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Case Report

Long-term Follow-up of a Temporomandibular Joint Cyst

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Abstract: We report a case of cystic lesion in a 23-year-old female, consisting of an oval-shaped lesion adjacent to the temporomandibular joint (TMJ). She presented with a Class III malocclusion with facial asymmetry and tenderness to palpation on the right TMJ. The patient was treated conservatively with a splint for the TMJ-associated cyst and combined surgical-orthodontic treatment for the facial asymmetry. The post-treatment course was uneventful. The authors recommend a conservative approach as one of the treatment options for TMJ cyst.

Key words: cyst, temporomandibular joint, facial asymmetry

Introduction

Ganglions are cystic lesions that develop near joints such as the wrist, ankle, foot, and knee¹⁾. They are divided into two types according to their presentation: those with walls that consist of fibrous connective tissue (ganglion) and those with walls that are lined by synovial cells (synovial cysts)²⁻¹¹⁾. Both ganglions and synovial cysts¹¹⁻¹⁹⁾ develop in the TMJ, although they are rare at this site. Females are more likely to develop a TMJ cyst, with an incidence ratio of 3:1 (female to male). The most common presenting symptoms are pain and an obvious cosmetic deformity^{20,21)}. Herein we present the case of a TMJ cyst and discuss our choice of treatment.

Case Report

A 23-year-old female presented with midline deviation of her upper and lower incisors. She had esthetic concerns about facial asymmetry (Fig. 1). The patient had received regular dental care and had undergone early class III (mandibular prognathism) treatment using a chin-cap. The chin-cap was designed to exert an upward and backward force on the mandible by applying pressure to the chin, thereby preventing forward growth. She had no history of traumatic injury or serious illness, and no family history of facial asymmetry.

Conventional radiographic examination, including panoramic imaging (Fig. 2A) and cephalometric imaging of the TMJ, showed no relationship between the mass and the condyle. However, cone-beam computed tomography (CT) revealed a concavity of the superior part



Fig. 1. Facial and intraoral photographs (first record : 23Y8M).

of the right condyle causing an oval-shaped lesion, and magnetic resonance imaging (MRI) revealed a cystic mass adjacent to the right TMJ (Fig. 2B, C). By MRI, the cyst appeared as a small mass covered by a membrane in the superior part of the right mandibular condyle inside the joint capsule (Fig. 2C-4, 6), and located in the lower joint cavity. The Proton-weighted image showed a lesion with homogeneous moderate signal intensity (Fig. 2C-3, 4). A homogenous high intensity signal was obtained on T2-weighted imaging (Fig. 2C-5, 6). Based on the MRI findings, the mass was diagnosed as a cystic lesion of the joint capsule. Disc morphology was normal bilaterally. The meniscus maintained a normal relationship with the condyles in the open and closed positions bilaterally without evidence of subluxation or dislocation of the disc (Fig. 2C-1, 2, 3, 4). The cystic mass was very small, and located adjacent to the middle of the condyle. The articular disc position was normal, pain was not excessive, and there was no progressive condylar resorption. Conservative management was therefore recommended as the treatment objective, comprising application of a stabilization-type splint (Fig. 3) and observation.

MRI examination 10 months later showed no change and the patient subsequently underwent combined surgical-orthodontic treatment. The post-treatment course was uneventful. Follow-up after 8 years showed normal joint function and a decrease in size of the cystic mass (Fig. 4, 5).

