

# Giant frontal mucocoele invading the anterior cranial fossa and orbit

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## Citation

P Bezdziński, P S?oniewski, D R?c?awowicz. *Giant frontal mucocoele invading the anterior cranial fossa and orbit*. The Internet Journal of Neurosurgery. 2008 Volume 6 Number 1.

## Abstract

Mucocoele is a rare intracranial pathology. In majority mucocoeles arise within the frontal and ethmoid sinuses. Intracranial and intraorbital extensions are uncommon. A 48 year old male with a history of head trauma with multiple craniofacial fractures for 30 years. After 30 years came to first generalized epileptic seizure, also the leftside exophthalmos was observed. The radiological investigations, computed tomography ( CT ) and magnetic resonance ( MRI ), showed large extracerebral pathological mass invading the left frontal and ethmoid sinuses, left orbit and anterior cranial fossa with left frontal lobe compression. The left side fronto - basal craniotomy was performed. The histopathological diagnosis was mucocoele. Postoperative neurological examination revealed no deficit. The patient was seizures free and in good condition discharged from the department. Mucocoele is a rare, benign pathology arising intracranial from the sinuses. The results are good, the frequency of complication is low.

## INTRODUCTION

Mucocoele is a rare benign intracranial pathology arising from the paranasal sinuses, in the frontal and ethmoid, but intracranial extension is uncommon. The cause is the accumulation of mucous secretions into paranasal sinuses due to obstruction of the normal pathways caused by inflammation, trauma, previous surgery, fibrosis, anatomical abnormality, or by a mass lesion such as an osteoma, or altered mucus production. We report a case of the patient with a giant mucocoele of the left frontal sinus extended into the left orbit and frontal region.

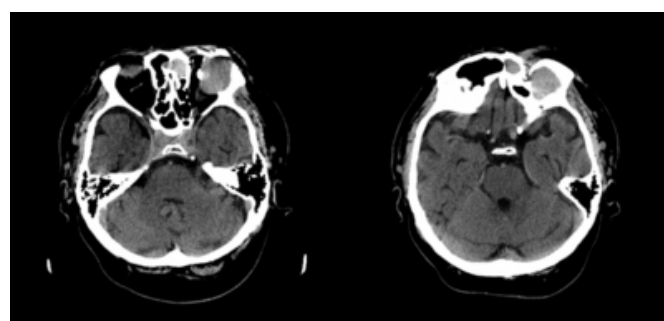
## CASE REPORT

A 48-year-old man with a history of vehicle accident 30 years ago with the injury and fractures of the wall of the left frontal sinus and orbit rim. He was treated conservatively. After this period he experienced for the first time in his life a generalized epileptic seizure. The left side exophthalmos was also observed. The patient reported, that this slowly increasing exophthalmos of the left eye and worsening of the vision in this eye, he noticed about six months before this incident. The antiepileptic medication with valproate was prescribed and the radiological diagnostic with computed tomography ( CT ) and magnetic resonance imaging ( MRI ) was performed. CT showed a homogenous mass lesion in the left frontal and ethmoid sinus, which destroyed the posterior

and inferior wall of the frontal sinus and extended into the orbit and left anterior cranial fossa ( subfrontal ) ( Fig.1 ). MRI showed that the mass was isointensive to the brain on the T1-weighted images and isointensive on T2-weighted images ( Fig.2 ).

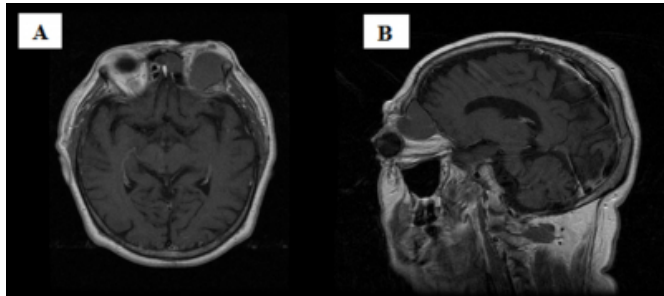
## Figure 1

Figure 1: Axial and sagittal native CT scans shows homogenous mass inside the left orbit, left ethmoid and frontal sinus. Posttraumatic destruction of the external wall of the left frontal sinus.



