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# External Auditory Canal Cholesteatoma: A Case Series of Six Patients with an Updated Review of the Literature

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**Abstract** | **Case Series**

***Background:*** External auditory canal cholesteatoma (EACC) is a rare osteolytic disease in which keratinising squamous epithelium accumulates within the bony external auditory canal (EAC). It is far less common than middle-ear cholesteatoma and is frequently underdiagnosed, particularly when there is no history of otologic surgery. Spontaneous and post-traumatic forms are the principal non-iatrogenic types. We report six cases managed at the Department of Otorhinolaryngology–Head and Neck Surgery, Hospital of Specialties, Rabat, and review the current literature to place the diagnostic and therapeutic issues in context. ***Methods:*** We conducted a retrospective descriptive analysis of six patients operated on for spontaneous or post-traumatic EACC between January 2017 and December 2025. Clinical presentation, otoscopic findings, imaging, surgical management and postoperative course were reviewed. ***Results:*** The commonest symptoms were otorrhoea, otalgia, aural fullness and conductive hearing loss. High-resolution CT (HRCT) consistently showed a soft-tissue opacity of the canal associated with smooth, well-defined bony erosion. Treatment consisted of complete removal of the cholesteatoma, canaloplasty or meatoplasty, and prolonged canal calibration when indicated. No major intra-operative complications occurred. One patient had a delayed recurrence during follow-up. ***Conclusion:*** Although rare, EACC is potentially destructive and calls for early recognition, HRCT confirmation, stage-adapted surgery and prolonged follow-up, since recurrence may occur years after apparently complete excision.

**Keywords:** External auditory canal cholesteatoma, Otology, Temporal bone erosion, Otorrhoea, Canaloplasty, High-resolution CT.



## INTRODUCTION

External auditory canal cholesteatoma is an uncommon inflammatory lesion of the temporal bone in which invasive squamous epithelium erodes a localised area of the bony canal. It is considerably rarer than its middle-ear counterpart, and because it is easily mistaken for chronic otitis externa or otomycosis it is often diagnosed late; in a recent meta-analysis of 1007 patients, most cases were identified only at an advanced stage (Walker *et al*., 2026). Two non-iatrogenic forms are recognised: a spontaneous form, thought to arise from localised periostitis with secondary epithelial invasion and bone breakdown, and a post-traumatic form that follows injury to the canal wall, scarring, or bony sequestration (Dongol *et al*., 2021). Secondary EACC may also complicate radiotherapy for nasopharyngeal carcinoma, typically after a latency of several years (Mammarella *et al*., 2023). This paper reports six patients treated at our institution and reviews the contemporary literature on diagnosis, staging and management.

## PATIENTS AND METHODS

Six patients operated on for spontaneous or post-traumatic EACC between January 2017 and December 2025 were reviewed retrospectively. For each patient we recorded the presenting symptoms, otoscopic appearance, pure-tone audiometry, high-resolution temporal-bone CT findings, the surgical procedure performed, and the postoperative course. Patients with a history of previous otologic surgery (iatrogenic EACC) were excluded. The individual data are summarised in Table 1.

## RESULTS

The series comprised four men and two women, aged 17 to 67 years. The dominant complaints were chronic otorrhoea, otalgia, aural fullness and progressive

hearing loss; in one patient (Case 4) the disease followed a head injury three years earlier, and one patient (Case 3), an older diabetic man, presented with a peripheral facial palsy. Otoscopy typically showed canal-wall polyps or debris with variable stenosis, while the tympanic membrane was often normal or only slightly altered. Pure-tone audiometry showed a conductive hearing loss of 35–45 dB in five patients and was normal in one.

HRCT in every patient demonstrated the characteristic picture of a soft-tissue mass within the canal associated with smooth, well-defined erosion of the adjacent bone; the ossicular chain was preserved even when the middle ear was opacified. Surgery was tailored to the extent of disease and ranged from meatoplasty alone to canaloplasty or open-technique tympanoplasty with meatoplasty, with complete removal of the cholesteatoma and of any osteitic bone. No major intra-operative complication occurred. Over a follow-up of six months to seven years, the outcome was satisfactory in five patients; one (Case 5) developed a recurrence two years after surgery and was successfully re-operated, and the facial palsy in Case 3 persisted as a sequela.

