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Case Report

Temporomandibular joint arthroplasty with tragal cartilage graft in the excision of a ganglion cyst herniating into the external auditory canal: a case report

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ABSTRACT

Ganglion cysts of the temporomandibular joint (TMJ) are rare, and extension into the external auditory canal (EAC) is uncommon. These lesions may present with otologic symptoms such as aural fullness, conductive hearing loss, and visible protrusion into the canal. We present the case of a 63-year-old man with a 24-month history of preauricular pain, aural fullness, and conductive hearing loss. Clinical examination and otoscopy revealed a translucent mass obstructing more than 50% of the left EAC. Imaging demonstrated a 6 mm bony defect of the anterior EAC wall communicating with the TMJ. Surgical excision was performed through a preauricular approach, followed by reconstruction of the defect with an autogenous tragal cartilage graft. Histopathology confirmed a benign ganglion cyst. Postoperatively, the patient achieved complete resolution of symptoms and normal mandibular function, with no recurrence at 1-year follow-up. TMJ ganglion cysts with EAC extension are rare but should be considered in the differential diagnosis of EAC masses. Reconstruction with autogenous tragal cartilage provides effective anatomical restoration and symptom resolution.

Keywords: Temporomandibular joint, Ganglion cyst, External auditory canal, Arthroplasty, Cartilage graft

INTRODUCTION

The temporomandibular joint (TMJ) is a complex synovial joint responsible for essential functions such as mastication, speech, and swallowing. Pathologies affecting the TMJ can lead to chronic pain, restricted movement, and significant functional impairment. Among the lesions that may affect this joint, ganglion cysts represent a rare entity, characterized by cystic formations filled with mucinous material, usually associated with mucoid degeneration of the periarticular connective tissue or synovial herniation secondary to trauma or chronic joint degeneration.[1,2] While ganglion cysts are commonly found in peripheral joints, their occurrence in the TMJ is uncommon. Even rarer are cases where these lesions extend into adjacent structures such as the external auditory canal (EAC), presenting with atypical clinical symptoms. In such situations, patients may report otologic symptoms including otalgia, aural fullness, conductive hearing loss, and, in some cases, visible protrusion into the EAC.[1,3,4]

Treatment of these lesions depends on factors such as size, symptomatology, and anatomical extension. In

symptomatic cases with significant structural compromise, surgical intervention is indicated. TMJ arthroplasty may involve cyst excision and joint remodeling, aiming to restore function and relieve symptoms. Surgical procedures in the TMJ require meticulous surgical planning due to the proximity of critical structures such as the facial nerve and the skull base.[4-6] Surgical planning must incorporate data obtained from physical examination as well as imaging studies, with CT (computer tomography) and magnetic resonance imaging (MRI) playing a critical role in determining the location and helping with the diagnosis and management of TMJ pathologies.[1,7,8]

The literature on ganglion cysts of the TMJ with herniation into the EAC is scarce and consists primarily of case reports.[1,2,8] Therefore, detailed descriptions significantly contribute to the understanding of this pathology and to the refinement of diagnostic and therapeutic strategies.

This study aims to report a case of TMJ arthroplasty with excision of a ganglion cyst herniating into the EAC, discussing clinical, radiographic, surgical, and follow-up aspects in the context of current literature.

CASE REPORT

A 63-year-old male patient was referred to the Oral and Maxillofacial Surgery service by the Otolaryngology department due to a 24-month history of right preauricular pain, progressively associated with aural fullness and episodes of conductive hearing loss. Clinical examination revealed tenderness upon palpation of the left TMJ, without limitation of mouth opening, and the presence of clicking during mandibular opening.

Otoscopy showed a mild amount of white otorrhea on the EAC floor and more than 50% obstruction of the left external auditory canal by a translucent, pinkish, non-pulsatile mass. The lesion exhibited mobility with mouth opening and the patient said his hearing gets improved when he opens his mouth.

Audiometric testing performed on March 20, 2023 (Figure 1), revealed that the right ear had hearing within normal limits (WNL) from 125 Hz to 1000 Hz, with mild to moderate sensorineural hearing loss from 1500 Hz to 6000 Hz, returning to WNL at 8000 Hz. The left ear had mild to moderate mixed hearing loss. Speech recognition testing (NU-6 scale, recorded stimuli) was considered excellent (>96%), consistent with pure tone thresholds for the right and left sides, and no significant interaural difference was noted. Tympanometry of the right ear was WNL, and in the left ear, it was unable to achieve a hermetic seal.

