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Treatment of External Auditory Canal Hemangioma by Surgical Excision and Flap Reconstruction: 2 Case Reports

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Data Collection B
Statistical Analysis C
Data Interpretation D
Manuscript Preparation E
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Conflict of interest: None declared

Case series

Patients: Male, 68-year-old • Female, 62-year-old

Final Diagnosis: External auditory canal hemangioma

Symptoms: Ear fullness

Clinical Procedure: —

Specialty: Surgery

Objective: Rare disease

Background: Hemangiomas are relatively common in the head and neck but rarely involve the external auditory canal (EAC). Surgical approaches for EAC hemangiomas vary, and optimal surgical management remains unclear.

Case Reports: We present 2 cases of hemangioma involving the EAC. Case 1 involved a 68-year-old man who presented with a sensation of fullness in the left ear. Case 2 involved a 62-year-old woman who presented with right-ear fullness, hearing loss, and persistent tinnitus. Preoperative assessment included otologic examination, computed tomography, magnetic resonance imaging, and corresponding auditory evaluations. Imaging across both cases consistently revealed well-defined soft-tissue masses confined to the EAC, accompanied by localized bony irregularities but preserving the middle ear structures. Both patients underwent complete trans-canal excision with concurrent skin flap reconstruction. Histopathological analysis of the excised specimens confirmed the diagnosis of cavernous hemangioma in each case. At 1-year follow-up, both patients achieved full symptom resolution, intact canal anatomy, and no recurrence.

Conclusions: In our 2 cases, trans-canal resection combined with local flap reconstruction served as a practical approach for EAC cavernous hemangiomas, resulting in symptom resolution and preservation of canal integrity at the 1-year follow-up.

Keywords: Hemangioma, Cavernous • Otologic Surgical Procedures • Ear Canal • Surgical Flaps • Case Reports

Full-text PDF: https://www.amjcaserep.com/abstract/index/idArt/953469

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Introduction

Hemangiomas of the external auditory canal (EAC) are exceedingly rare, constituting only a minor fraction of vascular anomalies in the head and neck region [1]. Histologically, the most prevalent subtypes are capillary and cavernous hemangiomas, though lesions with mixed morphological features have also been documented [2]. Notably, bone erosion secondary to EAC hemangiomas has been reported in only a limited number of cases [3,4]. While surgical excision demonstrates definitive therapeutic efficacy for EAC hemangiomas, surgical approaches that positively impact long-term prognosis remain to be elucidated [5-7]. Moreover, most previous studies have emphasized the surgical techniques themselves rather than the postoperative outcomes of the reconstructed flaps [4,5,8]. In this study, we describe 2 clinical cases of hemangioma involving the EAC and share our experience with concurrent surgical skin flap reconstruction. All procedures adhered to institutional ethical guidelines, and written informed consent was obtained from both participants prior to inclusion.

Case Reports

Case 1

A 68-year-old man presented with a 4-month history of left ear fullness, recently worsening, without pain, tinnitus, discharge,

