

# Frontal Sinus Mucocoele\*

## AN UNUSUAL CLINICO-RADIOLOGICAL PRESENTATION

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### SUMMARY

A case of frontal sinus mucocoele is presented with atypical radiological findings. The mucocoele was removed via an osteoplastic flap procedure.

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Mucocoele of the frontal sinus typically presents with intermittent or persistent headache in the supra-orbital region due to progressive enlargement.<sup>1</sup> There is a gradual thinning out of the bony walls of the frontal sinus with resultant expansion through the area of least resistance into the roof of the orbit. This causes the next most common symptom namely diplopia. Frontal sinus mucocoele is the result of obstruction of the frontonasal duct following chronic infection, trauma or surgery of the frontal sinus.

According to Ballenger,<sup>1</sup> the radiological findings of a mucocoele are characteristic. It appears as a smooth, globular, punched-out area of radiotranslucency. Samuel<sup>2</sup> states that erosion of the sinus wall is at first recognized by obliteration of sinus ridges, followed by decalcification of the dense bony outline and later by expansion of the sinus cavity. The affected sinus, although fluid-filled, may appear more translucent than the opposite sinus since the loss of bone density more than compensates for the increased density of the fluid content.

In this presentation we wish to report a case of frontal mucocoele with atypical radiological findings. It was treated by removal via an osteoplastic flap procedure.

### CASE REPORT

A 48-year-old Bantu male presented with a 9-month history of intermittent diplopia, blurred vision and pain in his left eye. There was no history of trauma or of nasal or paranasal sinus infection.

On examination he was a healthy adult male whose only clinical abnormalities were slight proptosis of the left eye, diplopia on upward gaze and a hard, non-tender swelling palpable medially under the roof of the orbit. Clinical examination of the upper respiratory tract revealed no other abnormalities. The eye itself had full movement in all directions and the fundi, pupillary reaction and corneal

sensation were all normal. Visual acuity was 6/9 in the right eye and 6/12 in the left.

X-ray studies (Fig. 1) showed a bony mass in the region of the left frontal sinus with depression of the medial part of the roof of the orbit. The mass had the same radiotranslucency as the surrounding bone, as can be seen in the tomographic view of the frontal sinus (Fig. 2). The mass appeared to expand across the midline into the opposite frontal sinus as well as into the roof of the orbit. Because of the homogenous appearance of this mass and the fact that there was no evidence of bone erosion it was felt that this was a form of fibrous dysplasia involving the frontal sinus.

Radio-isotope studies with strontium 90 revealed an increased uptake of strontium in the midline in the region of the nose.

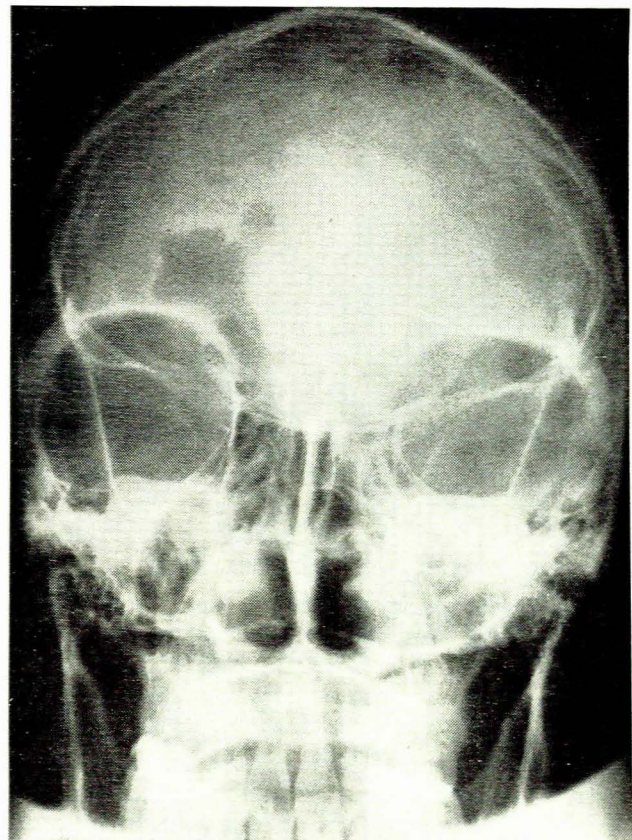


Fig. 1. Mass occupying left frontal sinus.

