OLGU SUNUMU CASE REPORT

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# Frontocutaneus Fistula Secondary to Pott's Puffy Tumor: A Rare Complication of Acute Sinusitis

## Pott's Puffy Tümörüne Sekonder Gelişen Frontokutanöz Fistül: Akut Sinüzitin Nadir Bir Komplikasyonu

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**ABSTRACT** Pott's puffy tumor (PPT) is frontal bone osteomyelitis and subperiosteal abscess caused by frontal sinusitis or rarely trauma. Headache, frontal swelling, nasal congestion, nasal discharge are the main symptoms, but in some patients, it does not cause symptoms other than swelling and can cause intracranial complications and lead to fatal problems. Magnetic resonance imaging or computed tomography helps the diagnosis of PTT and its complications. Successful results are taken with timely diagnosis, appropriate antibiotherapy and surgical treatment. By presenting our PPT case involving a fistula formed between the frontal sinus and forehead which can be forgetten because it is rarely seen, we aimed to emphasize that life-threatening problems can be prevented with appropriate treatment.

**Keywords:** Pott puffy tumor; sinusitis; complications; endoscopy; cutaneous fistula

**ÖZET** Pott'un şişkin tümörü, frontal sinüzitin ya da nadir olarak travmanın neden olduğu, frontal kemik osteomiyeliti ve subperiostal apse ile karakterize bir tablodur. Baş ağrısı, frontal şişlik, burun tıkanıklığı, burun akıntısı başlıca semptomları olup, bazı hastalarda şişlik dışında semptom vermeyip sinsi bir şekilde intrakraniyal komplikasyonlara neden olarak ölümcül problemlere yol açabilmektedir. Manyetik rezonans görüntüleme ya da bilgisayarlı tomografi, Pott'un şişkin tümörü ve komplikasyonlarının teşhisine yardımcı olur. Erken teşhis, uygun antibiyoterapi ve cerrahi tedavi ile başarılı sonuçlar alınmaktadır. Biz, ciltte fistülize hâle gelmiş Pott'un şişkin tümörü olgumuz üzerinden nadir görülen ve bu yüzden tanıda unutulabilen bu hastalığı konuşarak, uygun tedavi ile hayatı tehdit edici problemlerin engellenebileceğini vurgulamayı amaçladık.

**Anahtar Kelimeler:** Pott puffy tümörü; sinüzit; komplikasyonlar; endoskopi; kutanöz fistül

Pott's puffy tumor (PPT) was firstly described by Percival Pott in 1760.[1] With the increasing use of antibiotics, the frequency of this rare disease, which is mostly a complication of sinusitis, has decreased even more. The disease may rarely progress and a cutaneous fistula can be formed.[2] Although it is most common after acute sinusitis, it can also be seen after trauma, surgery, cocaine use, insect bite, mastoiditis or dental infections.[3] It can ocur due to hematogenous spread of the infection or to direct extension of infection. It is more common in adolescence due to increased diploic vein flow rate.[4] It can lead to intracranial complications by direct spread with bone erosion or through diploic veins.[4] The patient may present with cranial complications, especially in patients who are treated inappropriately and the symptoms are not severe and ignored because of this.[5]

## CASE REPORT

A 47-year-old male patient presented to our clinic with swelling of the forehead which had first appeared one week earlier, headache and erythematous ulcerated lesion on forehead skin. Diagnostic nasal endoscopy shows thick purulent discharge in the left middle meatus.

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In the laboratory examination, the leukocyte count was found to be 10,500 cells/uL. Paranasal computed tomography (CT) scan showed soft tissue masses at left maxillary, ethmoid and frontal sinus (Figure 1). There was a bony erosion at the anterior wall of frontal sinus (Figure 2). In the cranial magnetic resonance imaging (MRI) performed to evaluate the complications, there was dural thickening and pathological contrast enhancement in the frontal lobe (Figure 3). Intravenous (IV) antibiotics (ceftriaxone and metronidazole) were initiated in the patient who was hospitalized with the diagnosis of frontocutaneus fistula secondary to PPT. On the second day of the treatment, endoscopic sinus surgery was performed, the frontal sinus ostium was enlarged, the fistulized area was enlarged to the skin externally, the purulent material in the frontal sinus was completely removed, and a drain was placed to the skin (Figure 4, Figure 5, Figure 6, Figure 7). Culture was taken from that purulent material. The culture was negative. The patient whose symptoms regressed on the 14$^{th}$ day of IV antibiotherapy was discharged. Antibiotherapy (cefixime) was completed to 4 weeks. No recurrence occurred in the five-year follow-up. The patient was followed up with endoscopic examination. There was no need for imaging methods.

Informed consent for this case report was taken from the patient.