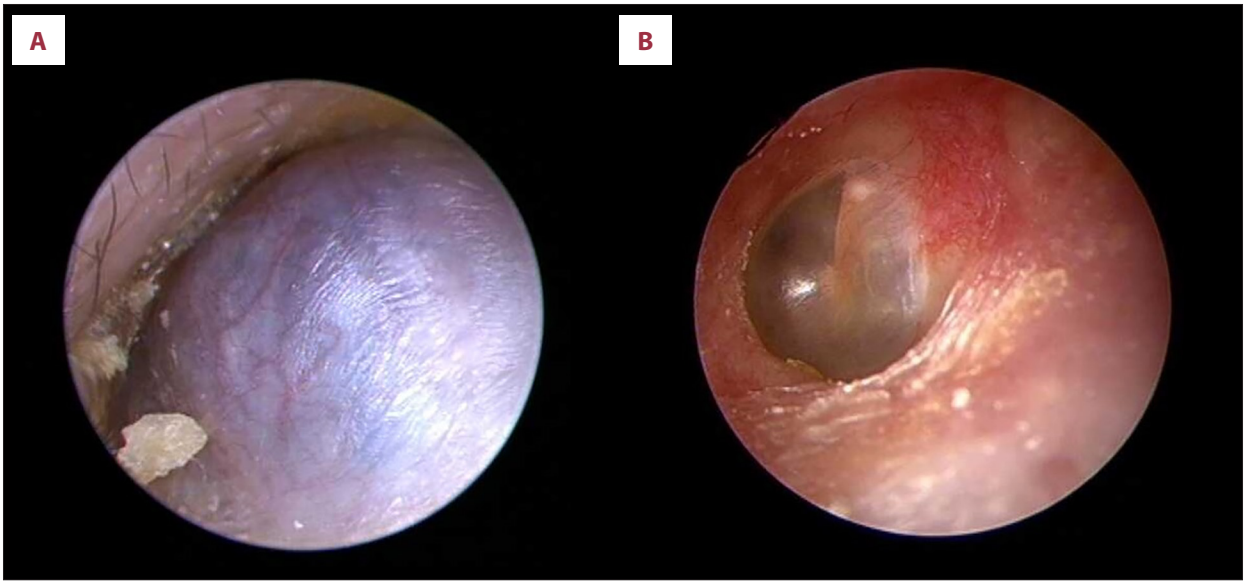

Figure 1. Otoscopy in Case 1. (**A**) Otoscopy showed a reddish-purple mass in the left external auditory canal. (**B**) Otoscopic image 1 year after surgery showed no recurrence and good recovery.

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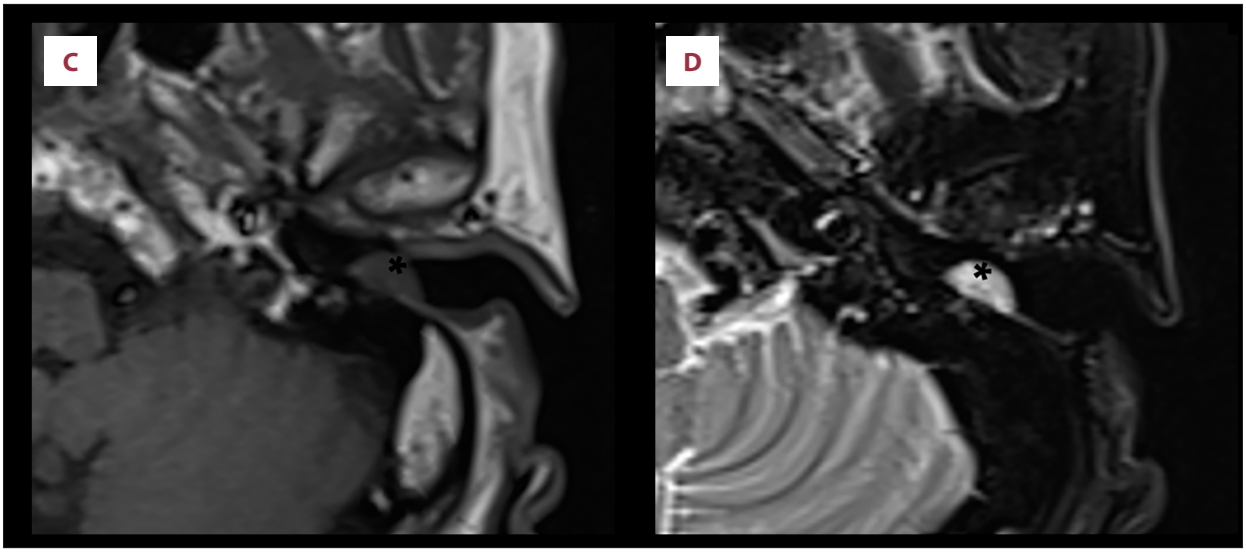

Figure 2. CT and MRI images in Case 1. (**A, B**) Coronal and axial CT scans showed soft-tissue masses in the left EAC, highlighting bony erosion at the adjacent posterior wall without involving the tympanic cavity. (**C, D**) T1-weighted and T2-weighted MRI of the EAC revealed a semicircular lesion along the posterolateral wall of the left EAC. The asterisk indicates the lesion. CT, computed tomography; MRI, magnetic resonance imaging; EAC, external auditory canal.

