Giant cell tumors of the temporal bone and infratemporal fossa: a case report and review of the literature

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**ABSTRACT**

**Objectives:** To report a giant cell tumor (GCT) of temporal bone and infratemporal fossa and to review the literature pertinent to the care of such patients.

**Study Design:** Case report and review of the literature.

**Methods:** A review of the literature was conducted using Pubmed and the key words temporal bone, GCT, infratemporal fossa, and recurrent GCT. Medical records from an index case were analyzed and presented in the context of the available literature.

**Results:** Six case reports over 23 years illustrate that these benign locally destructive lesions may originate in the temporal bone with extension into the infratemporal fossa. More commonly, GCTs involve the distal ends of long bones. We present a 30-year-old male who developed a temporal bone GCT with infratemporal fossa extension 12 years after undergoing successful surgical treatment of a GCT of the femur. Our index case differs from prior reported cases by surgical approach and by the occurrence of an infratemporal fossa GCT as well as a previous GCT at a separate anatomical location. Complete removal was achieved but required resection of the zygomatic arch and dissection of all upper facial nerve branches. This was tolerated well with acceptable functional and cosmetic results. The patient is disease free after 24 months without facial nerve deficits.

**Conclusion:** Due to the risk for recurrence, complete resection of GCTs of the temporal bone and infratemporal fossa is advocated. Surgical techniques that allow for visualization of the facial nerve and increase surgical access can enhance overall clinical success with limited post-operative morbidity.

**RESULTS**

- An 18-year-old healthy male underwent curettage and cement packing for pathologically proven GCT of the right distal femur. 4 months later, recurrent disease was noted and definitive resection was performed with reconstruction.

- 12 years later a palpable and observable fullness in the superior parotid bed and posterior aspect of the zygomatic arch was noted. Cranial nerves were intact with no adenopathy.

- Imaging showed an enhancing lesion of the left upper parotid and infratemporal fossa (Fig. 1). Fine needle aspiration was consistent with a GCT.

**DISCUSSION**

- GCTs may be composed of three cell types to include stromal cells, mononuclear histiocytic cells, and multinuclear giant cells.3 Pathology showed giant cell tumor with histological features distinct from the prior femur GCT (Fig. 2-3). Margins showed no evidence of residual giant cell tumor.

**CONCLUSIONS**

- Superior surgical access and wide local excision are required to ensure optimal outcomes in GCTs of the head and neck.

**METHODS**

- The current literature was reviewed using Pubmed and the key words temporal bone, GCT, infratemporal fossa, and recurrent GCT. An index case was analyzed and presented in the context of the available literature highlighting surgical, pathological, and use of imaging modalities.

**INTRODUCTION**

- GCTs are neoplasms that most often occur at the ends of long bones but may involve the skull.

- GCTs originate from non-osteogenic stromal cells of bone marrow, account for 5% of bone tumors, and may be locally aggressive.

- Large case series suggest that temporal bone involvement is rare (1/546 cases)3 and zygomatic arch involvement with infratemporal fossa extension is documented in a single case report.

- First line treatment for GCTs is surgical resection.

- Recurrence reflects the inadequacy of treatment and successful surgical management is associated with the extent of resection.2,3

- When metastasis occur, the lung is most commonly impacted.1,4

- We present a case of a temporal bone GCT and zygomatic arch involvement with infratemporal fossa extension. This patient had a history of a previous GCT in the femur with histologically distinct features raising the possibility of a second primary GCT versus metastatic disease to the temporal bone.

- We review the literature and illustrate how complicated lesions of the head and neck often require superior surgical access to ensure clinical success with limited post-operative morbidity.

**REFERENCES**