Further imaging studies were requested. MRI and CT scans were performed, and there were no imaging findings suggestive of TMJ dysfunction. A small bony defect was noted along the anterior wall of the left EAC, appearing to communicate with the TMJ. There were a slight thickening and enhancement of adjacent periarticular soft tissues (Figure 2).

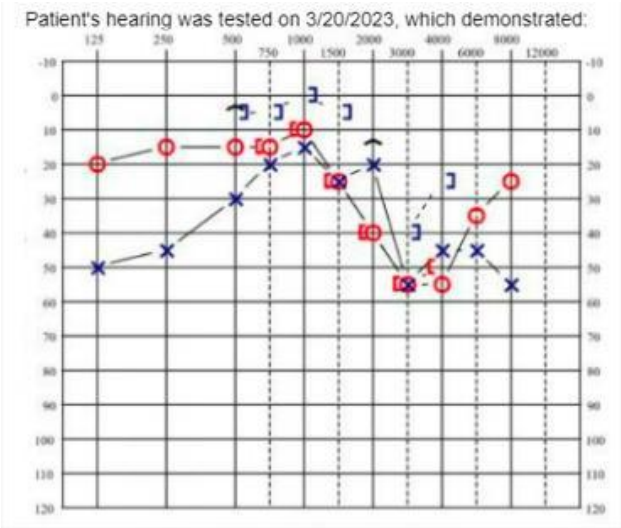

Figure 1: Audiometric testing. Mild to moderate mixed hearing loss.

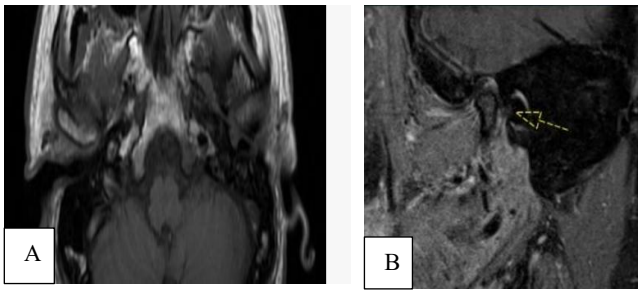

Figure 2 (A and B): MRI showing the occlusion of the external auditory canal.

The CT scan showed a 6 mm bony defect in the anterior wall of the left EAC was identified, communicating with the underlying TMJ. A small soft tissue density extended through the defect, contacting and potentially involving the tympanic membrane, with slight extension into the mesotympanum. The defect size was stable compared to a previous CT scan in 2022. The previously observed opacification of the middle ear and mastoid air cells, as well as inflammatory changes in the left parapharyngeal and masticator spaces, had largely resolved, consistent with sequelae of prior inflammation without evidence of malignancy or active infection. Due to the symptomatology and anatomical extent of the lesion, surgical treatment was indicated. An open TMJ arthroplasty was performed via endaural approach, utilizing autogenous tragal cartilage graft. A surgical marker was used to delineate the endaural incision. Local anesthesia was achieved with 1 ml of lidocaine. A #15 blade was used to incise the skin. Dissection was carried out to expose the left TMJ capsule.

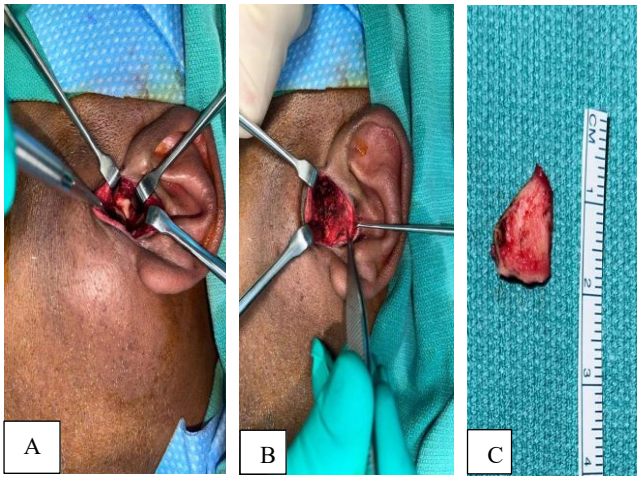

Figure 3 (A-C): Preauricular access and excision of the lesion.

