L	Swelling	Surgical	Not stated	Not stated
IX	Goudot et al.	1999	1	65	M	L	Reduced mouth opening	Surgical	Not stated	Not stated
X	Goudot et al.	1999	1	35	M	R	Swelling	Surgical	12	No
XI	Lomeo et al.	2000	1	47	F	L	Swelling, pain	Surgical	6	No
XII	Moatemri et al.	2007	1	30	M	L	Swelling, pain	Surgical	6	No
XIII	John Neis et al.	2009	1	57	M	L	Ear pain and fullness	Surgical	Not stated	Not stated
XIV	Spinzia et al.	2011	1	45	F	R	swelling	Surgical	18	No
XV	Okochi et al.	2012	1	31	M	Not specified	Swelling, pain	Not refer	Not stated	Not stated
XVI	Okochi et al.	2012	1	20	F	Not specified	Pain	Not refer	Not stated	Not stated
XVII	Vera-Sinera et al.	2013	1	48	F	L	Swelling	Surgical	6	No
XVIII	H. Ansari et al.	2013	1	63	F	L	Pain	Surgical	Not stated	Not stated
XIX	S. Verma et al.	2014	1	33	F	R	Swelling, pain	Surgical	5years	No
XX	Present case	2014	1	42	F	R	Swelling	Surgical	4	No

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 open surgery is indicated when an arthroscopic procedure fails to eradicate the synovitis and the synovial cyst. But arthroscopic procedure is contraindicated whenever neoplasm is suspected.

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 cysts 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 1 was 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.

Acknowledgement

The Author thanks Professor Yuqin Ma (Pathologist), for her contribution in the histopathological examination.

References

- Gerber NJ, Dixon AS. Synovial cyst and juxta-articular bone cyst (geodes). *Semin Arthritis Rheum.* 1974; 3: 323-324.
- Gaisford JC, Hanna DC, Richardson GS, Bindra RN. Parotid tumors. *Plast Reconstr Surg.* 1969; 43: 504-510.
- Barnes L, Verbin, Goodman. *Surgical Pathology of the Head and Neck.* Marcel Dekker. 1985; 892-893.
- Zhongcheng G, Kheremu A, Bin L, Hui L, Mei H, Xiopeng Y, et al. Ganglion cyst of temporomandibular joint: A case report and literature review. *J Oral Maxillofac Surg Med Pathol.* 2013; 26: 531-534.
- Copeland M, Douglas B. Ganglions of the temporomandibular joint: case report and review of literature. *Plast Reconstr Surg.* 1988; 81: 775-776.
- Lopes V, Jones JA, Sloan P, McWilliam L. Temporomandibular ganglion or synovial cyst? A case report and literature review. *Oral Surg Oral Med Oral Pathol.* 1994; 77: 627-630.
- Farole A, Johnson MW. Bilateral synovial cysts of the temporomandibular

- joint. *J Oral Maxillofac Surg.* 1991; 49: 305-307.
8. Bonacci CE, Lambert BJ, Pulse CL, Israel HA. Inflammatory synovial cyst of the temporomandibular joint: a case report and review of the literature. *J Oral Maxillofac Surg.* 1996; 54: 769-773.
 9. Ansari H, Robertson CE, Lane JI, Viozzi CF, Garza I. Auriculotemporal neuralgia secondary to TMJ synovial cyst: a rare presentation of a rare entity. *Headache.* 2013; 53: 1662-1665.
 10. Albright JT, Diecidue RJ, Johar A, Keane WM. Intraosseous ganglion of the temporomandibular joint presenting with otorrhea. *Arch Otolaryngol Head Neck Surg.* 2000; 126: 665-668.
 11. Reychler H, Fievez C, Marbaix E. Synovial cyst of the temporomandibular joint. A case report. *J Maxillofac Surg.* 1983; 11: 284-286.
 12. Okochi K, Nakamura S, Tetsumura A, Honda E, Kurabayashi T. Magnetic resonance imaging of temporomandibular joint cyst. *Oral Surg Oral Med Oral Pathol Oral Radiol.* 2012; 113: 827-831.
 13. Nahlieli O, Lewkowicz A, Hasson O, Vered M. Ganglion cyst of the temporomandibular joint: report of case and review of literature. *J Oral Maxillofac Surg.* 2000; 58: 216-219.
 14. Spinzia A, Panetta D, Russo D, Califano L. Synovial cyst of the temporomandibular joint: a case report and literature review. *Int J Oral Maxillofac Surg.* 2011; 40: 874-877.