\*Date received: 19 April 1971.

## Treatment

The decision was then made to explore this mass surgically. This was done via an osteoplastic flap using a coronal scalp incision. The outer table of both frontal sinuses was elevated as a flap by cutting with a Stryker saw at the superior and lateral markings of an X-ray template of the frontal sinus, fracturing the nasal process of the frontal bone with a chisel and fracturing the frontal bone across the supra-orbital ridges on elevation of the flap.



Fig. 2. Localized view of frontal sinus (lateral).

The left sinus was found to be less than 1 cm in diameter, smooth-walled, lined by thin mucosa and filled with a cream-coloured, viscous fluid. Bacteriologically this fluid was later found to be sterile. The bone overlying this small sinus cavity was thickened and the interfrontal septum was about 1 cm thick. The radiological finding of 'expansion' into the opposite frontal sinus was in fact the result of this septum. Bone specimens taken from this septum were found to be histologically normal. The sinus cavity was obliterated by removing its mucosal lining, polishing the bony walls with a rotating burr and filling the cavity with

a piece of temporalis muscle readily accessible through the same exposure. The osteoplastic flap was replaced and the scalp wound closed with a single layer of interrupted nylon sutures.

The postoperative progress was uneventful. The pain and diplopia disappeared within a few days and there was no further blurring of vision.

## DISCUSSION

Mucocoeles of the frontal sinus are not uncommon. The case under discussion demonstrates the common presentation of headache, proptosis, diplopia and a palpable mass above the medial canthus of the eye. However, in this case the radiographic findings suggested that this was a form of fibrous dysplasia. A localized lateral view of the frontal sinus (Fig. 2) shows the mass with a density almost equal to that of the bone of the outer table. The absence of bone sclerosis suggests that no sclerosing osteitis existed, but rather that this was the limit of new bone growth. Surgical exploration showed a normal but thickened interfrontal septum in this area.

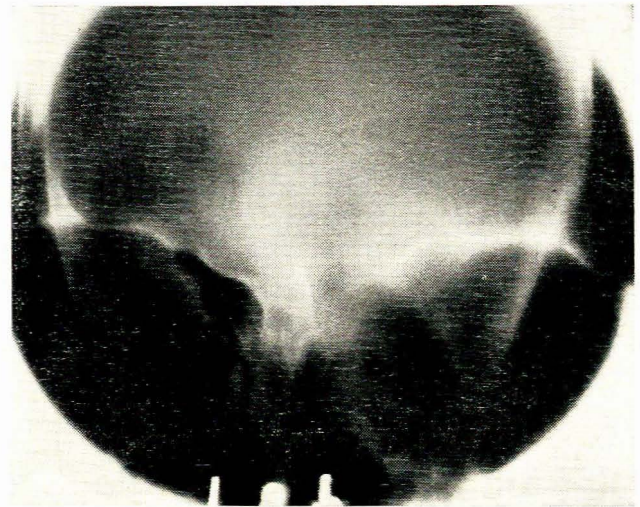


Fig. 3. Antero-posterior tomogram of frontal sinus.

Radiology of the sinuses has been considered one of the most neglected fields in the literature,<sup>3</sup> but with the advent of polytomography (Fig. 3), far more can be learned about sinus pathology. This case, however, shows that these diagnostic aids are not infallible and that in the final analysis, clinical evaluation remains the more reliable method.

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## REFERENCES

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2. Samuel, E. (1968): *Seminars in Roentgenology*, 3, 153.
3. Felson, B. (1968): *Ibid.*, 3, 113.