Objective: To pictorially demonstrate the mechanisms of facial nerve injury in primary and metastatic malignancies of the human temporal bone as a teaching reference for clinicians and surgeons managing tumors of the lateral skull base with facial nerve paralysis.

Methods: 17 specimens from a human temporal bone repository were studied for clinical and otopathologic evidence of facial nerve paralysis secondary to tumor involvement by compression, direct invasion and perineural spread. Specimens were examined by light microscopy and available clinical records were reviewed. Cases were subdivided into primary tumors of the temporal bone, regional and distant metastatic disease. Drawings depict the intra-temporal segments of the facial nerve and how each segment was affected by the pathology, and list the pathology, House-Brackmann Grade at the time of death and duration of survival from the onset of paralysis to death. Representative photomicrographs of H and E sections of the nerve are included.

Primary Tumors of the Temporal Bone

Regional Metastatic Disease

Distant Metastatic Disease

Conclusions

1. The facial nerve may be affected by direct invasion, compression or perineural spread of primary and metastatic tumors in the temporal bone.
2. Wallerian Degeneration is observed in all 3 mechanisms of injury and was seen histologically within 10 days of onset of paresis.
3. Compression and direct invasion of the nerve were the most common mechanisms of facial paresis in primary tumors of the temporal bone.
4. Primary tumors of the temporal bone were less frequently associated with perineural spread than regional and distant metastases in this cohort.