End Stage Odontogenic Sinusitis, A Case Report

Melachuri, M. MD[1], Crosby, D. MD[1], Bolk, K. MD[1]
1. Southern Illinois University School of Medicine, Department of Otolaryngology- Head and Neck Surgery

Introduction

Osteomyelitis of the skull base from an odontogenic source is rare. It most commonly originates from otogenic infections with the temporal bone, clivus, occipital bone, and mandible most frequently involved. But atypical osteomyelitis of the skull base can be caused by bacterial or fungal spread from the sphenoid, ethmoid or frontal sinus and very rarely the maxillary sinus. Spread to the skull base from the maxilla would require an infection to move backwards through the infratemporal and pterygopalatine fossa moving through multiple tissue and bone layers. Similarly, odontogenic infections can lead to osteomyelitis of the mandible with very rare involvement of the maxilla.

Case Presentation

80-year-old Caucasian female presenting to Springfield, Illinois with facial swelling, diplopia and purulent drainage from oral cavity after biopsy of a necrotic appearing area in her maxilla two days prior by her dentist. She had dental implants on the upper left maxilla for 20 years and root canals in the same area 7 months prior. Past medical history included Hypertension, Hyperlipidemia, Osteoporosis, Adenocarcinoma of the Left breast treated with surgery and chemotherapy in 2010, and previous Tobacco use. Notable medications included Ezetimibe and Alendronate. On exam she had a 3cm oroantral fistula in the left maxillary gingival sulcus with purulent drainage, swelling over the left jaw, diplopia at rest and decreased visual acuity but intact extraocular motion.

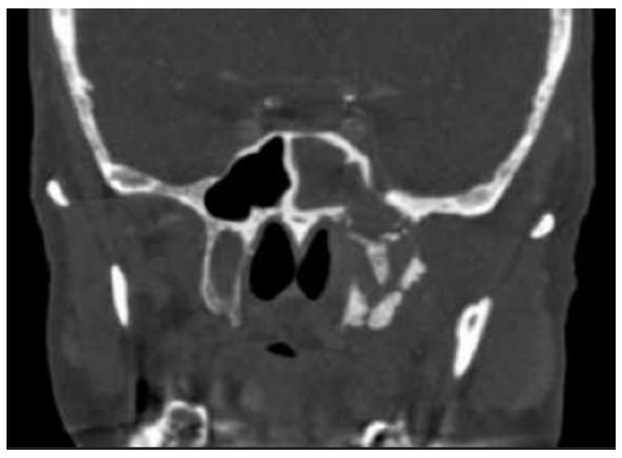
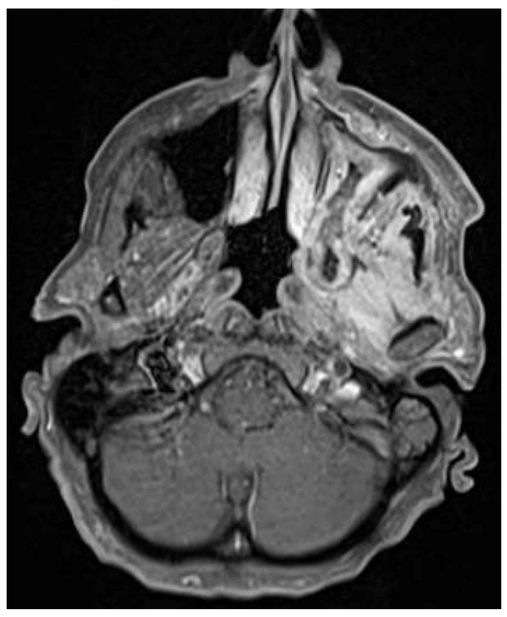


Figure 1: CT Sinus coronal plane preoperatively demonstrating opacification of left sphenoid with osteitis and erosion of the left skull base of the middle fossa and pterygoids.

Figure 2: MRI Brain and face with contrast in the axial plane preoperatively demonstrating extensive left maxillary sinus inflammation extending into the pterygopalatine and infratemporal fossa with enhancement.



Imaging

CT Maxillofacial demonstrated osteomyelitis of the skull base with involvement of the left paranasal sinuses, pterygopalatine fossa, infratemporal fossa, temporal fossa, masticator space, extending into the left orbit, orbital apex, cavernous sinus, and enhancement of the dura along the middle cranial fossa. MRI Orbit/Face/Neck delineated edema and enhancement over the left maxillary sinus, left sphenoid air cells, pterygoid plates, and middle cranial fossa with extension into the masticator space, pterygomaxillary fissure, superior portion of the left parapharyngeal space, inferior portion of the left orbit, and left Temporomandibular joint. There was also a left Mastoid and middle ear effusion.

