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Computed tomography in the diagnosis of mucoceles of sphenoid and ethmoid sinuses

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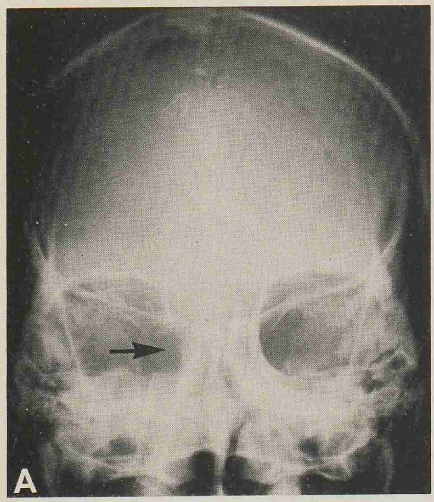
INTRODUCTION

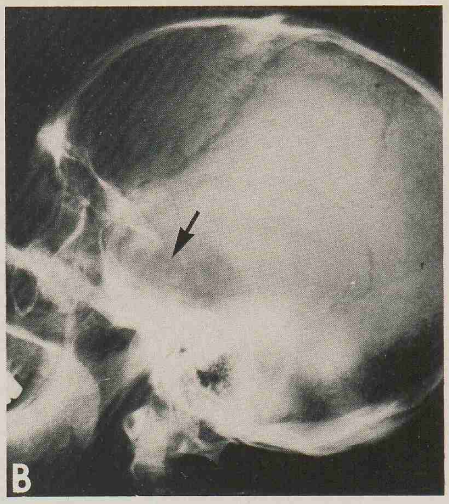
In the accurate diagnosis of mucoceles of the sphenoid and ethmoid regions, the following points are important (Hounsfield, 1973; Wyllie et al., 1973; Gould et al., 1977). Usually, the patient has significant ophthalmologic symptoms that may include all or some of the following findings: decreased visual acuity, narrowed visual fields, exophthalmos, impaired eye movements, and deviation of the eyeball. A complete history and physical (ENT) examination is essential in patients with these ophthalmologic symptoms. A previous history of nasal or paranasal sinus surgery is common. Rhinologic radiologic examination should include Caldwell view, Waters view, lateral view, submental view of sinus, and conventional tomography. Computed tomography (CT) can be important if there is an intracranial lesion and also can be effective in identifying space-occupying lesions of the base of the skull, including lesions of the paranasal sinuses (Ambrose, 1973; Pullen, 1977).

REPORT OF CASES

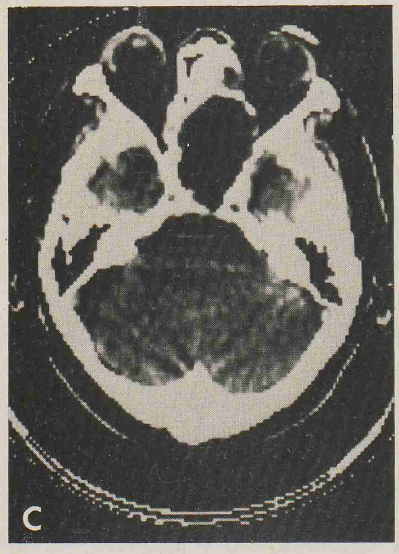
Case 1 (Sphenoid Mucocele). - A 67-year-old man who had Caldwell-Luc surgery 26 years previously noted pain in his right retro-orbital region, a decrease in visual acuity, and diplopia. Ophthalmologic examination substantiated the decrease of the right visual field, atrophy of the optic nerve, and right exophthalmos. The symptoms had gradually developed during a 1-year period. Rhinoscopic examination revealed a smooth, brown mass in the sphenoethmoid region on the right. Conventional radiologic examination (Caldwell view) demonstrated destruction of the medial wall of the right orbital cavity, including the lamina papyracea of the ethmoid bone (Figure 1A). A lateral roentgenographic view showed destruction of the sphenoid sinus and sella turcica (Figure 1B). There was no evidence of endocrinopathy, as might be expected if there was a pituitary lesion. CT scan showed lucency in the sphenoethmoid region, with protrusion of a mass into the region of the right orbit (Figure 1C). The lesion appeared to be encapsulated, and its boundary was distinct.



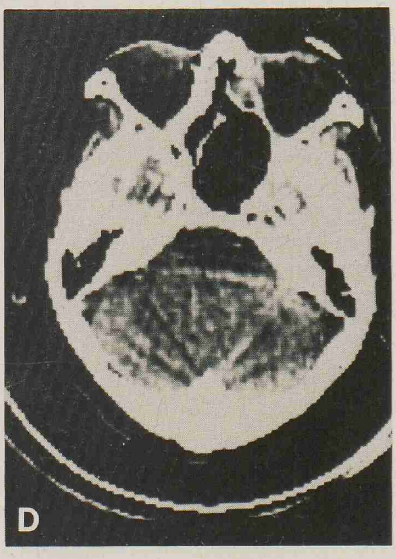
Plain posteroanterior Caldwell view shows absorption (*arrow*) of medial wall of right orbit.



