Ganglion of the Temporomandibular Joint: A Case Report and Review of the Literature

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We report a case of ganglion of the temporomandibular joint in a 66-year-old man. Histologically, the mass showed a cystic cavity, which was surrounded by dense fibrous connective tissue, but epithelial lining was not observed. A review of the literature revealed 18 previous reports of ganglion arising in the temporomandibular joint.

Key words: temporomandibular joint, cyst, ganglion

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Introduction

A ganglion is a cystic structure arising subcutaneously, usually in association with tendon sheaths or joints (1). Although the vast majority of ganglia occur about the wrist, they may arise in the vicinity of the temporomandibular joint (TMJ). These cystic structures are divided into 2 types according to their presentation: those with walls that consist of fibrous connective tissue (ganglia) and those with walls lined by synovial cells (synovial cysts) (1-6). Both ganglia and synovial cysts can develop in the TMJ but are rare (5, 7-11). We report a case of ganglion of the TMJ.

Case Report

A 66-year-old man presented to the Ohu University Dental Hospital, in January 2005, for evaluation of a painless mass on the left side of his face. The mass was first noticed by the patient approximately 6 months previously. The condition produced neither joint pain nor masticatory dysfunction. The patient's medical history was unremarkable, with no history of trauma in the region.

On examination, a circumscribed globular mass, measuring 25mm in diameter was noted in the left preauricular region. The mass had a smooth contour and was firm immobile, and it appeared to protrude from the outer surface area of the mandibular fossa of the TMJ. The pa-

tient did not show any limitation in opening his mouth, pain on palpation, or deviation of the mandible. There was no enlargement of the regional lymph nodes. Complete blood count and differential leukocyte count were normal.

Magnetic resonance image (MRI) revealed an oval-shaped lesion adjacent to the left TMJ (Fig. 1), although panoramic radiograph and computed tomography (CT) showed no relation between the mass and the condyle. The patient was admitted for surgical investigation and excision of lesion. Under general anesthesia, a preauricular incision on the left side was made. A mass was identified adjacent to the capsule of the joint, but it had no apparent communication with the joint. There was no relation between the mass and the parotid gland. During dissection, the mass was ruptured and gelatinous materials flew out. Postoperative healing was uneventful. A follow up 15 months later showed no recurrence of the swelling.

Histological examination of the excised mass showed a cystic structure, which was surrounded by dense fibrous connective tissue. No epithelial lining was noted (Figs. 2A and B). An area of myxoid change was observed within the connective tissue, and was accompanied with foamy macrophages (Fig. 2C). From these findings, a diagnosis of ganglion was made.

Fig. 1: Magnetic resonance image revealing an oval-shaped lesion adjacent to the left temporomandibular joint (arrow).

Discussion

Ganglion is a cystic lesion found in close association with joints or tendon sheaths (6). The lesions are commonly found subcutaneously along the extensor surface of the wrist, knee, and ankle joints. However, there have been a few reported cases occurring in the TMJ.

A cystic lesion in the TMJ area needs to be differentiated from tumors arising from the parotid gland or cutaneous and subcutaneous tissue.

A cystic lesion in the articular space may be a synovial cyst or a ganglion cyst (12). In the literature, the terms "synovial cyst" and "ganglion cyst" are often used interchangeably (5, 10, 13, 14) and are erroneously considered to be synonymous (10, 13). Although both occur near joints, their histologic features and origins are different (10, 13).

Ganglion cysts are considered to arise as a result of myxoid degeneration or cystic softening of the collagenous tissue of the joint capsule or tendon sheath (3). They are filled with viscous fluid or gelatinous material and are lined by fibrous tissue (10, 13). They neither connect with the joint cavity nor contain synovial lining on histologic examination (15).

On the other hand, synovial cysts are usually filled with gelatinous fluid and lined by cuboidal or flattened cells consistent with a synovial origin (10, 13, 16, 17). The pathogenesis of the synovial cyst is considered due to either herniation of the synovium into the surrounding tissue or displacement of synovial tissue during embryogenesis (10), although the exact origin of these cysts is still under discussion (4).

Although both ganglia and synovial cysts may arise as a result of trauma, only synovial cysts have been associated with a primary inflammatory process (21). In this case, no history of traumatic injury was reported.

In the present case, the lesion did not appear to be completely separated from the TMJ without any commu-

Fig. 2: (A) Photomicrograph showing a cystic cavity lined by thick fibrous wall. (hematoxylin-eosin stain, original magnification $\times 1$)

(B) Photomicrograph showing the dense fibrous connective tissue of the cyst wall. There is no epithelial lining. (hematoxylin-eosin stain, original magnification $\times 50$)

(C) Photomicrograph showing an area of myxoid change. (hematoxylin-eosin stain, original magnification $\times 50$)

nication with the joint cavity. Microscopic examination showed a cystic space lined by dense fibrous connective tissue with neither epithelial nor endothelial lining. We consider that this structure is different from a synovial cyst in that the cyst wall lacked both the lining of synovial cells and communication with the joint cavity. Thus we made a diagnosis of ganglion.

The CT scan and MRI are the most helpful tools for diagnosis of ganglion, for they allow determination of the limits of the cyst and its relation to the parotid gland (11, 18). In the present case, MRI indicated the mass was located adjacent to the capsule of the joint, having no communication with the joint, while CT scan exami-

Table 1: Ganglion of the temporomandibular joint

Case	Authors	Race	Age	Sex	Location
1	Heydt et al. (1977)	ND	47	F	L
2	Ethell et al. (1979)	ND	28	F	R
3	Patel et al. (1979)	White	45	F	R
4	Kenney et al. (1987)	ND	44	F	L
5	Shiba et al. (1987)	ND	28	M	R
6	Copeland et al. (1988)	Caucasian	60	F	L
7	El-Massry et al. (1989)	ND	33	F	R
8	Tom et al. (1990)	ND	22	M	R
9	Hopper et al. (1991)	ND	58	F	R
10	Lopes et al. (1994)	White	33	F	L
11	Chang et al. (1997)	ND	32	F	L
12	Goudot et al. (1999)	Caucasian	35	M	R
13	Albright et al. (2000)	White	51	F	R
14	Nahlieli et al. (2000)	ND	57	F	L
15	Takaku et al. (2001)	Japanese	50	F	R
16	Kim et al. (2003)	ND	37	F	L
17	Silva et al. (2005)	ND	51	F	L
18	Present case (2006)	Japanese	66	M	L

ND: no description.

M: male, F:female.

R: right, L:left.

nation did not show any abnormality in this region.

It is not easy to make a clinical diagnosis of this condition, and sometimes a definitive diagnosis is not made until after intraoperative observation or postoperative microscopic examination (11). In present case, we obtained a final diagnosis of ganglion through comprehensive findings including MRI examination, intraoperative observation, and microscopic examination.

Ganglion is rare in the TMJ. To our knowledge, only 18 cases, including our case, have been reported in the English literature (Table 1) (1-7, 10-17, 19, 20). An analysis of these data indicates that ganglion is more common in women (78% of all cases), affects both sides about equally and occurs exclusively in adults from 22 to 66 years of age (average 43 years).

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