

# Tophaceous Gout within the External Auditory Canal

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## Background

- Gout is a common inflammatory arthropathy characterised by the deposition of monosodium urate crystals (MSU) (8)
- Presentations are typically grouped into acute gout flares, chronic arthropathy and tophaceous gout.
- First presentations of tophaceous gout are uncommon (1).
- Tophaceous gout as an initial presentation is more likely in patients who are:
  - female
  - have chronic kidney disease
  - taking anti-hypertensive medication (1)
  - more likely to have involvement of the finger joints.
- Several case reports describing tophaceous gout of the ear, typically limited to the middle ear or the pinna (2-7).
- This case report outlines the first-documented presentation of tophaceous gout of the external auditory canal.

## Case Presentation

- A 65-year-old Asian female presented to the Otolaryngology/Head and Neck surgery outpatient clinic with a prior diagnosis of a right ear canal tumour.
- History:
  - Two-month history of right sided ear blockage, hearing loss and tinnitus, with pain.
- Past medical history:
  - Hypertension and previous meningioma.
  - No allergies, non smoker
- Examination:
  - Large cystic mass completely obstructing the right external auditory canal (EAC).
  - Partially compressible.
  - The medial part of her ear canal appeared undisrupted, with no notable middle ear changes.
- Investigations:
  - Bloods: uric acid level – normal range
  - Computed tomography imaging: well-circumscribed soft tissue mass located at the external cartilaginous ear canal superiorly with no notable bony erosions.
  - Magnetic resonance imaging: heterogenous, mildly peripherally enhancing, relatively well-circumscribed 1.3cm lesion within the confines of the right EAC. The lesion was isointense on T1 and hypointense on T2.
  - Audiogram: mild-to-moderate mixed hearing loss in the right ear. There was a mild high frequency sensorineural hearing loss in the left. All other frequencies within expected limits.
  - Endoscopic assisted trans-canal excision of her EAC: large skin lined cystic mass was found to completely occlude the lateral half of the EAC with superior extension into the base of the helix.
    - Endaural release incision and complete removal of the mass. Epidermoid content found within the mass after exposure.
- Microscopically, there was keratinised squamous epithelium with abundant orthokeratin. The squamous epithelium contained scattered ceruminous glands with mild cystic dilatation. Within the orthokeratin, crystalline structures that were brightly polarisable, elongated and needle-shaped. They were arranged like sheaves of wheat, consistent with uric acid crystals seen in tophaceous gout.
- There was no evidence of malignancy.

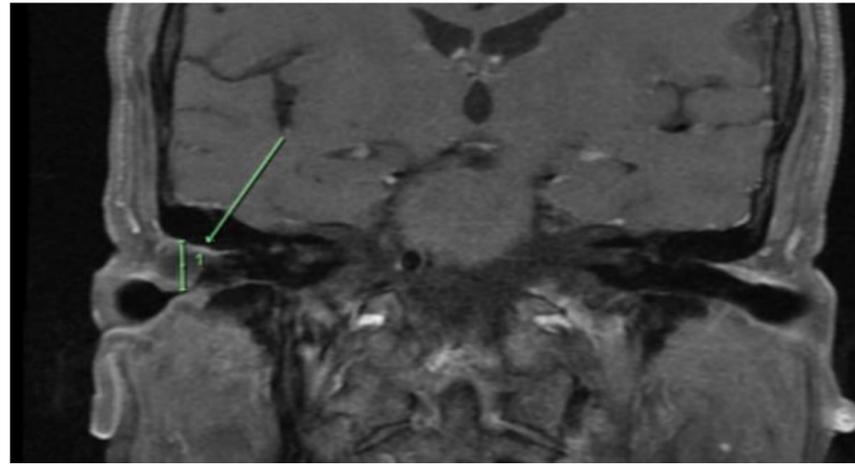


Figure 1: Magnetic resonance imaging demonstrating a 1.3cm lesion in relation to the peripheral portion of the right external auditory canal