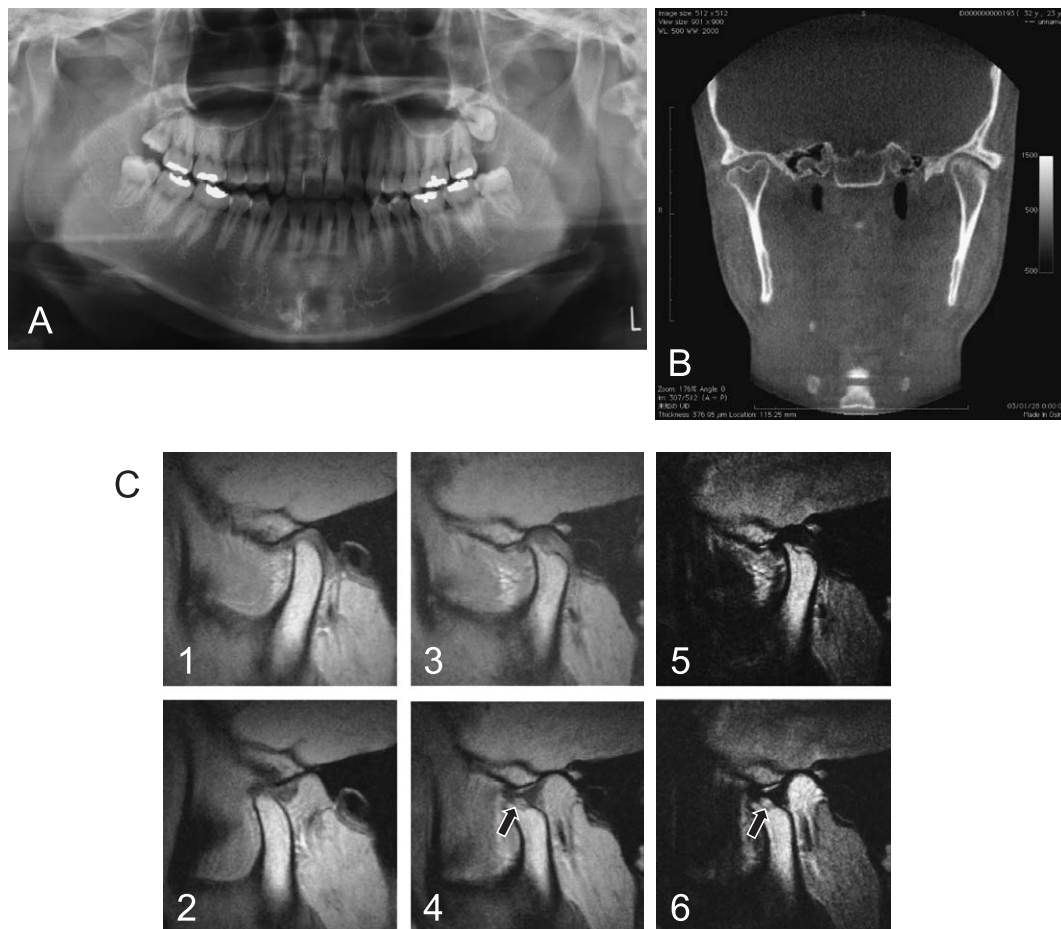


Fig. 2.

- A : Panoramic radiograph.
- B : CT showing a concavity of the superior part of the right condyle.
- C : Sagittal MRI (24Y0M), revealing an oval-shaped lesion adjacent to the right TMJ (arrows). T2-weighted image showing high, homogenous signal intensity (arrow) inside the cystic mass. The mass has a very smooth contour and is surrounded by a zone of low signal intensity.
- 1 : Proton density image (Left closed). 2 : Proton density image (Left open).
- 3 : Proton density image (Right closed). 4 : Proton density image (Right open).
- 5 : T2-weighted image (Right closed). 6 : T2-weighted image (Right open).



Fig. 3. Stabilization-type splint.

