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Case Report

Refractory Chronic Diffuse Granular Myringitis with Medial Meatal Stenosis

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Granular myringitis is a chronic inflammatory condition of the tympanic membrane that does not involve the middle ear. Various treatment modalities have been proposed for the treatment of granular myringitis, but there is no standard treatment regime. A 60-year-old woman had left persistent ear discharge for 4 months. Examination revealed diffuse granulation tissue, forming a pseudomembrane at the medial aspect of the ear canal and obstructing the tympanic membrane. An audiogram revealed mild-to-moderate left-sided conductive hearing loss. She was treated with multiple courses of ear drop antibiotics but had no improvement. The decision for surgical intervention was driven by the presence of a grade IV medial meatal stenosis, the potential risks associated with prolonged medical management, the distressing impact on the patient's life, and a shared decision-making process. A combined transcanal and postauricular endoscopic approach whereby excision of the granulation tissue, canalplasty, and myringoplasty were performed. She exhibited complete symptom resolution and reported an improved quality of life. This approach yielded successful symptom resolution, highlighting its potential in managing refractory chronic granular myringitis. We aimed to carefully weigh the risks of surgery against its potential benefits in a refractory chronic case, acknowledging the inherent risks and disadvantages of surgical interventions. Further studies are warranted to evaluate the long-term outcomes and benefits of this approach.

KEYWORDS: Tympanic membrane, inflammation, ear canal, tissue

INTRODUCTION

Granular myringitis (GM) is a chronic inflammatory condition of the tympanic membrane, characterized by de-epithelialization and granulation of the involved area in the absence of middle ear involvement. It is about one-fourth as prevalent as cholesteatoma.[1] While various medical and surgical treatment approaches have been proposed, refractory cases can be challenging to manage. In some patients, the presence of medial meatal stenosis can further complicate treatment options. In the present report, we describe a surgical technique that utilizes combined transcanal and postauricular endoscopic approaches for excision of granulation tissue, followed by canalplasty and myringoplasty.

CASE PRESENTATION

A 60-year-old lady presented to the ear, nose, and throat clinic with persistent scanty serous ear discharge and ear discomfort in the left ear for 4 months. Previous treatment at a health clinic involving oral antibiotics and topical ear drops failed to yield any improvement. Following aural toileting, examination revealed diffuse granulation tissue, forming a pseudomembrane at the medial aspect of the ear canal, obscuring the tympanic membrane (Figure 1). An audiogram showed left-sided mild-to-moderate conductive hearing loss with significant air–bone gap (Figure 2). High resolution computed tomography showed a thickened tympanic membrane with a normal tympanic cavity without evidence of bony erosion (Figure 3).

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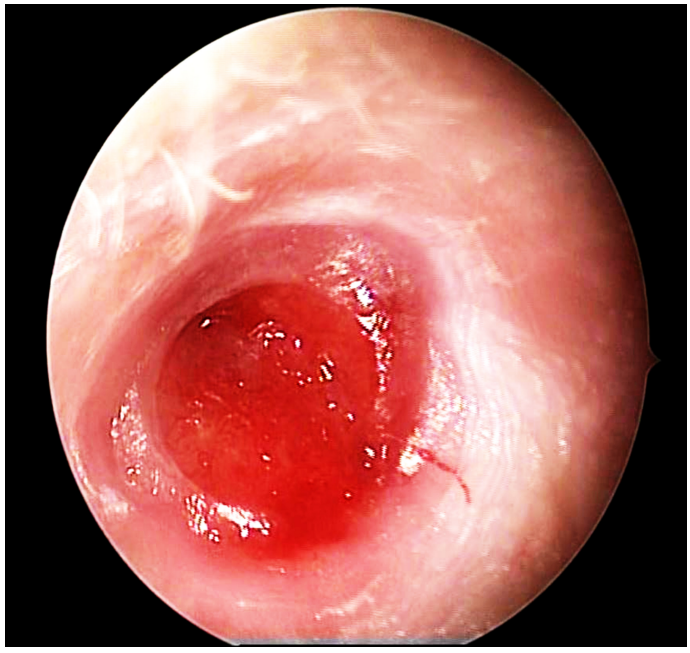

Figure 1. The entire tympanic membrane is covered with granulation tissue, forming a pseudomembrane appearance, with extension into the adjacent auditory canal.