## Figure 2

Figure 2 : (A) Preoperative axial T-weighted MRI shows a pathological mass in the left orbit. (B) Preoperative sagittal T-weighted MRI shows a mass in the left orbit, and in the left frontal sinus compressing the frontal lobe.

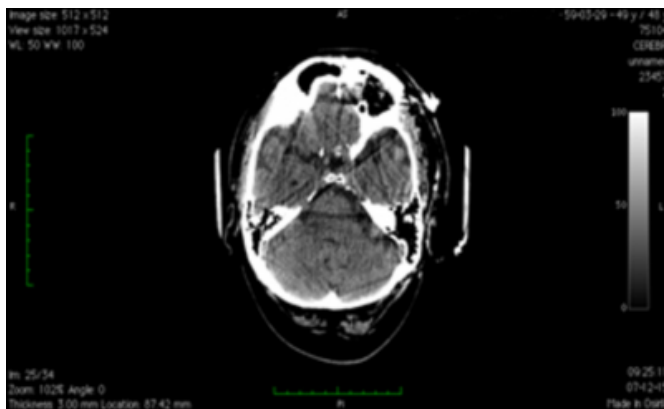


A left fronto-basal craniotomy was performed. There was a green-gray encapsulated soft tissue filling completely the left frontal sinus and partially the ethmoid sinus. The posterior and inferior wall of the frontal sinus was destroyed and the mass involved the anterior fossa and extended into the orbit. Under microscopic magnification the total resection of the pathological mass was achieved. The pathological mass was easily suckable and completely evacuated. The radical extirpation of the sinus mucosa was performed. The frontal sinus was rinsed with the saline solution and packed with a sponge. Postoperative bacteriologic culture of the mucocele was positive – the *Staphylococcus aureus* was isolated and intravenous and oral therapy with amoxicillin/clavulanate 3,6g daily was given.

The postoperative course was uneventful. Postoperative CT showed completely removal of the mucocele ( Fig.3 ). The patient was discharged from the department on the fifth postoperative day.

## Figure 3

Figure 3: CT scan on the first postoperative day shows no residual mass in the left frontal sinus and orbit.



## DISCUSSION

Most mucoceles arise in the frontal and ethmoidal sinuses, they are mainly found in adults aged 30 to 60. They are rarely extended into the intracranial cavity or orbit and much less intradural ( fewer than 1% of cases )<sup>24789</sup>. The cause of mucocele formation (accumulation of mucous secretion) is the occlusion of the natural pathways of the sinuses due to inflammation, fibrosis, trauma, previous surgery, anatomical abnormality or by a mass lesion<sup>1</sup>. In the present case, the pathogenesis of the mucocele were the multiple fractures of the left frontal sinus, the pathogenesis of generalized seizures was the frontal lobe compression. The cranial base destruction is reported to be 10% - 20%<sup>2</sup>. The mucocele, that involved the orbit or visual pathways may cause restrictive ophthalmoplegia, proptosis, exophthalmos, and reduce visual acuity<sup>310</sup>. On MRI, the lesion is usually hyperintensive on T2-weighted images without internal enhancement and calcification, and on CT scans isodense to brain, depending on the water content<sup>511</sup>. Cerebrospinal fluid ( CSF ) rhinorrhea, neuro- ophthalmological disturbances, pneumocephalus, intracranial infection, and convulsion are the most often clinical symptoms at the time of diagnosis<sup>6</sup>. In our patient the lesion was associated with left exophthalmos and diplopia with worsening of vision and generalized epilepsy.

The treatment of choice is the total transcranial extirpation of the mucocele together with the sinus mucosa to prevent recurrence<sup>259</sup>. Also a transnasal drainage and curettage with the help of an endoscope are applied with success<sup>4</sup>. The most often postoperative complications are CSF rhinorrhea, pneumocephalus, infection. The differential diagnoses are meningioma, glioma, epidermoid tumor, cysticercosis, and posttraumatic porencephaly<sup>6</sup>.

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