Ganglion cyst of the temporomandibular joint with intracranial extension in a patient presenting with seventh cranial nerve palsy

Case report

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Ganglion cysts arising from the temporomandibular joint are quite rare. They arise from myxoid degeneration of the collagenous tissue of the capsule of the joint but lack joint cavity connection. The contents of the cyst are gelatinous material, and the cyst lining is composed of fibrous connective tissue.2,3 Ganglion cysts arising from the TMJ are more common in middle-aged women than in men or women of other ages, and patients with these lesions usually present with swelling and minimal to no pain in the preauricular region.1,4,6,8 We report the case of a patient with a large ganglion cyst of the TMJ with unilateral intracranial extension in whom facial nerve palsy was the initial presenting symptom. We believe this is the first such case reported in the literature.

Ganglion cysts arising from the temporomandibular joint are rare entities that often present with swelling and minimal to no pain in the preauricular region. To the authors' knowledge, a temporomandibular joint ganglion cyst occurring with acute facial nerve palsy and intracranial extension has never been reported. The patient in the current case initially underwent treatment for Bell palsy and then draining of the cyst at an outside hospital with no relief of symptoms. Repeat MR imaging showed an increase in the size of the cystic, enhancing, middle fossa lesion measuring 4 cm. Resection of the lesion was undertaken using a middle fossa approach. After a satisfactory surgical decompression, the patient demonstrated a significant recovery in her facial palsy over a 3-month period of time. This case presents new clinical and radiographic findings associated with these lesions. (DOI: 10.3171/2011.10.JNS111247)

Key Words • temporomandibular joint • ganglion cyst • synovial cyst • intracranial extension • oncology • skull base surgery

Case Report

Presentation and Examination. This 63-year-old woman was referred for evaluation of a left middle fossa cystic lesion. The patient initially presented to an outside hospital after an acute onset of facial palsy occurring over a single day. She was initially treated for Bell palsy with a course of antiviral therapy and steroid medication but had no improvement in her facial palsy. An MR imaging study revealed a cystic lesion in the middle fossa that appeared to involve the TMJ, and the patient underwent a subtemporal approach for drainage of the cyst at the outside hospital. After surgery, she had no improvement in her symptoms, and the histological findings were nondiagnostic. Approximately 1 month after the cyst drainage, repeat MR imaging demonstrated partial recurrence of the cyst, and the patient was referred to our institution.

At presentation to our neurosurgery clinic approximately 2.5 months after the patient’s first surgery, a repeat MR imaging study showed further increase in the size of the cystic, enhancing, middle fossa lesion, which now measured 4 cm (Fig. 1). Abnormal enhancement of the intratemporal geniculate ganglion and adjacent facial nerve was also evident. Bone CT images of the area showed erosive changes of the mandibular condyle, connection of the TMJ to the middle cranial fossa mass, and dehiscence of the anterior margin of the geniculate ganglion. Initial differential diagnoses, in decreasing order of likelihood, included a nonneoplastic inflammatory process spreading from the TMJ, seventh cranial nerve schwannoma, and atypical meningioma. Resection of the lesion via a middle fossa approach was recommended and accepted by the patient.

This article contains some figures that are displayed in color online but in black and white in the print edition.
Surgery. A left middle fossa craniotomy was done in- 
tra- and extradurally in conjunction with the otolaryngol-
ogy team. The lesion was found to have transdural ex-
extension. Exploration involved the capsule of the TMJ, with 
partial joint and condylar resection, as well as the middle 
cranial fossa osteotomy to expose the facial nerve. After 
enhancement and fat saturation, an axial T1-weighted MR image (D) 
of the same region as in panel C shows the rim-enhancing low-signal 
lesion (arrow) in the floor of the middle cranial fossa with pathologi-
atical enhancement of the geniculate ganglion (arrowhead) and adjacent 
components of the facial nerve.