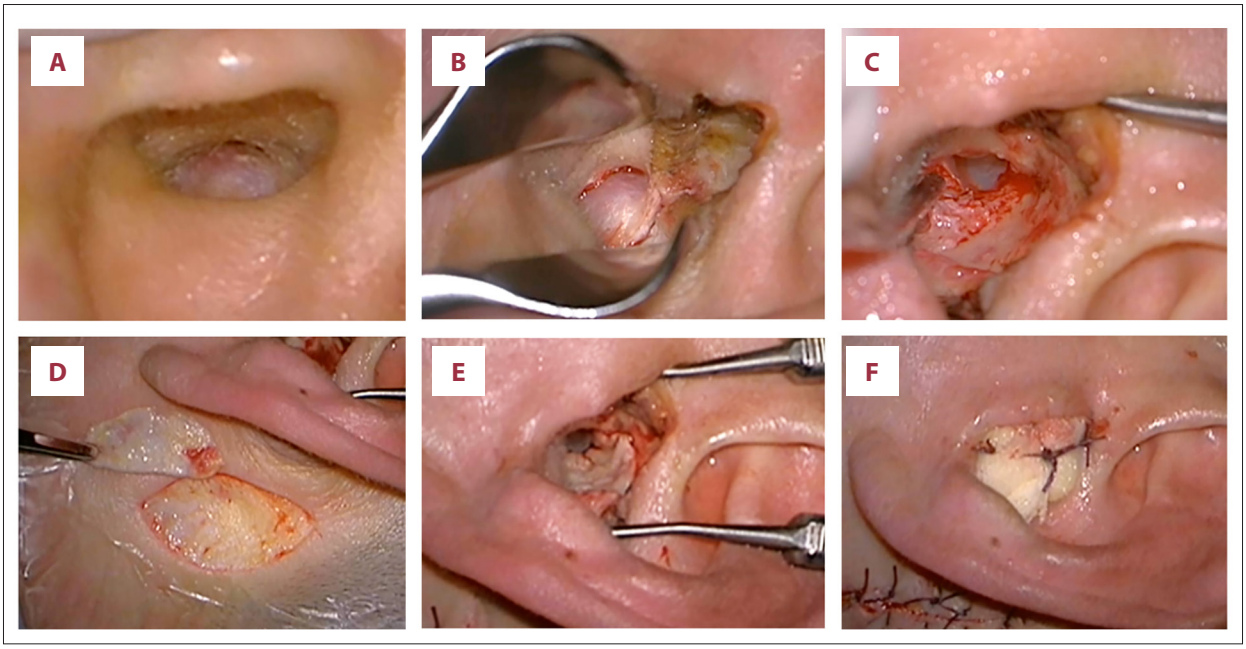

Figure 3. Surgical procedure for hemangioma resection and reconstruction in the left EAC of the patient in Case 1. (**A**) Preoperative view showing a reddish hemangioma in the left EAC. (**B**) Intraoperative exposure and meticulous dissection of the hemangioma. (**C**) Complete excision of the vascular lesion. (**D**) Harvesting of a free skin graft from the postauricular region. (**E**) Coverage of the surgical defect using the postauricular skin graft. (**F**) Final wound management with iodine-impregnated gauze packing in the left EAC. EAC, external auditory canal.