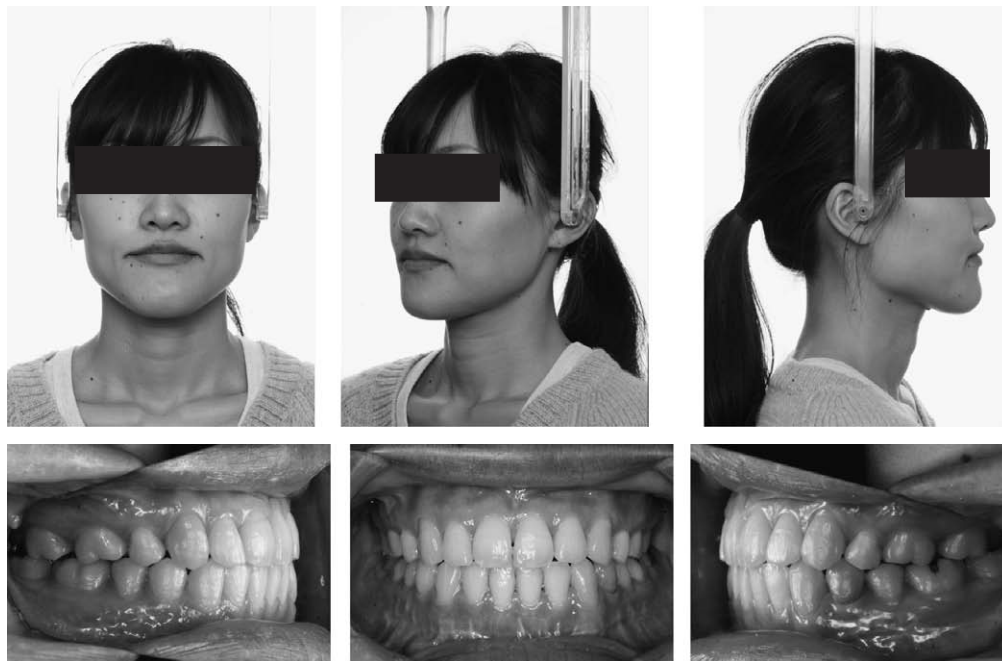


Fig. 4. Facial and intraoral photographs (post-treatment : 32Y1M).

Discussion

The differential diagnosis of TMJ cysts includes tumors arising from the parotid gland, cutaneous and subcutaneous tumors (sebaceous cyst), as well as primary and metastatic tumors of the condyle, chondromatosis, and crystal arthropathies²²⁾. CT and MRI^{16, 17, 23)} are the most helpful tools for diagnosis and allow determination of the cyst limits and its relation to the parotid. The diagnoses of synovial cysts and ganglion are often used interchangeably, but these are two different lesions^{3, 18)}. Synovial cysts contain synovial fluid, are lined by an endothelium containing synoviocytes, and may or may not communicate with the joint cavity. Ganglion cysts contain a viscous substance and are lined by dense connective tissue, rather than by synovium. Ganglia do not communicate with the joint cavity, and the origin of these ganglion cysts remains controversial⁹⁾.

Synovial cysts seem to develop with increases in intra-articular pressure³⁾ due to trauma^{12, 15, 18)}, inflammation²⁴⁾, which causes capsular herniation, or displacement of synovial tissue during embryogenesis¹⁸⁾. On the other hand, ganglion cysts develop by myxoid degeneration and cystic softening of the joint capsule³⁾. Our patient had received chin-cap therapy for three years from the age of 9, and this is one of the procedures most frequently cited as a cause of TMJ dysfunction (TMD)^{25, 26)}. It is commonly believed that upward and backward forces are applied to the condyle by a chin-cap, resulting in increased intra-articular pressure that may eventually cause a synovial cyst.

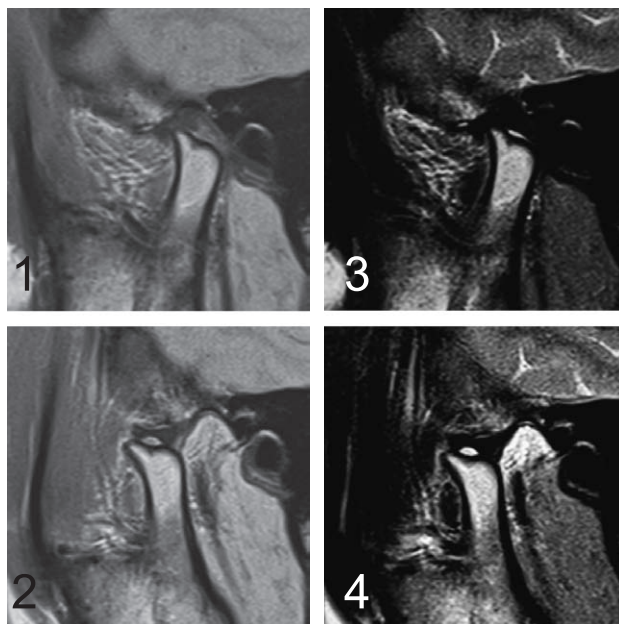


Fig. 5. Sagittal MRI (32Y1M). MRI follow-up after 8 years showed a normal joint function and decreased cystic mass.

1: Proton density image (Right closed). 2: Proton density image (Right open). 3: T2-weighted image (Right closed). 4: T2-weighted image (Right open).

Up to half of all ganglia disappear spontaneously⁴⁾ and, although there is not the clinical experience to support this view, a conservative approach could be offered to the patient. The case presented here emphasizes the need for thorough clinical examination and proper imaging for patients who present with somewhat atypical TMD symptoms, and to prevent unnecessarily extensive surgery being performed for this benign condition.

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