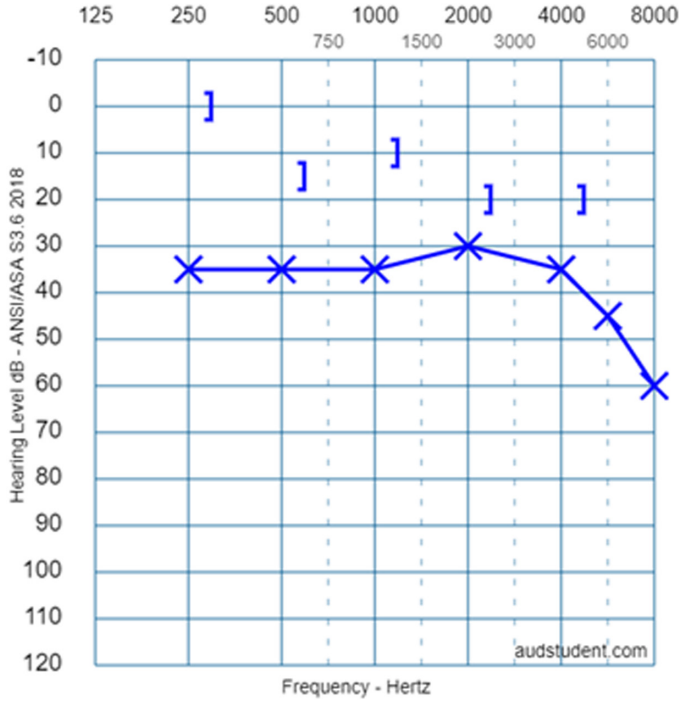

Figure 2. Pre-operative audiogram of the left ear revealed mild-to-severe conductive hearing loss.

She was then treated with topical Pocin-H (hydrocortisone + neomycin + polymyxin B) ear drops for 6 weeks but had no improvement. The recurring nature of the disease episode, coupled with an inadequate response to medical therapy and the distressing impact on the social life, she opted for surgical treatment after a shared decision-making process. We employed a combined transcanal and postauricular endoscopic approach to excise the granulation tissue, in tandem with canalplasty and tympanoplasty (Figure 4). Consent for publication was obtained from the patient.

Surgical Technique

A postauricular incision was utilized to completely expose the granulation tissue due to the stenotic bony external auditory canal. Following the exploration, a tympanomeatal flap was raised. Two horizontal incisions were made over the 12 o'clock and 6 o'clock positions, extending laterally along the external auditory canal. These incisions were joined, allowing the skin flap to be elevated. Endoscopic middle ear inspection revealed healthy middle ear mucosa. The granulation tissue was meticulously teased off the healthy tympanic membrane with Panetti suction microhook and sent for histopathological confirmation. Unhealthy meatal skin was excised, exposing the canal wall. A canalplasty was then performed with diamond drill size 1 to widen the canal. Temporalis fascia was harvested and used for type 1 tympanoplasty, overlaid laterally to the handle of malleus. The remaining canal skin flap was repositioned. Gelfoams soaked in antibiotic-steroid ear drops were used to keep the graft in place and to line the exposed canal skin areas.

Histopathological examination of the granular lesions showed inflamed granulation tissue with acute on chronic inflammation. Four months post-operatively, she had complete resolution of her symptoms. She no longer had ear discharge or ear discomfort and reported an improved quality of life. The post-operative audiogram showed no significant changes in her hearing levels (Figure 5).

MAIN POINTS

- Refractory chronic granular myringitis, particularly when complicated by medial meatal stenosis, presents significant challenges that may necessitate surgical intervention.
- A combined transcanal and postauricular endoscopic technique offers a promising option, demonstrating its potential effectiveness in managing refractory granular myringitis.
- The exploration and validation of advanced surgical approaches, with an emphasis on improving patient outcomes and minimizing complications, is thus an important future challenge.

DISCUSSION

Though the precise etiology of GM is unknown, a number of causes have been proposed, including traumas, infections, and previous otology procedures leading to desquamation of the tympanic membrane and granulation tissue development.[1-3] Our patient most likely had a chronic ear infection with positive cultures for *Staphylococcus aureus*. A classification system based on the disease's presentation and severity was proposed by Wolf et al[2]. Grade I represents focal de-epithelialization, grade II shows focal polypoid granulations, grade III has diffuse polypoid development throughout the whole tympanic membrane, and grade IV when the granulation tissue additionally involves the external auditory canal wall.