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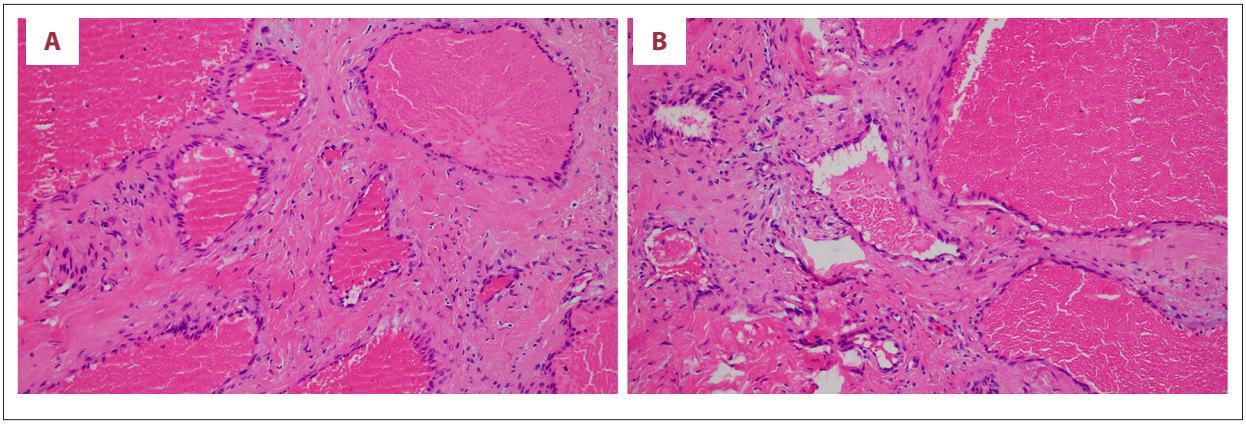

Figure 4. (**A, B**) Histopathologic examination of the specimen in Case 1 showing dilated vascular channels lined by flattened endothelial cells and surrounded by fibrous connective tissue (H&E, ×200). H&E, hematoxylin and eosin.

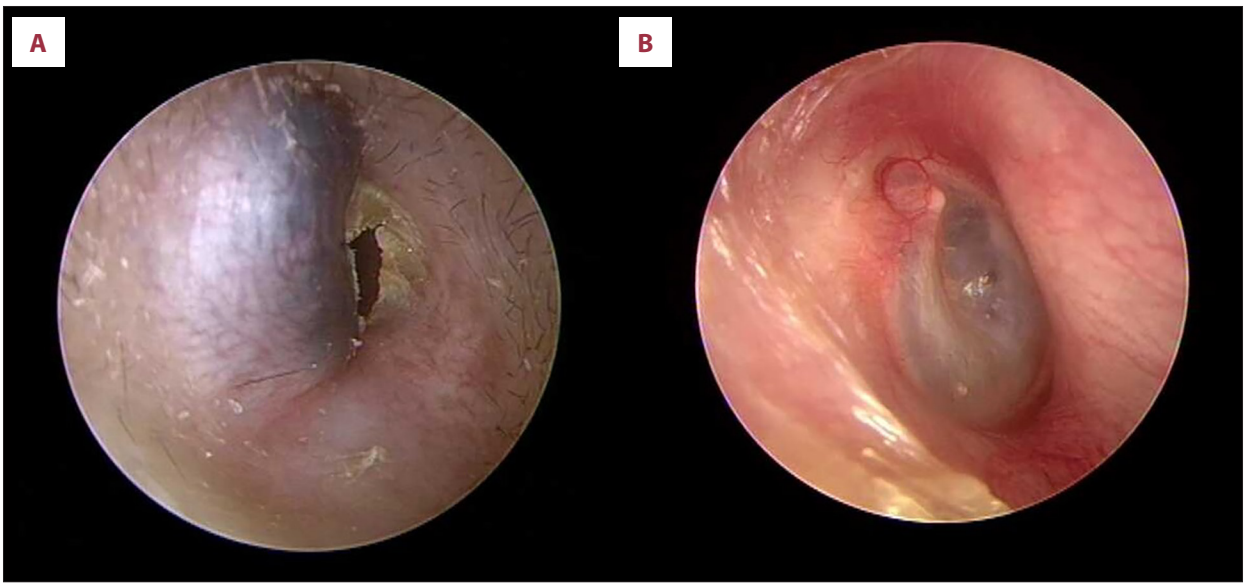

Figure 5. Preoperative and postoperative otoscopic images in Case 2. (**A**) Otoscopy showed a smooth reddish-purple mass nearly obstructing the right ear canal. (**B**) Otoscopic image 1 year after surgery showing good recovery and no evidence of recurrence.

or hearing loss. Otoscopy revealed a soft, reddish-purple mass on the posterior wall of the left EAC, nearly obstructing the canal and obscuring the tympanic membrane (**Figure 1A**). Temporal bone computed tomography (CT) demonstrated a 13 × 5 × 9-mm round soft-tissue lesion arising from the posteroinferior wall of the EAC, with bony erosion at the posterior wall adjacent to the mass, but without involving the tympanic cavity (**Figure 2A, 2B**). No abnormal density, erosion, or destruction was observed in the middle ear. Magnetic resonance imaging (MRI) identified an 11 × 6-mm semicircular lesion along the posterolateral wall of the left EAC (**Figure 2C, 2D**).

