Pseudogout Presenting as an Infratemporal Fossa Mass
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Abstract
Objectives Infratemporal fossa masses encompass a wide range of benign and malignant pathologies. Precise diagnosis is crucial in formulating a management strategy, and we describe an endoscopic, transmaxillary approach in diagnosing pseudogout manifesting as an infratemporal fossa mass.

Study Design Retrospective case report.

Methods The clinical presentation, radiographic images, operative technique, and histopathologic analysis are presented of a patient referred to a tertiary medical center with an infratemporal fossa mass.

Results A 65-year-old male was referred to the head and neck surgery clinic with one year of intermittent left otalgia and aural fullness. Pure tone audiometry revealed a left-sided moderate to severe mixed hearing loss. Physical examination was remarkable for a left-sided serous otitis media and intact function of bilateral mandibular and facial nerves. Computed tomography (CT) confirmed a 5-cm calcified mass in the infratemporal fossa, as well as calcifications in the left temporomandibular joint with remodeling of the left mandibular condyle (Figure 1). A transcortaneous biopsy was nondiagnostic, and the patient was consented for an endoscopic biopsy of the mass. The mass was approached endoscopically with image guidance via a wide maxillary antrostomy, pterygopalatine fossa dissection, and finally into the infratemporal fossa. After dissecting through the pterygoid muscles, a firm, calcified mass was identified. An intraoperative biopsy returned as a chondroid neoplasm, and the mass was then debulked. The only sequela has been numbness of left hard palate, which has slowly been resolving starting at 2 months after surgery.

Case Presentation
A 65-year-old male was referred to the head and neck surgery clinic with one year of intermittent left otalgia and aural fullness. Pure-tone audiometry revealed a left-sided moderate to severe mixed hearing loss. Physical examination was remarkable for a left-sided serous otitis media and intact function of bilateral mandibular and facial nerves. Computed tomography (CT) confirmed a 5-cm calcified mass in the infratemporal fossa, as well as calcifications in the left temporomandibular joint with remodeling of the left mandibular condyle (Figure 1). A transcortaneous biopsy was nondiagnostic, and the patient was consented for an endoscopic biopsy of the mass. The mass was approached endoscopically with image guidance via a wide maxillary antrostomy, pterygopalatine fossa dissection, and finally into the infratemporal fossa. After dissecting through the pterygoid muscles, a firm, calcified mass was identified. An intraoperative biopsy returned as a chondroid neoplasm, and the mass was then debulked. The only sequela has been numbness of left hard palate, which has slowly been resolving starting at 2 months after surgery.

Histopathology
Permanent section pathologic examination of the mass (Figures 2, 3) revealed chondrocytes with mild to moderate nuclear atypia and abundant aggregates of calcium pyrophosphate crystals, consistent with pseudogout.

Discussion
Infratemporal fossa masses encompass a wide variety of pathologies. Numerous approaches to the infratemporal fossa have been described, ranging from transtemporal approaches as described by Fisch, preauricular transmaxillary approaches, and more recently, endoscopic approaches.1,2 Each approach is characterized by a unique profile of benefits, morbidities, and limitations. Histopathologic diagnosis is of paramount importance in the consideration of surgical management, and we present the successful use of an endoscopic approach to the infratemporal fossa in the diagnosis of an unusual mass.

Pseudogout, a calcium pyrophosphate deposition (CPPD) disease, is characterized by episodes of pain, swelling, and redness in affected joints, of which the knee is the most common. Crystals isolated from synovial fluid display either weak or no positive birefringence.4 Abundant deposits of calcium pyrophosphate crystals may result in a so-called pseudotumor, also referred to as tophaceous pseudogout. The temporomandibular joint is uncommonly affected by such pseudotumors, although case reports do exist in the literature.3,6

As illustrated by this case, tophaceous pseudogout presenting as an infratemporal fossa mass represents a unique histopathologic entity. Correct diagnosis is critical, particularly in distinguishing this manifestation from chondrosarcoma. An endoscopic, transmaxillary approach to the infratemporal fossa is well-tolerated and can be considered as an alternative to open approaches for tissue diagnosis of infratemporal fossa masses.

References

Even more uncommonly, an infratemporal fossa mass may arise from tophaceous pseudogout, and, to our knowledge, only one other such case has been reported in the literature.7 In tophaceous pseudogout, chondroid metaplasia is often seen in and around the deposits of CPPD, and it is therefore of paramount importance to identify the etiologic crystals to distinguish pseudogout from the graver diagnosis of chondrosarcoma.8

Considering the benign nature of this process, further treatment in the current presentation is twofold. First, risk factors for the development of present and future CPPD disease, including osteoarthritis, prior chemical or physical insult, hyperparathyroidism, hypomagnesemia, and hemochromatosis, must be identified, and any reversible factors addressed. A second, symptomatic control of ongoing disease must be achieved; nonsurgical options, including pharmacologic therapy (NSAIDs, colchicines, corticosteroids), can be considered. In this case, as the patient was relatively asymptomatic, the decision was made by the patient’s rheumatologist to observe the lesion with serial imaging studies without medical treatment. Finally, physical exam and audiometry demonstrated resolution of the effusion and hearing loss.

Figure 1. Sagittal and axial computed tomography imaging reveal a calcified mass in the left infratemporal fossa.

Figure 2. Low power section shows collections of blue staining CPPD crystals and the surrounding chondroid metaplasia (H&E 100X).

Figure 3. High power, partially polarized section shows the plate-like polygonal CPPD crystals, which refract weakly upon polarization (H&E 1000X).