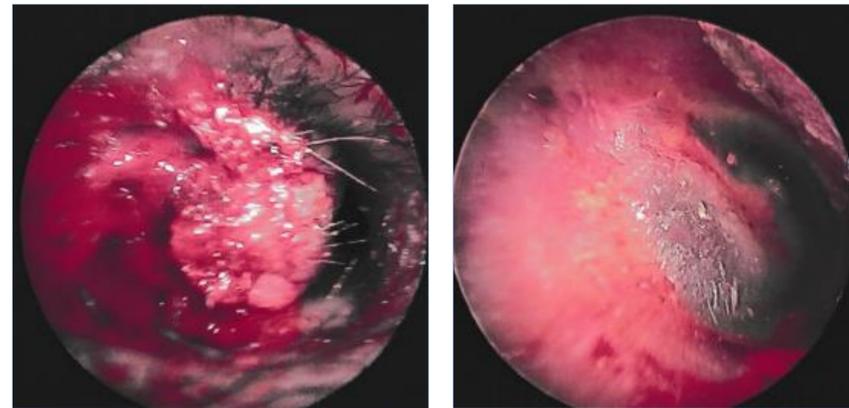


Figure 2: Endoscopic images of the lesion within the external auditory canal

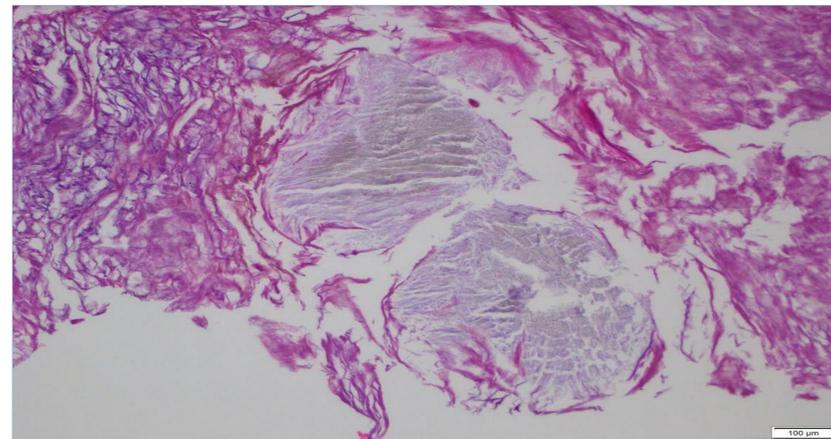


Figure 3: Haematoxylin and Eosin stain exhibiting the characteristic tinctorial features expected in uric acid crystals

## Discussion

- Gout is a common inflammatory monoarthropathy, typically affecting the first metatarsal joints, ankles, knees, wrists, and hands.
- Usually presents acutely as a gout flare, or chronically as inter-critical gout or tophaceous gout (8).
- Tophaceous gout is characterised by collections of sodium urate and a chronic inflammatory process, leading to destructive changes in surrounding tissue
- Within the ear, episodes of tophaceous gout affecting the middle ear (2, 4-7) as well as the auricle (3) have been recorded.
  - Saliba et al. (6) have identified multiple patients with varying presentations of tophaceous gout in a recent review of the literature (7).
  - The absence of uricaemia or the other manifestations of gout was notable (7).
- The rare clinical presentation described in this case report of gout within the EAC without associated uricaemia or other clinical manifestations of gout is of unclear significance.
- This case demonstrates an important ddx for isolated middle ear pathology that was only able to be diagnosed with histopathological analysis of tissue samples.
- Given the absence of uricaemia or other clinical manifestations of gout in this case and in those discussed by Saliba et al. (7), therapeutic uric acid lowering therapy is presumably of limited utility.

## Conclusions

- This is the first case of first presentation tophaceous gout within the EAC
- This case demonstrates a differential diagnosis for isolated middle ear pathology that was only able to be diagnosed with histopathological analysis of tissue samples.
- Further research targeting the management of patients with first presentation tophaceous gout would be of benefit

## References

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