The patient subsequently underwent endoscopic trans-canal excision of the left EAC mass under general anesthesia, followed by reconstruction with a postauricular free skin flap. The complete surgical procedure, including key anatomical structures and technical details, is illustrated in **Figure 3**. Postoperative histopathological analysis confirmed the diagnosis of a cavernous hemangioma (**Figure 4**). At 1-year follow-up, there was no recurrence of the lesion (**Figure 1B**) and the patient reported significant improvement in aural fullness.

Case 2

A 62-year-old woman presented with a 2-week history of right-ear fullness, progressive hearing loss, and persistent high-pitched tinnitus, worse in quiet environments. She denied otalgia, otorrhea, and vertigo. Otoscopy showed a smooth, reddish-purple mass on the posterior cartilaginous wall of the right EAC, nearly obstructing the lumen (**Figure 5A**). Pure-tone

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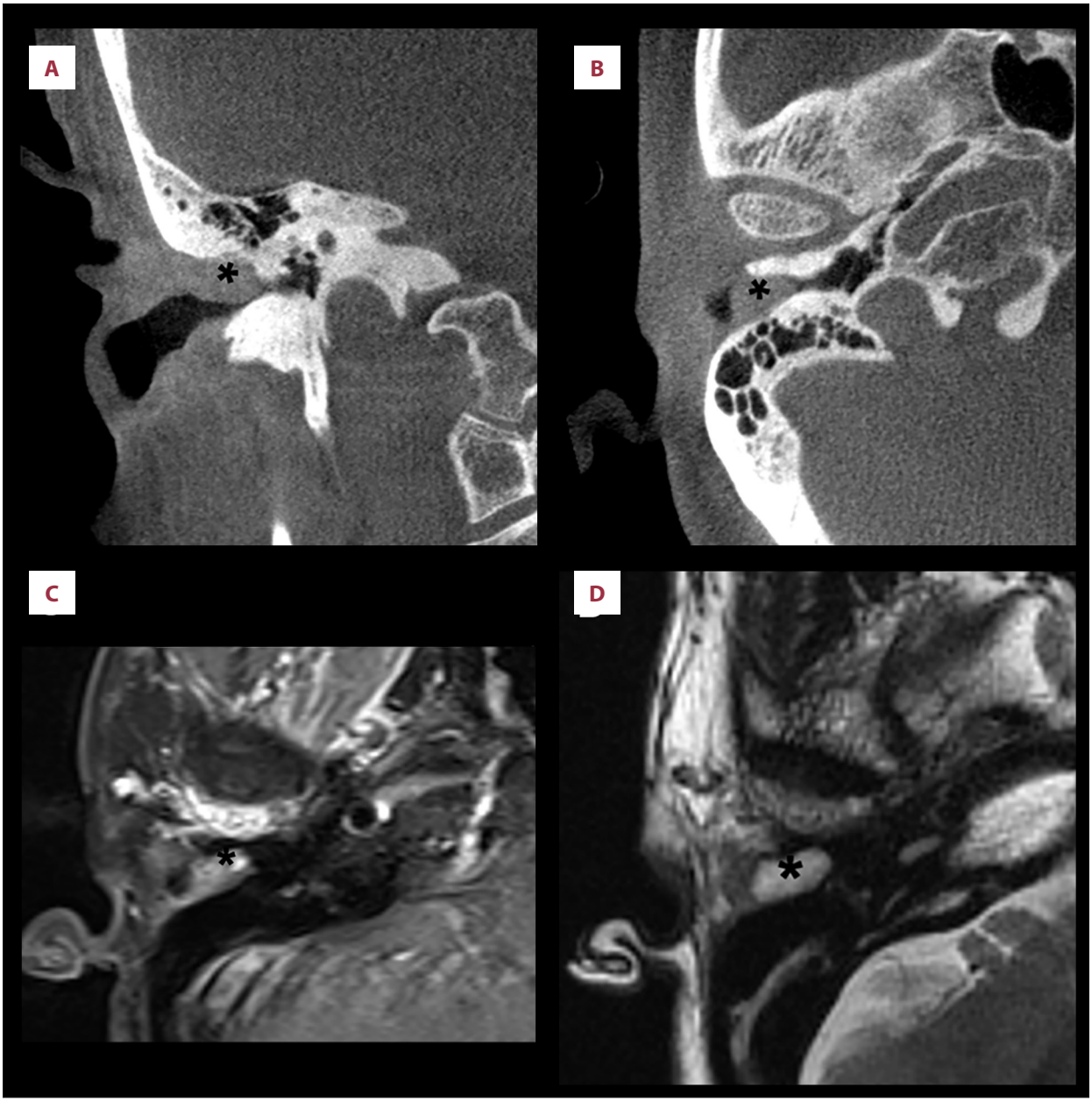