**Table 1: Summary of the six patients with external auditory canal cholesteatoma**

| Case | Patient | Presentation & otoscopy | PTA | HRCT | Surgery | Follow-up |
|---|---|---|---|---|---|---|
| 1 | Woman, 18 | Left purulent otorrhoea; blocked-ear sensation. Antero-inferior wall polyps + scales; normal eardrum. | Normal | Tympanal bone lysis, EAC thickening; free tympanic cavity. (Figure2) | Transcanal posterior tympanotomy + canal reaming | 7 yr: satisfactory |
| 2 | Man, 36 | Right purulent otorrhoea, otalgia, ipsilateral hypoacusis. Anterior wall erosion, tympanal bone exposed; slightly altered eardrum. | CHL 35 dB | Tympanal bone lysis; middle-ear filling. | Open-technique tympanoplasty + meatoplasty | 6 yr: satisfactory |
| 3 | Man, 67, diabetic | Right purulent otorrhoea, insomnia-grade otalgia, complicated by peripheral facial palsy. Pinna-traction/tragal-pressure pain; obstructive polyp filling EAC. | CHL 45 dB | Middle-ear opacification, ossicular chain spared; EAC soft-tissue filling with wall lysis. | Open-technique tympanotomy + canaloplasty | 5 yr: satisfactory; residual facial palsy |
| 4 | Woman, 17 | Progressive right hearing loss, 3 yr after head trauma. Stenotic EAC; eardrum not visualised. | CHL 35 dB | Complete right EAC filling; free tympanic cavity. | Right meatoplasty | 3 yr: satisfactory |
| 5 | Man, 46 | Right purulent otorrhoea 5 yr + hypoacusis. EAC stenosis discharging whitish material; eardrum not visible. | CHL 40 dB | Middle-ear opacification, ossicular chain spared; EAC soft-tissue filling with wall lysis. | Right canaloplasty + meatoplasty | 3 yr: recurrence at 2 yr, re-operated |
| 6 | Man, 53 | Progressive left hearing loss. Partially stenotic, inflamed EAC; normal eardrum. | CHL 40 dB | Posterior extension of the cholesteatoma involving the whole mastoid; mastoid cortex preserved; free middle-ear cavity. (Figure 3) | Left canaloplasty + meatoplasty | 6 mo: satisfactory |

*PTA, pure-tone audiometry; CHL, conductive hearing loss; HRCT, high-resolution computed tomography; EAC, external auditory canal*

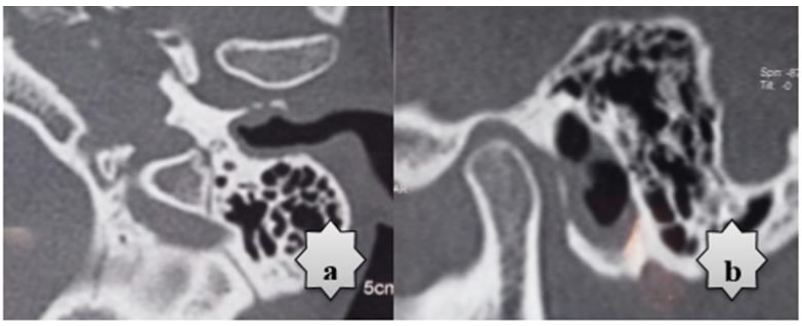


**Figure 1: Axial (a) and coronal (b) temporal-bone CT of the left ear, showing irregular thickening of the external auditory canal walls with an eroded tympanic bone (stage I)**