Postoperative Course. No improvement in the patient’s 
facial palsy was seen immediately after surgery. Postop-
erative imaging was performed (Fig. 2), and she was dis-
charged on postoperative Day 3. Similarly, at the 1-month 
follow-up, the facial palsy remained; however, a dramatic 
improvement was observed at the 7-month follow-up ex-
amination. Her facial nerve functioning had recovered at 
that time from House-Brackmann Grade VI to Grade III.5

Pathological Analysis. Histological evaluation showed 
a collagenous wall with absence of the synovial cell layer 
on the luminal surface, supporting the diagnosis of gan-
glion cyst of the TMJ. The collagenous wall of the gangli-
on cyst showed low cellular density, and there was a small 
amount of hemorrhage within the collagenous tissue. In-
flammatory infiltrates and foreign body granulomas seen 
in the specimen were likely related to the patient’s previ-
ous surgery (Fig. 3).

Discussion

Cysts arising from the TMJ may be histologically 
identified based on the cell type in the cyst wall.7,8 Cysts 
lined by synovial cells should be considered a separate 
entity from cysts lined by fibrous connective tissue (gan-
glion cysts), even though distinction between the two has 
been blurred in previous reports. Both forms of cysts can 
arise from trauma: synovial cysts are thought to arise pri-
marily from an inflammatory response, whereas ganglion 
cysts arise from myxoid degeneration of the connective 
tissue of the joint capsule.7 Despite the different causes 
and histological descriptions, the clinical characteristics 
and treatment of these two types are often the same.7,8

The clinical presentation of patients with synovial 
cysts of the TMJ is generally nonspecific. Patients may 
report pain with jaw movement and localized tenderness 
to touch or may only describe a preauricular lump with- 
out associated pain.7 No previous cases of intracranial ex-
tension or seventh cranial nerve palsy have been reported 
in the literature. Ali et al.3 reported the case of a patient 
with a TMJ ganglion cyst who presented with auricle par-
esthesia that was thought to have arisen from compres-
sion of the auriculotemporal nerve. Albright et al.1 previ-
ously described a patient with a synovial cyst arising from 
the TMJ who had erosion of the temporal bone into the 
external auditory canal. Otherwise, symptoms from cysts 
arising from the TMJ have been relatively confined to 
the location of origin, with local symptoms such as pain,
clicking with jaw opening, or limited range of jaw motion.2,6–8 Cases of ganglion or synovial cysts of the TMJ presented in the literature remain scarce, with as few as 24 cases of either type of cyst documented from 1977 to 2005.2

This case establishes facial nerve palsy and intracranial extension as a possible complication of ganglion cysts arising from the TMJ. Intracranial or extracranial factors may be responsible for this clinical presentation because of mass effect of the lesion on the geniculate ganglion, the intratemporal segment, or the extratemporal segment of the nerve at the stylomastoid foramen. After a satisfactory surgical decompresion, our patient demonstrated a significant recovery in her facial palsy over a 6-month period.

This case further supports the recommendation that aspiration of TMJ ganglion cysts is an inadequate treatment and complete resection should be sought.1 As in our patient’s case, recurrence may follow incomplete resection or aspiration.1,2 Patients with asymptomatic lesions may undergo a period of conservative management, as spontaneous involution is thought to occur in some cases.7 Ganglion cysts of the TMJ should now also be considered in the differential diagnosis for patients who harbor middle fossa lesions adjacent to the TMJ even when presenting with facial nerve paralysis.

Disclosure

The authors report no conflict of interest concerning the materials or methods used in this study or the findings specified in this paper.

Author contributions to the study and manuscript preparation include the following. Conception and design: Couldwell. Acquisition of data: Mumert. Analysis and interpretation of data: Mumert, Altay, Harnsberger. Drafting the article: Mumert. Critically revising the article: Couldwell, Altay, Shelton, Harnsberger. Reviewed submitted version of manuscript: Couldwell, Altay, Shelton, Harnsberger.

Acknowledgment

The authors thank Kristin Kraus, M.Sc., for excellent editorial assistance with this paper.

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Manuscript submitted August 11, 2011.
Accepted October 26, 2011.
Please include this information when citing this paper: published online November 25, 2011; DOI: 10.3171/2011.10.JNS111147.
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