Figure 6. CT and MRI images in Case 2. (**A, B**) CT showing soft-tissue masses in the right EAC with a marked narrowing of the canal and suspected erosion of the bony wall in the superior aspect. (**C, D**) T1-weighted and T2-weighted MRI showed an oval nodule in the bony portion of the right EAC. The asterisk indicates the tumor. CT, computed tomography; MRI, magnetic resonance imaging; EAC, external auditory canal.

audiometry indicated high-frequency conductive hearing loss in the right ear. Temporal bone CT showed a well-defined isodense mass in the right EAC (9 × 6-mm) with canal narrowing and possible superior bony erosion (**Figure 6A, 6B**). Contrast-enhanced MRI revealed an oval nodule in the bony canal (11 × 5 × 7-mm) with marked nodular enhancement that was more prominent on the coronal plane (**Figure 6C, 6D**).

Following preoperative evaluation, the patient underwent endoscopic trans-canal resection with local flap reconstruction under general anesthesia, using the identical surgical procedures as in Case 1. Histopathology showed thin-walled vascular spaces with fibrous septa and CD31-positive endothelium, confirming a cavernous EAC hemangioma (**Figure 7**). One-year follow-up revealed no recurrence and improved hearing (**Figure 5B**).

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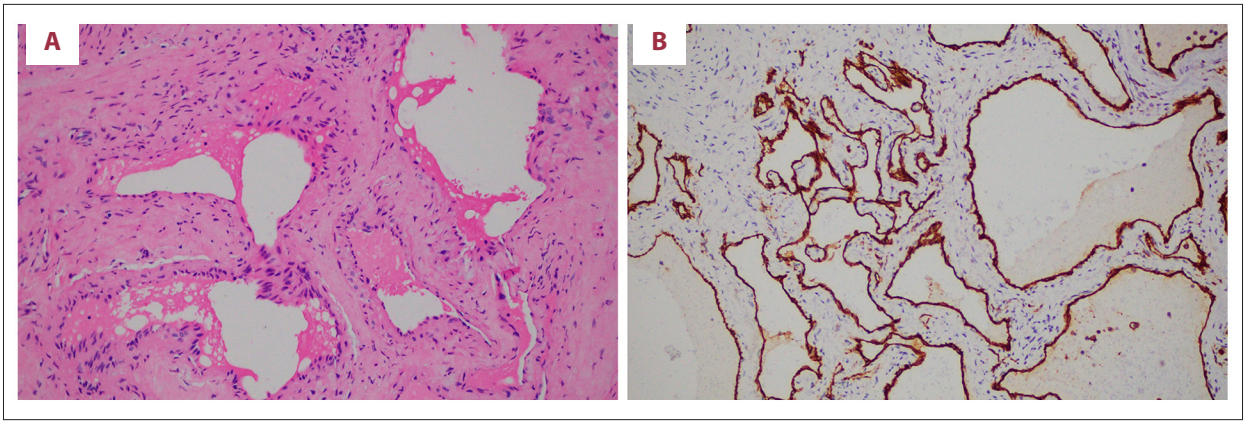

Figure 7. Histopathologic imaging of the specimen in Case 2. (**A**) The vessel walls were irregular and dilated, with vascular spaces separated by fibrous septa and lined by a layer of flattened endothelial cells (H&E, × 200). (**B**) CD31 immunohistochemical staining showed positive staining for endothelial cells. (× 200). H&E, hematoxylin and eosin.