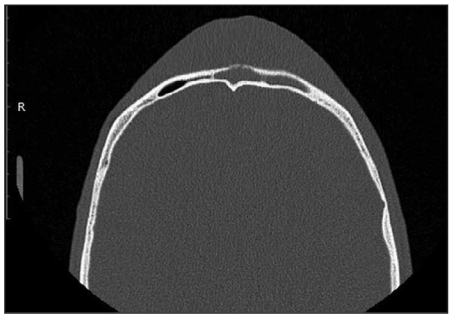


**FIGURE 1:** Computed tomography shows frontal sinus anterior bone erosion.

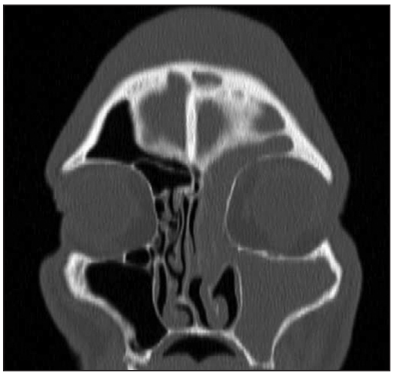

**FIGURE 2:** Computed tomography shows left maxillary, ethmoidal and frontal sinus inflammation.

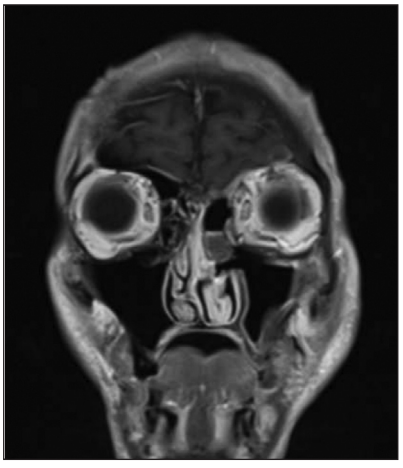

**FIGURE 3:** Magnetic resonance shows left dural thickening.

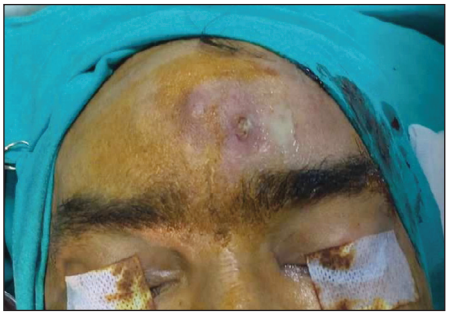

**FIGURE 4:** Frontocutaneous fistula.

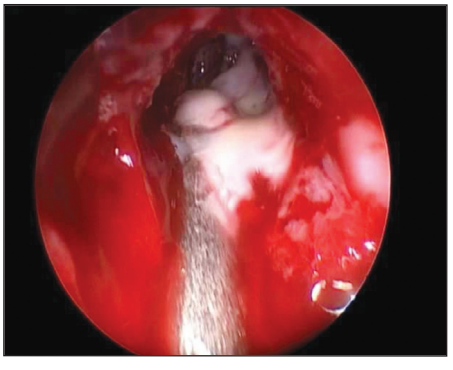

**FIGURE 5:** Purulent secretions in frontal sinus.

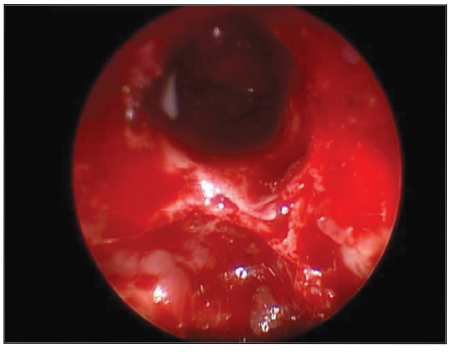

**FIGURE 6:** Purulent secretions removed.

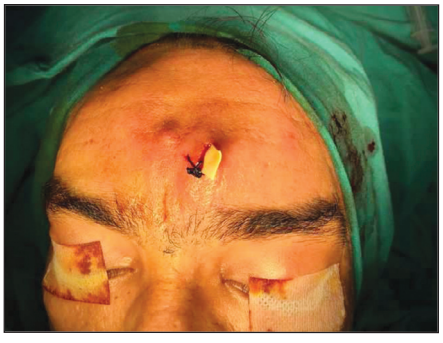

**FIGURE 7:** Draining the abscess and insertion a penrose drain.

## DISCUSSION

Although rare, PPT still appears as a complication of sinusitis. Its rare occurrence prevents coming to mind, especially in people with suppressed symptoms. The sinocutaneous fistula is particularly located in the frontal or orbital regions because they are less resistant to infection.[6] Intracranial complications seen in PPT are meningitis, subdural, epidural or intracerebral abscesses and sagittal sinus thrombosis.[5] MRI or CT helps the diagnosis of PPT espically in the patient with supressed symptoms.[2] Soft tissue and skin infections, skin tumors and hematoma should be considered in the differential diagnosis of PPT. PPT treatment consists of surgical and medical treatment. Surgery can be performed with endoscopic or external approach. In the past years, external approach was usually performed to drain the abcess and clean the necrotic bones.[7]

This is a fast and effective method, but beside scar its disadvantages are that it cannot reach frontal recess completely and cannot clean the other sinuses. Now, functional endoscopic sinus surgery is usually performed alone or with external techniques successesfully in PPT treatment.[8] Its use alone is less invasive and causes less morbidity. Recovery is shorter than external technique. Antibiotics are used in medical treatment. With the antibiotics given in sufficient doses and time, the infection is eradicated and its spread and recurrence is prevented. Empiric antibiotherapy must begin at the time of diagnosis. After culture results, the antibiotherapy can be narrowed. Since our culture results were negative, the patient's empiric antibiotic therapy continued throughout the hospitalization. Although there is no consensus in the literature, antibiotic treatment is generally expected to continue for 6-8 weeks. Commonly used antibiotics are clindamycin, ceftriaxone, metronidazole, and vancomycin.[7]

As in our patient, even in complicated PPT fistulized to the skin, with appropriate antibiotherapy and adequate surgical treatment, satisfactory results can be obtained without the emergence of life-threatening complications of the disease. Especially in skin lesions and swelling in the frontal region, even if PPT symptoms are not present completely, we should evaluate this area with imaging methods. PPT is a serious condition that can lead to life-threatening complications if left untreated.

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### *Conflict of Interest*

*No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.*

### *Authorship Contributions*

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