Lateral view shows destruction of sphenoid sinus and adjacent structures.



CT scan shows extension of lesion (seen on right surgical exploration) and protrusion of cyst into right orbit.

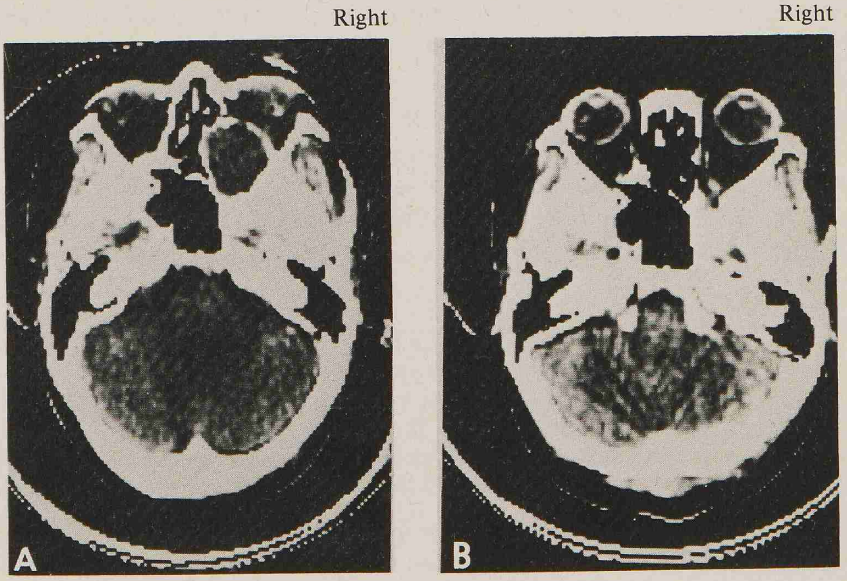


CT scan after surgery. Cyst is reduced. There is diminished protrusion of right eye and a communication into nose.

Figure 1. Case 1.

At surgical exploration with the patient under general anesthesia, the mass was biopsied, and at that moment, a gush of brown mucus was observed, denoting the presence of a mucocele. No evidence of malignancy was found on pathologic examination. The mucocele was opened by an endonasal surgical approach and was drained into the nose. The patient's visual acuity improved, along with the visual fields, and the diplopia disappeared by 2 months after surgery. A postoperative CT scan demonstrated a communication into the nose (Figure 1D), and there was a decrease in pressure on the right orbital contents.

Case 2 (Ethmoid Mucocele). – A 48-year-old man who had a Caldwell-Luc operation 19 years previously had noted right exophthalmos for approximately 7 months. He had progressive decrease of right visual acuity for approximately 2 months. Ophthalmologic examinations revealed decreased visual acuity and gross exophthalmos on the right. Results of visual field testing were within normal limits. Rhinoscopic examination revealed a brown mass in the region of the right middle meatus. Plain roentgenograms of the sinus revealed a lucency in the right ethmoid sinus, with associated bony destruction. A CT scan showed lucency of the right ethmoid region, with extension of the mass into the right orbit (Figure 2A). The mass appeared to be cystic and well encapsulated.



CT scan shows ethmoid cyst on right, with extension into right orbit.

CT scan after surgery. Protrusion of eye is diminished and cyst has disappeared.

Figure 2. Case 2.

At surgical exploration, an attempt at obtaining a biopsy specimen produced brown mucus; no evidence of malignancy was found on pathologic examination. Through an endonasal surgical approach, the cyst was opened into the nose. Five months after operation, both the visual acuity and the exophthalmos were improved, and CT scan showed decompression of the right orbital contents (Figure 2B).

DISCUSSION

Since CT was first instituted in 1971, its use has increased considerably worldwide (Gould et al., 1977). CT offers substantial advantages, primarily because it is a noninvasive, well-tolerated technique, and it has become indispensable for diagnosing intracranial lesions (Messina, 1976). In 1976, Wortzman and Holgate found CT also useful for obtaining information on facial deformities and tumors involving the paranasal sinuses. According to Gould et al. (1977), CT has contributed to the diagnosis of lesions located below the base of the skull, including tumors in the neck region.

In the present study, EMI-scanner CT-1010 was used for the diagnosis of mucoceles of the sphenoethmoid recess. Plain views of the sinus region or conventional tomograms of the skull clearly reveal the nose, paranasal sinuses, and other adjacent structures and allow ready visualization of destructive lesions. Generally, plain views of conventional tomography of the skull do not supply information about the boundaries and characteristics of lesions.

In the present two cases, the expanding lesions were clearly revealed by CT, without any discomfort to the patients. In CT, views in the horizontal planes include the ethmoid sinus, sphenoid sinus, and orbital contents, thus yielding useful information on the extent of the lesion and its relationship to adjacent structures. If pathologic lesions are suspected to be in the ethmoid or sphenoid region, CT scan should be added to the conventional radiologic examination.

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