Discussion

These 2 case reports demonstrate that trans-canal excision with local flap reconstruction is a safe and effective treatment for EAC hemangioma, achieving symptom resolution and no recurrence at 1-year follow-up. EAC hemangioma, a rare benign vascular tumor, exhibits variable and nonspecific clinical manifestations. The most common presenting symptoms include hearing loss, followed by aural fullness and tinnitus. Some patients may present with otalgia or otorrhagia, or they may remain entirely asymptomatic [4]. In our 2 cases, the primary presenting symptom was aural fullness, with hearing impairment observed in Case 2, which suggested that aural fullness may be the initial symptom even in the absence of significant hearing loss. The main treatment for EAC hemangiomas is surgical resection, with approaches including oto-endoscopy, trans-canal excision, retro-auricular approach, and postauricular excision [4,9,10]. When the tumor involves the tympanic membrane or middle ear cavity, tympanoplasty and mastoidectomy can be performed as supplementary procedures [11,12]. Most patients experience no recurrence postoperatively, except for 1 case reported by Jackson et al where incomplete resection led to recurrence [13]. Additionally, Pavamani et al reported in 2007 a case of EAC hemangioma invading the middle ear and tympanic membrane, which was treated with radiotherapy, resulting in significant tumor reduction [14].

Few reports focus on the postoperative outcomes of flap reconstruction. Most emphasize the surgical technique itself rather than postoperative results of the reconstructed flap [4,5]. In our 2 cases, both were treated with trans-canal excision combined with local skin flap reconstruction, resulting in complete symptom resolution and no evidence of recurrence at the 1-year follow-up. Our findings suggest that flap reconstruction not only facilitates tissue healing but also achieves short-term outcomes.

For lesions involving bone, complete surgical excision with reconstruction of the bony canal wall is indicated. Reeck et al in 2002 achieved stable therapeutic results at 4 months postoperatively using replaced EAC skin flaps [15], while Ljiljana Vlaški et al successfully treated a cavernous hemangioma with bone destruction using a trans-meatal approach with skin flap reconstruction, also obtaining a good outcome [16]. Our cases contribute to the literature by providing practical technical details on immediate surgical defect repair using local skin flaps, an aspect that remains underrepresented in existing reports. In both cases, patients remained asymptomatic with intact canal anatomy at 1 year postoperatively. This postoperative course is likely supported by the skin flap's ability to provide adequate coverage for soft-tissue defects following tumor resection, thereby helping to prevent canal stenosis. The surgical management of these lesions should be tailored with the goal of complete resection while preserving hearing function and minimizing complications. Postoperative follow-up is essential to monitor for potential recurrence, particularly in cases with bony involvement or incomplete resection.

Conclusions

In our 2 cases of EAC hemangioma, we found that trans-canal resection combined with local flap reconstruction was a practical approach for EAC cavernous hemangiomas, achieving symptom resolution and maintaining canal integrity at 1-year follow-up.

Institution Where Work Was Done

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Informed Consent/Ethics Approval Statement

All patients provided written informed consent for the use of their clinical images and data for research and publication purposes.

Artificial Intelligence Disclosure

During the preparation of this work, the authors used DeepSeek for language polishing and grammar improvement. The scientific content, clinical data, and conclusions are entirely the work of the authors. After using this tool, the authors reviewed and edited the content as needed and take full responsibility for the publication.

Declaration of Figures' Authenticity

All figures submitted have been created by the authors who confirm that the images are original with no duplication and have not been previously published in whole or in part.

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