Intervention

She was started on IV Antibiotics and urgently underwent Endoscopic Sinus Surgery with local debridement. Intraoperatively bone surrounding the oroantral fistula as well as the posterior, lateral, and medial wall of the maxillary sinus was devitalized and inflamed. No fat planes were found within the infratemporal fossa. Palatine bone and pterygoid plates were debrided as well as abnormal bone along the inferior orbital wall.

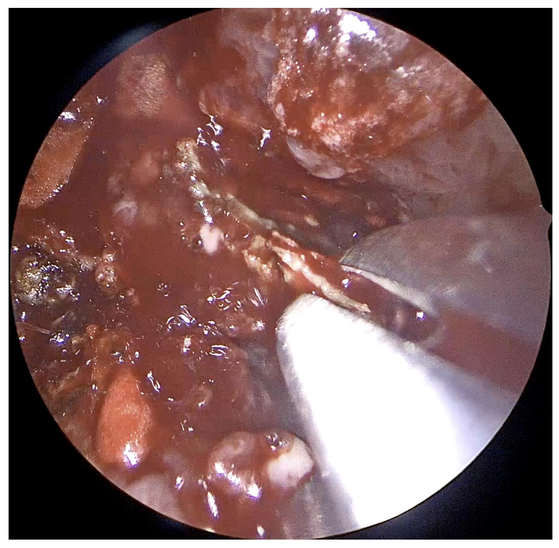


Figure 3: Endoscopic visualization on the left following medial maxillectomy and posterior maxillary wall removal with removal of devitalized pterygoid bone.

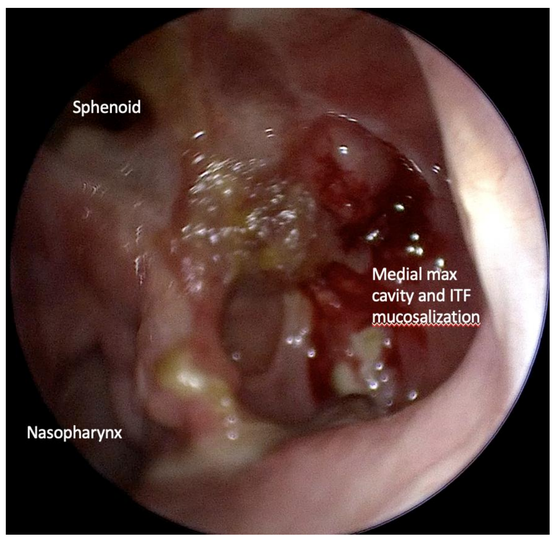


Figure 4: 3 month post operative endoscopy demonstrating the healing left medial maxillectomy cavity with re-mucosalization over the exposed pterygopalatine and infratemporal fossa.

Outcome

Tissue cultures demonstrated beta Streptococcus group F, diphtheroids and Prevotella species. All bacterial and fungal blood cultures were negative. Pathology of the left palatine, maxillary and sphenoid bone showed partially necrotic and devitalized bone with osteomyelitis. Microscopically, the contents of the left pterygopalatine fossa were found to have signs of chronic sinusitis with eosinophils. She was treated with 6 weeks of Intravenous Vancomycin, Ceftriaxone, and oral Metronidazole.

The patient continued to have diplopia on vertical gaze on hospital discharge. At the 2 week post operative visit, her diplopia had improved and the patient no longer had drainage from the oroantral fistula. She denied rhinorrhea or epistaxis. On second post operative visit 6 weeks after surgery, she had completed her course of Intravenous antibiotics and had no persistent facial, nasal, or dental symptoms. The patient continued to do well 3 months and 6 months post operatively. She was referred to Facial Plastics and Reconstructive surgery for management of the oroantral fistula.

Conclusions

Although rare, severe chronic odontogenic infections can lead to skull base osteomyelitis. Risk factors including malnutrition with recent twenty-pound weight loss, long term bisphosphonate use for osteoporosis, history of Chemotherapy for breast cancer, prior dental extractions, multiple decades of denture utilization, severe iron deficiency anemia requiring multiple blood transfusion during admission, as well as elderly age may have predisposed the patient to this disease.