



## FOREHEAD SWELLING IN FRONTAL SINUSITIS – A RARE COMPLICATION POTT'S PUFFY TUMOUR.

**Dr Neeru Tomer**

Radiologist Sohar hospital.

**ABSTRACT** Pott's puffy tumour is a surgical emergency and an extremely rare complication of frontal sinusitis (1). It is characterised by osteomyelitis of the frontal bone with an associated subperiosteal abscess (2). A case of a 8 year old girl with a history of forehead swelling and frontal sinusitis, which was clinically and radiologically diagnosed as Potts Puffy tumor, a rare complication of frontal sinusitis in the post antibiotic era is being reported here.

**KEYWORDS :** Frontal Sinusitis, Forehead swelling ,Osteomyelitis, Subperiosteal abscess.

### INTRODUCTION

Pott puffy tumour refers to a non-neoplastic complication of acute sinusitis. It is characterised by a primarily subgaleal collection, subperiosteal abscess, and osteomyelitis. It is usually related to the frontal sinus.

Although it may affect patients of any age, incidence is higher in adolescence. It has become unusual since the availability of antibiotics.

### CASE REPORT

A 8-year-old girl presented to the ENT department with a history of frontal sinusitis associated with a forehead swelling. She denied any history of trauma, vomiting, visual disturbance, photophobia, fever or rhinorrhoea. On examination, she had a 4×5 cm erythematous, tender, fluctuant, soft tissue swelling on the center and left side of his forehead. she had no focal neurological deficit or evidence of orbital cellulitis.

One month ago, she had left frontal sinusitis which was treated by antibiotics and anti inflammatory drugs .She was lost to follow up till she reported with a fresh complaint of forehead swelling.

The patient was thought to have had a rare complication of Pott's puffy tumour (3)and was started on intravenous antibiotics.

A Contrast enhanced CT scan of her paranasal sinuses and head showed a soft tissue density filling left frontal ,left ethmoid sinuses with subperiosteal collection overlying the frontal bone ( figure 1A). Bone algorithm demonstrated a defect in the anterior wall of the frontal sinus ( figure 1B).



**Fig.1 A:** CECT axial image reveals a soft tissue density filling left frontal ,left ethmoid sinuses with subperiosteal collection overlying the frontal bone



**Fig.1 B,C:** Bony algorithm shows a defect in the anterior wall of the frontal sinus and continuation of the soft tissue density with subperiosteal collection

Post Contrast demonstrated a focal abscess, However no intracranial complications was delineated. The abscess collection on her forehead was drained with endonasal endoscopic frontal sinus exploration and she was put on intravenous antibiotics . A repeat CT scan (paediatric protocol) of the sinuses showed resolution of the disease and she made an uncomplicated recovery.

### DISCUSSION

Potts puffy tumor is defined as a subperiosteal abscess of the frontal bone with frontal osteomyelitis (4). Frontal sinus infection can spread directly through the thin bone wall of this sinus or through the network of small veins that drain its mucosa (5).

Pott's puffy tumor was more common in the pre-antibiotic era. The exact incidence however, is not known. In the post-antibiotic era few cases have been reported thus far in the pediatric population, mostly in adolescents [8] and an even smaller number being reported in the adult population in the English literature [8]. This case highlights the need to recognize and easily prevent this fatal complication of a seemingly benign infection like bacterial sinusitis.

It was first described by Sir Percivall Pott in 1760. The characteristic forehead swelling as a result of the subgaleal collection explains the "Puffy tumour" part of the name.

Today, this is a rare complication given the widespread use of antibiotics. The most common causes are Trauma and frontal sinusitis. The most common causal organisms are streptococci, staphylococci, and anaerobic bacteria. Cultures frequently reveal polymicrobial involvement (5).

In a patient with pre-disposing factors, Potts Puffy tumor usually presents as a well-circumscribed, fluctuant, tender swelling over the forehead. Infrequently, it may extend from the forehead onto the vertex and form an extensive subgaleal empyema [9]. Due to its indolent course, it may be accompanied with low grade fever and weight loss.

The infection may spread as a thrombophlebitis from the frontal sinus through the diploic veins, involving the intracranial space with consequent epidural or subdural empyema, meningitis, brain abscess, and venous sinus thrombosis (6).

Once the diagnosis of Pott puffy tumor is suspected, contrast-enhanced

CT (bone window) (Fig1) or MR imaging is needed to evaluate for possible intracranial complications. Subtle intracranial involvement is more easily seen at MR imaging. With the injection of gadolinium-based contrast material, one may see early linear enhancement of the dura mater, an extraaxial fluid collection, or an area of cerebritis. In the scalp, peripheral or rim contrast enhancement may be seen when an organized fluid collection is present. Surgical drainage remains the mainstay of therapy. Careful resection of the granulation tissue in the scalp and of infected bone up to the margins of normal bone is important, along with prolonged antibiotic therapy (7).

Pott's puffy tumor can be life threatening because of the high frequency of intracranial complications, hence a prompt diagnosis and combined treatment; surgery and long term antibiotic therapy (not less than 8 weeks), is necessary to cure the disease.

Pott's puffy tumor in recent years due to increasing anti-microbial resistance differential diagnoses should include this diagnosis in the settings of swelling over the forehead following seemingly treatment resistant acute bacterial sinusitis.

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