Angel Wing Pneumocephalus Sign Following Transsphenoidal Surgery

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Figure 1. Angel Wing Sign of intraventricular pneumocephalus.

After transsphenoidal resection of papillary craniopharyngioma 2 weeks prior, a 47-year-old man developed postoperative cerebrospinal fluid leak and rhinorrhea for 2 days before presentation. The patient was noted to be aggressively sniffing his nose to counteract nasal cerebrospinal fluid leakage. Following a large sniff, the patient seized and became stuporous. Computed tomography (CT) of the head (Figure 1) demonstrated the intracranial *Angel Wing Sign* of intraventricular pneumocephalus. The patient received normobaric hyperoxia with 100% non-rebreather, followed by intraoperative closure of the surgical leak site.

Pneumocephalus requires both medical and surgical management to prevent potentially fatal intracranial hypertension, mass effect, and bacterial meningitis. The *Mt Fuji sign* was previously described for cranial wounds that suck air typically through a lateral skull wound into the intracranial vault with

Figure 2. Different patient with right frontal craniotomy and tension pneumocephalus causing Mt Fuji “peak,” or compressed brain appearance versus left brain with more normal appearance.

external brain compression creating a “peak” or summit appearance to the brain (Figure 2). The Angel Wing Sign was previously described on chest radiography in pediatric population due to tension pneumomediastinum, but not in intracranial imaging. We, therefore, introduce the intracranial Angel Wing Sign, which has a distinct intraventricular pneumocephalus pattern due to entrainment after transsphenoidal surgery with intraventricular dilatation and pressure of surrounding brain tissue intrinsically, requiring medical and

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surgical treatment of symptomatic pneumocephalus. The patient's tumor grew through the lamina terminalis, creating a connection between the third ventricle and subarachnoid space, which is why the CT pneumocephalus pattern is so unique. Other transsphenoidal surgery and tumors may present similarly, which is why this pattern is important to recognize and different from the Mt Fuji pattern.

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