Following joint exposure, an additional 1 ml of lidocaine was injected into the superior joint space. An incision was made between the glenoid fossa and the articular disc to access the superior compartment. A periosteal elevator and Seldin retractor were used to inferiorly retract the mandibular condyle (Figure 3). Excision of the soft tissue on the mandibular head was performed, and the specimen was sent for histopathological analysis.

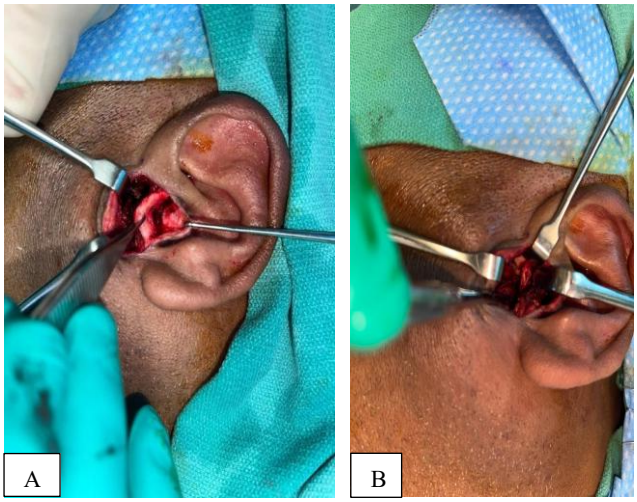

Figure 4 (A and B): Cartilage graft being removed from the tragus and repositioned to separate the ear canal from the TMJ.

The bony defect in the external auditory canal was identified and exposed. Tragal cartilage was harvested using iris scissors and electrocautery, creating a 1.5x1.5 cm graft, which was adapted to the bony defect to restore anatomical integrity (Figure 4). The joint and incision site were irrigated with saline. Hemostasis was achieved. Layered closure was performed using 4-0 Vicryl for deep tissue and 5-0 nylon for skin.

The specimen was confirmed to be a benign ganglion cyst, consisting of fibrous/fibrovascular tissue with acute and chronic inflammation, scant keratinous debris and no evidence of neoplasia.

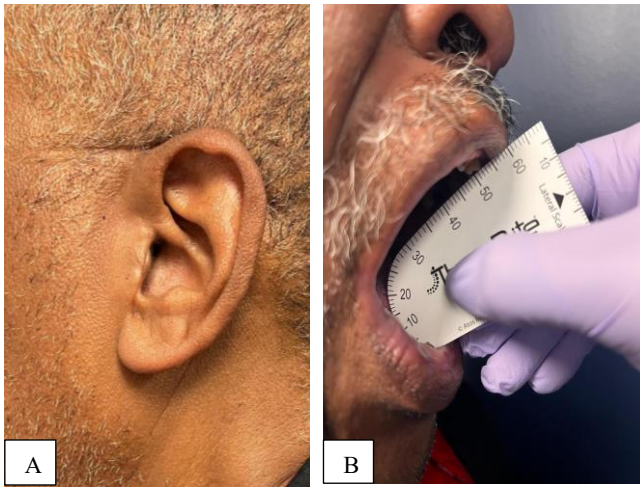

Figure 5 (A and B): Post operative aspect after one year.

At 3 months postoperatively, the patient showed complete resolution of otologic symptoms, improvement in hearing, and no evidence of recurrence. Mandibular function remained normal, with mouth opening greater than 45 mm, normal masticatory muscle function, and absence of pain at the surgical site. After one year the patient did not have any symptoms, he was hearing well and had no complaint about fullness. He was educated about the importance of coming for evaluations every year (Figure 5).

