

Intraventricular Bone Dust Migration after Neuroendoscopy: A Report of Two Pediatric Cases Tarek Youssef El Ahmadieh MD; Salah G. Aoun MD; Bradley E. Weprin MD; Bermans Iskandar MD; Angela V. Price MD

Introduction

Neuroendoscopy has demonstrated safety in the treatment of many pediatric pathologies. A common practice in pediatric neurosurgery is the use of Gelfoam sponge pledget in the burr hole, followed by bone fragments and dust (obtained from the burr hole), to cover the dural defect and enhance burr hole sealing. Reports on intracranial bone dust migration associated with this technique are scarce.

Methods

We report on 2 cases from 2 centers of intracranial migration of bone fragments after an endoscopic third ventriculostomy and an endoscopic colloid cyst resection. The bone fragment migration is thought to be caused by negative pressure from a lumbar puncture in one case, and from an external trauma to the head in the other. We provide a review of 5 cases reported in the literature.

Results

Both patients presented back with recurrent hydrocephalus and required reoperation. The first was treated with endoscopic removal of bone fragments and a septal fenestration. The second was treated with reopening of the third ventricular stoma that was covered by bone dust and an inflammatory membrane. Patients did well clinically on follow-up. In the literature, 3 patients required reoperation and removal of bone fragments with good results. Two patients required no intervention but demonstrated bone fragment growth on subsequent imaging. A summary of cases is provided in Table 1.

Conclusions

Bone fragment migration may be induced by external factors despite proper operative technique. Modifications to this technique are suggested and include approximating the dura prior to the placement of bone fragments and dust, or placing a barrier, such as pericranium or dural substitute, in the epidural space between the dural closure and the bone graft. Migrated bone fragments causing mechanical obstruction of CSF pathways should be removed. We also recommend washing out scattered bone dust seen in the ventricles.

Learning Objectives

-The use of autologous bone fragments and dust for burr hole closure can cause complications.

-Bone fragment migration may be induced by external factors despite proper operative technique.

-Modifications to this technique include approximating the dura prior to the placement of bone fragments and dust, or placing pericranium or dural substitute in the epidural space between the dural closure and the bone graft.



Sagittal CT brain image showing migration of the Gelfoam and bone fragments into the endoscopy tract after lumbar puncture.



Axial CT brain showing asymmetric right ventricular dilation with migrated bone dust along the endoscopy tract after removal of colloid cyst

Fig 7