There are many different medical and surgical approaches which have been promoted in the literature, but there is no globally accepted standard of treatment. For grade I and II GM, topical agents are generally the first line of treatment. These include antimicrobial steroid drops, vinegar, Castellani solution, cauterizing agents, and topical chemotherapy with 5-fluorouracil (5-FU) solution.[4-7]

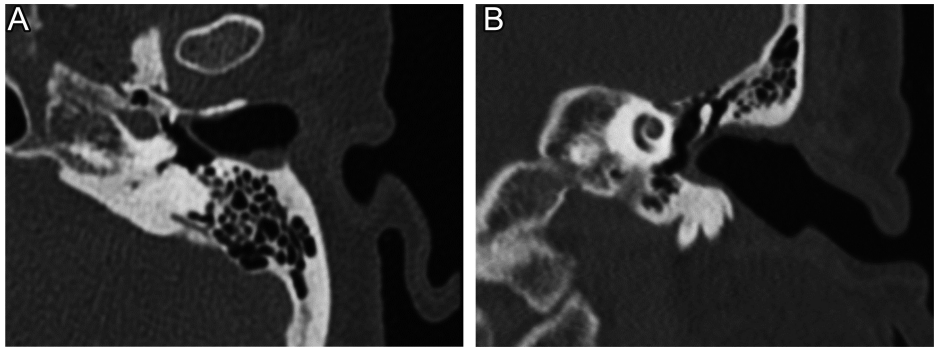

Figure 3. High-resolution computed tomography of the left temporal bone at (A) axial view and (B) coronal view. Soft tissue over the bony external auditory canal, with a normal-appearing middle ear.

Surgical interventions including excision[3-9] or laser therapy[10] have been recommended for grade III and IV GM. Ei-Seifi and Fouad[3] advocated radical surgery as a curative therapy where surgical removal of granulation tissue resulted in an 80% reduction in recurrence. Zhang[8] developed a surgical technique in which the tympanic epithelial layer and diseased tissue were avulsed followed by myringoplasty, while Chang et al[9] proposed a transcanal endoscopic excision of granulation tissue followed by tympanoplasty. All of these methods have varying success rates (76.9%-100%).[3-9]

Despite previous multiple courses of antibiotic treatments before seeing us and a 6-week continuous instillation of topical Pocin-H ear drops yielding no improvement, the patient continued to experience recurring symptoms, raising concerns about potential risks such as ototoxicity and otomycosis associated with prolonged medical therapy. The decision for surgical intervention stemmed from a culmination of challenges, including the patient's distress and the social impact. The significant effect on the patient's social life, coupled with the presence of medial meatal stenosis, limited the effectiveness of