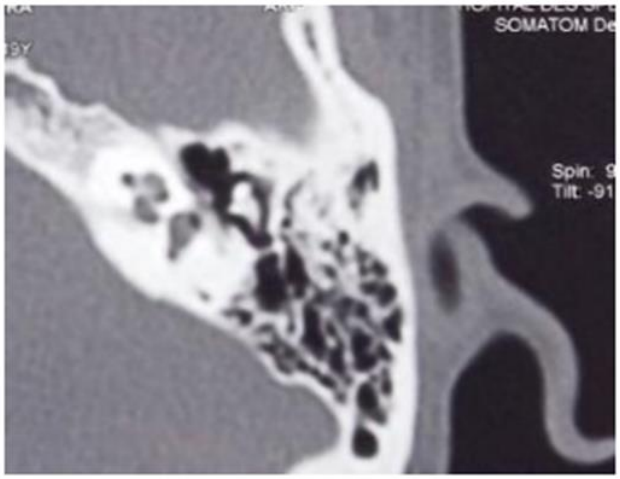


**Figure 2: Axial temporal-bone CT of the left ear showing a free tympanic cavity**

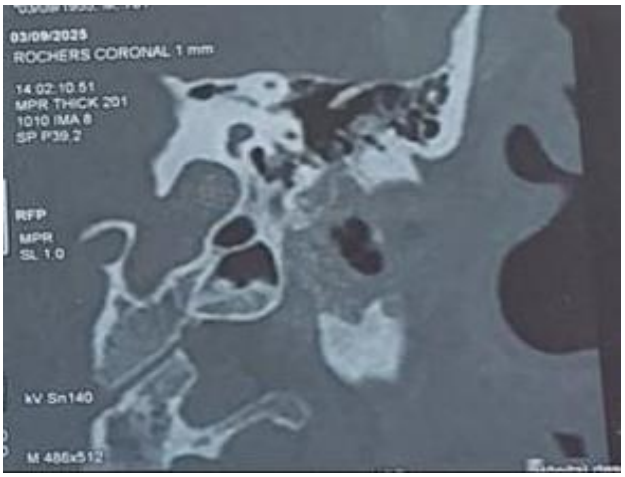


**Figure 3: Coronal temporal-bone CT of the left ear, showing posterior extension of the cholesteatoma involving the whole mastoid, with lysis of the mastoid cortex. (stage III)**

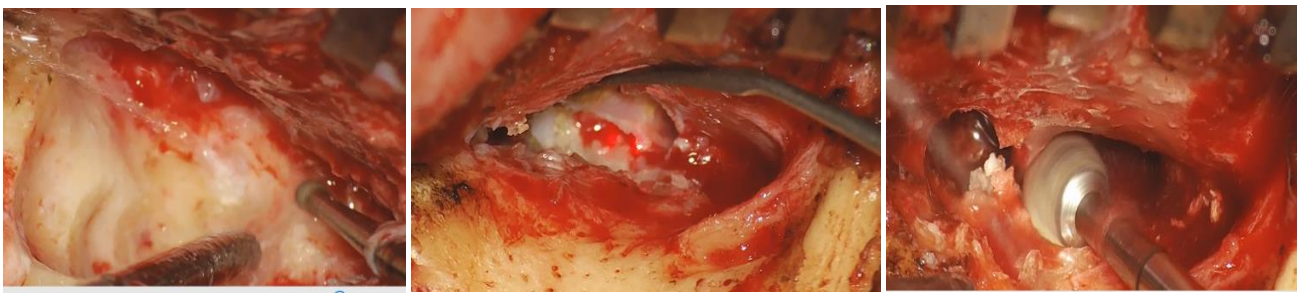

**Figure 4: Intra-operative images showing the extent of the cholesteatoma (bone lysis) and its step-by-step eradication**

## DISCUSSION

EACC remains a challenging and under-recognised entity, both because it is rare and because it shares clinical features with other conditions of the external ear, notably keratosis obturans and chronic otitis externa; distinguishing these entities at the outpatient stage is a recurring source of diagnostic delay (Motta *et al*., 2025). Spontaneous disease is generally attributed to localised periostitis that provokes epithelial migration and progressive bone destruction, whereas post-traumatic disease follows canal-wall injury, scarring, or sequestrum formation (Dongol *et al*., 2021). The interval between the initial trauma or infection and the appearance of EACC may be as long as a decade, a latency that matches Case 4 in our series, where symptoms began three years after a head injury and evolved thereafter.

