

Occipital air sinus causing intracerebral pneumocephalus

Case illustration

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PNEUMOCEPHALUS is usually defined as the presence of air within the cranial cavity. We describe the case of a 78-year-old man who presented with a 3-day history of aphasia. Computerized tomography (CT) scanning showed an intratemporal pneumocephalus together with enlargement of both the aerated occipital sinus and the ipsilateral mastoid cells (Fig. 1 *upper left* and *right* and *lower left*). The patient underwent left temporobasal-occipital craniotomy. The inner table was found to be tortuous and one of its lumps had eroded the dura mater at a level where there was a thin layer of arachnoid. A cavity holding pressurized air was encountered lying under the arachnoid and within the temporal lobe. The basal diploe had a

wide opening leading to a mastoid air cell with no separating septum. Some thin septa separated different air cells; these were ruptured to introduce a large fat graft. Six months after admission, the patient's speech had returned to normal; a control CT scan showed no sign of pneumocephalus and partial folding of the intradiploic space, although there was persistence of the air sinus (Fig. 1 *lower right*).

It seems evident that the origin of the disease lay in the presence of an air sinus within the diploe. We believe that originally there were two structures: the occipital air sinus and the air mastoid cells, which may or may not have been independent. For unknown reasons, a communication between these cavities formed or was already present. The air inside the resulting space became trapped without being absorbed. Progressive air-trapping within the diploe ruptured the inner table at its weakest part and tore both the adjacent dura mater and the pia-arachnoid. This would have allowed entrance of air into the brain in a valvular mechanism.

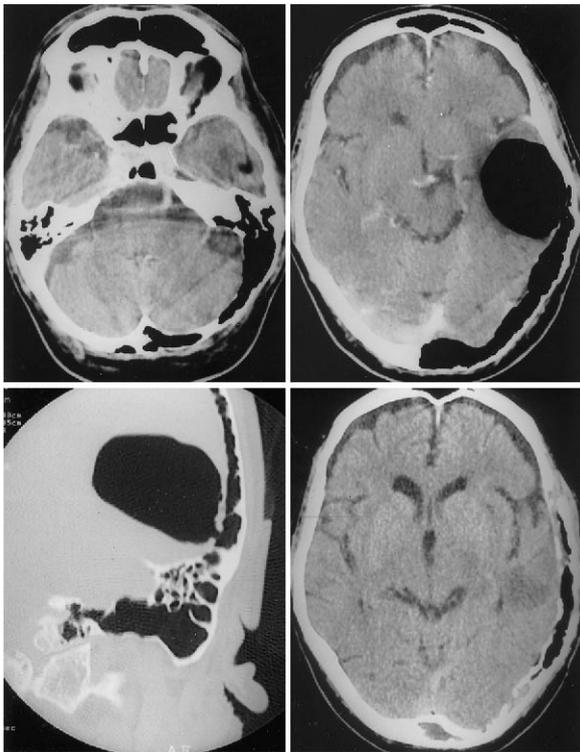


FIG. 1. Computerized tomography (CT) scans. *Upper Left* and *Right* (axial sections) and *Lower Left* (coronal section, bone window): Preoperative enhanced CT scans showing the enlargement of the left mastoid cavity and dissection of the left occipital diploe (*upper left*), the intraaxial air-containing structure in the left temporal lobe in continuity with the enlarged aerated sinus (*upper right*) and the communication between the pneumocephalus and the left temporal diploe (*lower left*). *Lower Right*: Postoperative axial unenhanced CT scan displaying partial folding of the left intradiploic space with persistence of the air sinus and a small hypodense zone in the left posterior temporal region.

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