

# A Rare Incidence of Polymicrobial Frontal Sinus Osteomyelitis In an Adult

## Jersey Shore University Medical Center

Kyle Wiseman, DO; Dhairya Gor, MD; Zaka Ahmed, MD; Sobaan Taj, MD; Edward Liu, MD; Shuvendu Sen, MD

### Introduction

A rare consequence of sinusitis is Pott's Puffy Tumor, characterized by frontal osteomyelitis and subperiosteal abscess. Traditionally described by Sir Percival Pott in relation to frontal head trauma, the disease entity was later found to be more common in children with sinusitis.

### Case Presentation

62-year-old male with a past medical history significant for arthritis and hypertension presented with two weeks of malaise, fever, and chills. He also endorsed ongoing sinus pressure and pain, along with changes in taste and smell. Physical exam revealed a small skin opening on the midline of his forehead with purulent drainage, reportedly present for two months. The patient had a temperature of 98.4, blood pressure of 141/73 and a white blood cell count of  $9.1 \times 10^3/\mu\text{L}$ . Computed Tomography (CT) of the face revealed focal soft tissue swelling and emphysema involving the frontal scalp as well as underlying lytic destruction of the frontal bone and complete opacification of the frontal sinus [Figure A]. Also noted was bilateral maxillary sinus opacification suggestive of severe pansinusitis [Figure B] with fistulization to the anterior frontal scalp.

He was started on ampicillin-sulbactam and sent to the operating room where he underwent multiple procedures including excision of a frontal sinus/cutaneous fistula, fronto-ethmoid debridement and cannulation with lavage/debridement. Post-operative wound cultures revealed the presence of Methicillin Sensitive Staphylococcus Aureus (MSSA), Streptococcus constellatus, Prevotella intermedia, Fusobacterium nucleatum, Candida dubliniensis, Parvimonas micra and a heterogeneous group of coagulase-negative staphylococci. The patient continued to have purulent drainage from his forehead wound and fluconazole was added. Given a lack of improvement on medical management, ENT performed a second surgery, including bilateral sphenoidotomy, bilateral frontal sinusotomy, frontoethmoid debridement, cannulation, lavage, bilateral and total ethmoidectomy sinuses. A penrose drain was temporarily placed. Osteomyelitis of the calvarium was noted and the patient was diagnosed with Pott's Puffy Tumor with forehead abscess. After discussion with ENT, the decision was made by infectious disease to treat the condition as osteomyelitis of the skull with Tigecycline twice-daily infusion for six weeks along with oral Fluconazole for two weeks.



FIGURE A



FIGURE B

### Discussion

Pott's Puffy tumor was initially thought to be caused by head trauma, however, frontal sinusitis has now been deemed the more likely cause. The condition is characterized by limited and painful swelling on the forehead with fever, headache, nasal discharge, or high intracranial pressure. Though it is more commonly seen in young people, Pott's Puffy Tumor can rarely occur in adults. The cultures are usually polymicrobial with anaerobes often seen. Some of the common bacteria isolated include alpha-hemolytic streptococcus, peptostreptococcus, Bacteroides and Fusobacterium. To have the fullest chance of recovery and prevent life-threatening intracranial complications, it is imperative to detect and treat this condition as early as possible.

### References

Raquel Andrade Lauria, Fernando Laffitte Fernandes, Thiago Pires Brito, Pablo Soares Gomes Pereira, Carlos Takahiro Chone, "Extensive Frontoparietal Abscess: Complication of Frontal Sinusitis (Pott's Puffy Tumor)", Case Reports in Otolaryngology, vol. 2014, Article ID 632464, 4 pages, 2014. <https://doi.org/10.1155/2014/632464>

Tibesar RJ, Azhdam AM, Borrelli M. Pott's Puffy Tumor. Ear Nose Throat J. 2021 Sep;100(6\_suppl):870S-872S. doi: 10.1177/01455613211039031. Epub 2021 Aug 20. PMID: 34414793.

Sharma P, Sharma S, Gupta N, Kochar P, Kumar Y. Pott puffy tumor. Proc (Bayl Univ Med Cent). 2017 Apr;30(2):179-181. doi: 10.1080/08998280.2017.11929575. PMID: 28405074; PMCID: PMC5349820.

Bean H, Min Z, Como J, Bhanot N. Pott's puffy tumor caused by Actinomyces naeslundii. IDCases. 2020 Sep 28;22:e00974. doi: 10.1016/j.idcr.2020.e00974. PMID: 33033689; PMCID: PMC7533312.



Hackensack  
Meridian Health  
Jersey Shore University  
Medical Center