DISCUSSION

Ganglion and synovial cysts are benign, fluid-filled lesions that develop in association with joint capsules or tendon sheaths, most commonly found in the wrist, knee, and foot, however their occurrence in the TMJ is rare.[1,3,4] These lesions may cause preauricular swelling, pain, or, in certain cases, otologic symptoms when extending into the EAC. Such extension is thought to result from the close anatomical relationship between the TMJ and the EAC, and, in some instances, from a dehiscence of the posterior wall of the glenoid fossa.[4-6]

Differentiation between ganglion and synovial cysts remains challenging, as both can present with similar clinical and radiologic features. Histopathological examination is required for definitive diagnosis. Ganglion cysts are composed of dense fibrous connective tissue without a true epithelial or synovial lining, while synovial cysts are lined by synoviocytes and may communicate with the joint cavity.[1-4] Pathogenetically, ganglion cysts are thought to arise from capsular or myxoid degeneration, whereas synovial cysts are associated with increased intra-articular pressure secondary to trauma or inflammation. Although trauma has been reported as a

contributing factor in some cases of synovial cysts, it is rarely associated with ganglion cysts.[6]

Epidemiological data indicate a higher prevalence in middle-aged women, with a mean age around 45 years and a female-to-male ratio of approximately 3:1.[4] Imaging plays a central role in diagnosis; magnetic resonance imaging (MRI) typically demonstrates a well-defined, homogeneous, non-enhancing lesion adjacent to the mandibular condyle, showing high signal intensity on T2-weighted and low signal on T1-weighted sequences, consistent with fluid content.[3] Ultrasound and computed tomography can complement MRI to delineate the relationship with the parotid gland or bony structures, respectively.[2] Fine-needle aspiration or puncture biopsy may aid diagnosis, although definitive confirmation requires histological evaluation.

Surgical excision remains the treatment of choice for symptomatic cases or when the lesion exerts pressure on adjacent structures. The preauricular approach provides excellent access to the TMJ, enabling complete excision and reconstruction when necessary.[9] However, conservative management may be appropriate for small, asymptomatic cysts, as spontaneous regression has been reported. They may also undergo spontaneous resolution following needle puncture, likely due to decompression and disruption of the cyst wall integrity.[4]

Recurrence is uncommon but possible. Although previous reports had not documented recurrence of TMJ cysts, Nys et al described the first recurrent case of a ganglion cyst 3.5 years after surgical removal, but they suggested that recurrence rates may be underestimated due to limited follow-up periods in earlier studies.[4] In the present case, complete excision and reconstruction with tragal cartilage were performed to restore anatomical integrity and minimize the risk of recurrence. Specific characteristics make auricular cartilage, particularly tragal cartilage, an effective option for TMJ reconstructions, with favorable functional and aesthetic outcomes.[9,10]

Histologically, the absence of an epithelial lining and the presence of fibrous connective tissue with mucinous material confirmed the diagnosis of a ganglion cyst, which is different from synovial cyst that has a true cyst lined by flattened synovial cells that may communicate with joint space.[11-13] The postoperative outcome was favorable, with no recurrence observed during follow-up.

Ganglion cysts of the TMJ extending into the EAC are exceedingly rare and can mimic otologic or parotid lesions.[14] A high index of suspicion and appropriate imaging are essential for diagnosis. When glenoid fossa dehiscence is present, reconstruction with autogenous cartilage provides effective anatomical restoration and prevention of recurrence, resulting in excellent functional outcomes.

The present case corroborates the findings reported in the literature, demonstrating that ganglion cysts of the TMJ may extend into the external auditory canal through bony dehiscence, producing otologic symptoms that mimic parotid or middle ear pathology. MRI and CT were decisive for diagnosis and surgical planning, confirming the communication between the TMJ and the EAC. Complete excision and reconstruction with autogenous tragal cartilage ensured anatomical restoration and resolution of symptoms, supporting previous reports that highlight the reliability of auricular cartilage in TMJ reconstruction.

CONCLUSION

Ganglion cysts of the TMJ are rare benign lesions that may exceptionally extend into the EAC, producing atypical otologic symptoms. Accurate diagnosis requires high clinical suspicion and detailed imaging, as CT and MRI are essential to identify the communication between the TMJ and EAC and to rule out other parotid or middle ear pathologies.

Surgical excision remains the treatment of choice for symptomatic or expansive lesions. The preauricular or endaural approach provides optimal access for complete removal and anatomical reconstruction. In the present case, the use of autogenous tragal cartilage allowed effective closure of the glenoid fossa defect, with excellent functional and aesthetic outcomes and no recurrence at follow-up.

This case reinforces the importance of multidisciplinary evaluation between oral and maxillofacial surgeons and otolaryngologists in the management of TMJ lesions with otologic involvement, highlighting the value of autogenous cartilage grafts as a reliable reconstructive option to restore joint integrity and prevent recurrence.

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