The most constant symptoms are otorrhoea and otalgia, whereas non-specific complaints such as fullness or pruritus can mask early disease, and unusual presentations continue to be reported as diagnostic pitfalls (Ramli *et al*., 2025). Conductive hearing loss is usually a late feature, appearing once the expanding keratin mass obstructs the canal or reaches the middle

ear. This sequence was reproduced in our patients, five of whom had a 35–45 dB conductive loss at presentation while the tympanic membrane often remained intact.

High-resolution temporal-bone CT is the imaging investigation of choice. It defines the exact site of disease, the depth of bony involvement, and any extension toward the mastoid, temporomandibular joint or middle ear (Dongol *et al*., 2021). The typical appearance an ovoid soft-tissue mass with smooth, focal bony erosion, often containing bony fragments helps to separate EACC from keratosis obturans, which instead produces diffuse widening of the canal without focal osteolysis (Motta *et al*., 2025). In spontaneous disease the inferior and posterior canal walls are most often affected, whereas in post-traumatic disease the lesion corresponds to the site of previous injury; both patterns were seen in our patients.

Surgery is the mainstay of treatment for symptomatic or advanced disease and should be matched to the extent of the lesion. Several staging schemes have been proposed, and comparative work continues to refine which one best guide surgical strategy (He *et al*., 2024); the CT-based system of Shin *et al.,* (2010) remains convenient in routine practice (Table 2). Small, localised lesions may be controlled conservatively by serial debridement and cleaning an approach that, in recent series, suffices for a substantial share of patients (Herranz *et al*., 2025) but most symptomatic or advanced cases, such as those in our series, require complete excision of the cholesteatoma, removal of osteitic bone, and canaloplasty or meatoplasty to restore a wide, self-cleaning canal (Quiz *et al*., 2025). Prolonged calibration is particularly important to prevent restenosis, which is itself a risk factor for recurrence.

Recurrence is well documented and may appear months to years after initial treatment; chronic inflammation, canal stenosis and incomplete removal are the main contributors. Reported recurrence rates after surgery are nonetheless low around 4.5% in a meta-analysis of more than a thousand patients (Walker *et al*., 2026) but relapses have been observed up to several years post-operatively (Quiz *et al*., 2025). One of our patients relapsed two years after surgery, which underlines the need for prolonged clinical and otoscopic surveillance even in patients who become asymptomatic. Overall, the prognosis is favourable when the disease is recognised early and treated with adequate canal reconstruction, with most surgical series reporting no recurrence at follow-up (Herranz *et al*., 2025); late recognition, by contrast, may lead to mastoid involvement, temporomandibular-joint erosion or facial-nerve exposure (Dosemane *et al*., 2023). The facial palsy in our older diabetic patient (Case 3) illustrates how advanced disease can behave, and reinforces the value of early imaging in any patient with chronic otorrhoea or persistent canal debris that does not respond to standard treatment.

**Table 2: CT-based staging of external auditory canal cholesteatoma (after Shin *et al*., 2010)**

| Stage | Description |
|---|---|
| **Stage I** | Cholesteatoma limited to the external auditory canal. |
| **Stage II** | Cholesteatoma invading the tympanic membrane and middle ear, in addition to the ear canal. |
| **Stage III** | Cholesteatoma creating a defect of the ear-canal wall and involving the cortex of the mastoid bone. |
| **Stage IV** | Cholesteatoma extending into areas beyond the temporal bone. |

## Conclusion

External auditory canal cholesteatoma, though rare, is a potentially destructive disease that requires early recognition and individualised surgical management. High-resolution CT for diagnostic confirmation, complete removal of the cholesteatoma, and prolonged follow-up are the keys to a favourable outcome. Our six-patient series supports a staging-based surgical approach and highlights the need for extended surveillance, given the possibility of late recurrence.

**Conflicts of Interest**

The authors declare that they have no conflicts of interest.

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