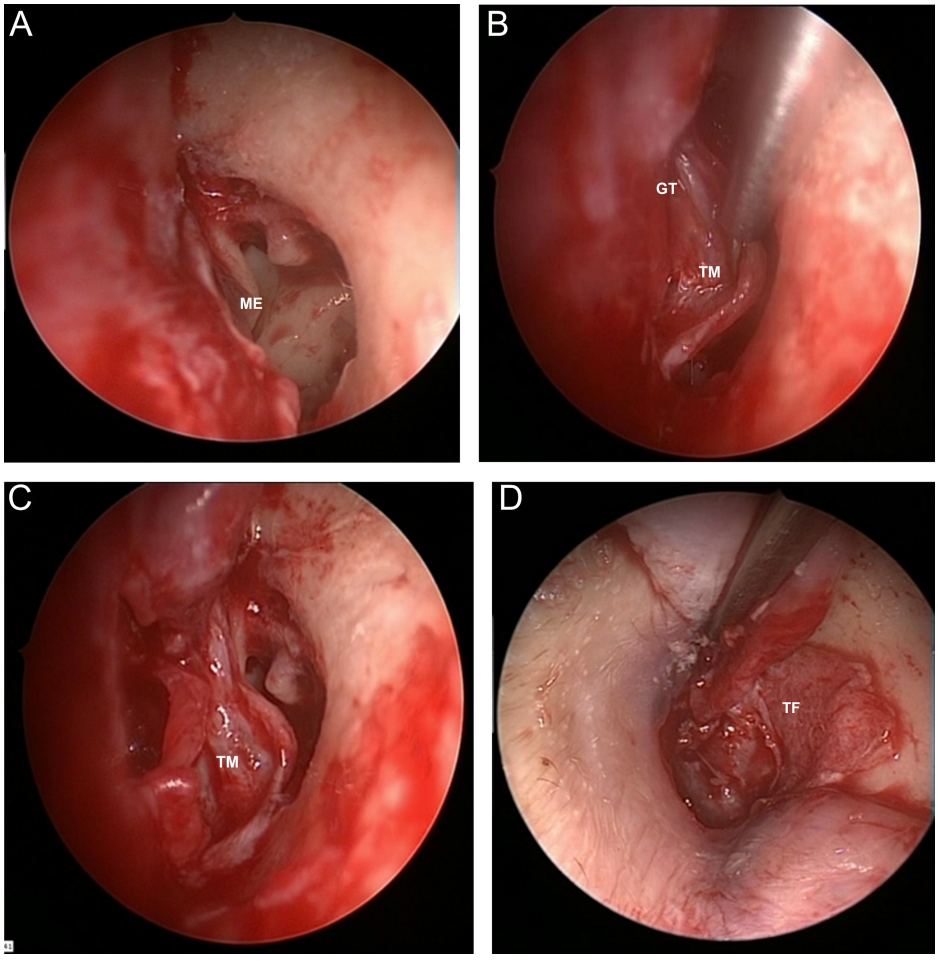

Figure 4. (A) Endoscopic view of left ear showing normal middle ear mucosa. (B) Granulation tissue is teased off from the underlying tympanic membrane. (C) Appearance of tympanic membrane with residual perforation. (D) Appearance following myringoplasty with temporalis fascia. GT, granulation tissue; ME, middle ear; TF, temporalis fascia; TM, tympanic membrane.

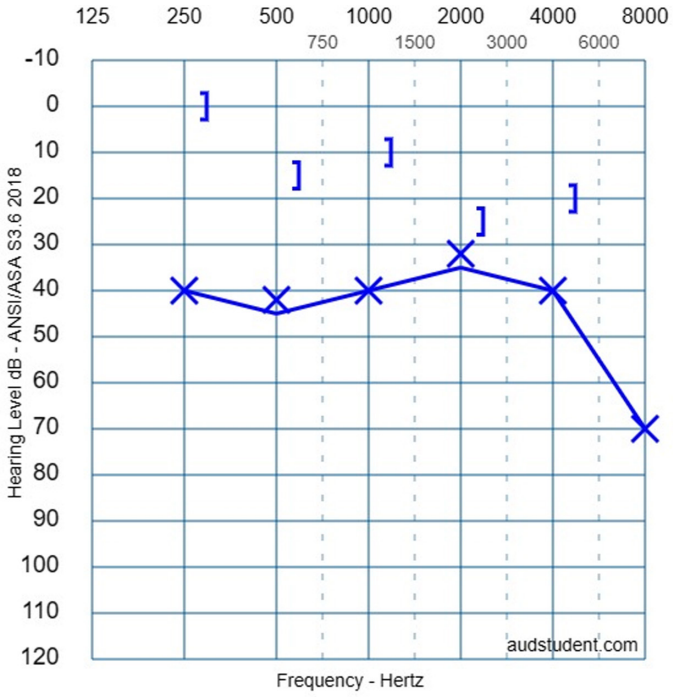

Figure 5. Post-operative audiogram of the left ear revealed no significant change in the hearing.

conservative measures and further necessitated a more definitive intervention.

In our case, the patient suffered from diffuse GM with medial meatal stenosis, which further complicates the surgical treatment. This innovative approach has several advantages over other treatment modalities. First, it provides better exposure and visualization of the affected area, allowing a more thorough removal of the granulation tissue. Additionally, the combination of transcanal and postauricular approaches allows for easier access to both the external auditory canal and middle ear.

While surgical excision of the granulation tissue has been shown to be effective, our innovative approach offers the added benefit of canalplasty and myringoplasty, which can potentially reduce the risk of recurrence and improve the patient's quality of life. Canalplasty is an essential component of this approach as it helps to widen the narrowed medial meatus, facilitating the removal of the granulation tissue and adequate postoperative care. Moreover, canalplasty helps in the visualization of de-epithelized tympanic membrane, graft placement in tympanoplasty, and reduces the future risk of cholesteatoma.[11] This is also in line with a study that found myringoplasty with canalplasty yielded better results than myringoplasty alone.[12]

CONCLUSION

Refractory chronic diffuse GM with medial meatal stenosis is a challenging condition to manage. A combined transcanal and postauricular endoscopic approach, including excision of the granulation tissue, canalplasty, and myringoplasty, has been shown to be a viable treatment option. This approach offers several advantages over traditional techniques, including better exposure, easier graft placement, and a reduced risk of recurrence. The addition of canalplasty to myringoplasty appears to yield better results than myringoplasty alone, and this may be particularly beneficial in cases of canal stenosis. This approach represents a promising technique for the management of refractory chronic diffuse GM with medial meatal stenosis.

Ethics Committee Approval: This study was approved by National Medical Research Register (approval number NMRR ID-23-02066-VHF; date: July 4, 2023).

Informed Consent: Written informed consent was obtained from the patient who agreed to take part in the study.

Peer-review: Externally peer-reviewed.

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