



## ABNORMALLY DILATED FRONTAL SINUSES - PNEUMOSINUS DILATANS FRONTALIS

### Radiology

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### ABSTRACT

Pneumosinus dilatans is an abnormally large frontal sinus sometimes presents with a deformity of the forehead as its first clinical presentation. We report a rare case of pneumosinus dilatans frontalis which presented as a bony hard swelling developed over one year.

### KEYWORDS

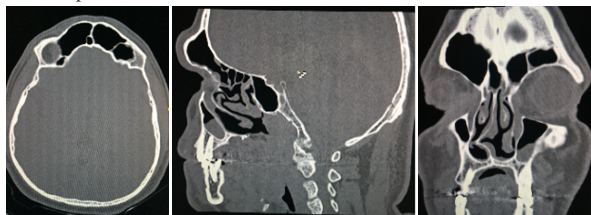
Forehead swelling, Large frontal sinus, Pneumosinus dilatans frontalis

### Case Report

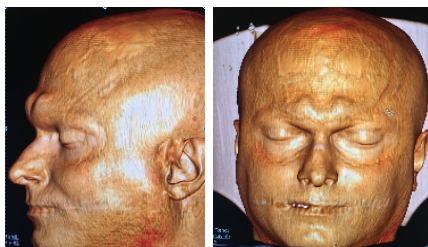
A 40 year old male presented with gradual onset of swelling on his left forehead above the eyebrow. Swelling was progressively increasing in size and was not associated with pain. He had no other complaints. Clinical examination was normal revealed mild deviation of septum to left with hypertrophied inferior turbinates. Local examination of the swelling, revealed a non tender bony hard swelling on left side of forehead, with normal overlying skin. The haematological and biochemical tests including levels of growth hormone and serum alkaline phosphatase were normal. Lateral view radiograph of skull showed bulging of the anterior table without any evidence of bone erosion.

Diagnostic nasal endoscopy did not reveal any intranasal abnormality. Computed tomography (CT) scan of paranasal sinuses showed extensive pneumatization and expansion of the frontal sinus, which extended from one side of skull to the other end (Figure 1). Sagittal views and 3D reformat showed expansion of frontal sinus where anterior table of frontal sinus was pushed forward with no evidence of bony erosion or thinning of the walls (Figure 2). The diagnosis of pneumosinus dilatans was made.

In view of the cosmetic appearance and the increased size of the swelling the patient was offered surgical treatment. Post-operatively mucosa of the frontal sinus was found to be normal. The ostium was inspected and found to be macroscopically normal. Excellent results were obtained, the patient had no complaints and no sinus symptoms. He was satisfied with his appearance and was asymptomatic on his follow up visit.



Computed tomography scan of paranasal sinuses axial view Axial 1(a), Coronal 1(b), Sagittal (c) shows abnormal expansion of the frontal sinus where the anterior table of the frontal sinus is pushed forward without any bony erosion.



Computed tomography 3 D reformat volume rendering sagittal and coronal views show abnormally dilated frontal sinuses presenting as forehead swelling

### DISCUSSION

PSD is a rare entity, first described by Benjamins [1]. It is characterised by idiopathic progressive expansion of one or more paranasal sinuses

(PNS) beyond normal margins without evidence of mucous membrane changes and thinning of wall.

A review of the literature by Borelli et al in 1979 yielded only 51 reported cases of PD [2]. In recent years, a few more cases have been reported. The expansion may involve complete or a part of the sinus most involved the frontal sinus, although the maxillary sinus, ethmoidal cells, and sphenoidal sinus can also be affected [3-5]. The aetiology and pathogenesis of PSD remains unclear.

The patient usually complains of slowly changing facial contours, forehead swelling and dull pain in the affected area, diplopia or other local pressure symptoms. It should be differentiated from pneumocele enlarged aerated paranasal sinuses with thinned bony walls [6].

Diagnosis is made by clinical examination, and confirmation by radiography plain film or CT, when the characteristic enlargement of the sinus is seen. The diagnostic criteria includes enlargement of an air cell or the whole sinus and presence of only air in the walls of sinus.

PD has also been associated with other disorders, such as meningioma, fibro-osseous disease, cerebral hemiatrophy, Klippel-Trenaunay-Weber syndrome, port-wine stains, and arachnoid cysts. [7,8]

CT scanning provides the most expedient differentiation from a host of other causes of frontal swelling, in particular solid mass lesions. Cyst wall thinning may even progress to areas of dehiscence, in which case a pneumatocele is produced.

The differential diagnosis of a frontal mass may include benign and malignant cutaneous or mesenchymal tissue neoplasms, a developmental cysts, expansive inflammatory processes, mucocoeles, and fibrous dysplasia. [9]

The aim of surgical treatment of PD is not only directed at correcting the bony deformity but also at restoring appropriate drainage when the nasofrontal duct is involved. [10] widely patent nasofrontal recess. ( Please delete and normal mucosal lining). The surgical procedure involved only correction of the bony deformity, as the nasofrontal duct was patent.

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