Ossified Epidural Hematoma Following Posterior Fossa Exploration
Report of a Case

W. W. Whisler, M.D., and H. C. Voris, M.D.
Department of Neurology and Neurological Surgery, University of Illinois College of Medicine, Chicago, Illinois, and Department of Neurological Surgery, Veterans Administration Hospital, Hines, Illinois

Epidural hematoma is an infrequent complication of ventricular drainage in obstructive hydrocephalus. A careful review of the literature has failed to uncover a case in which the patient has survived long enough for the hematoma to become ossified and demonstrable by x-ray.

Case Report

A 27-year-old white man first entered the Veterans Administration Hospital, Hines, Illinois, in August, 1961, complaining of increasingly severe headaches, incoordination of all extremities, and blurring of vision. A suboccipital craniectomy was performed with the partial removal of a cystic hemangioblastoma of the right cerebellar hemisphere. At the time of surgery the lateral ventricle was tapped through a burr hole in the right, posterior parietal region.

The patient did well postoperatively until November, 1962, when he was readmitted to the Neurology Service complaining of low back pain which radiated into both legs. He had no headaches or other symptoms referable to the central nervous system. Plain skull films revealed a 6×8 cm. ring of calcification in the right parietal area, which had not been present on the skull films taken at the time of hospitalization in 1961. As Fig. 1 shows, this calcification extended from the burr hole previously made in the parieto-occipital region, anteriorly to the coronal suture and from a point about 2 cm. lateral to the mid-line inferiorly for approximately 7 cm. An angiogram of the right carotid artery showed that the cortical vessels were depressed, a finding consistent with the diagnosis of subdural or epidural hematoma.

Operation. Under general anesthesia a large parietal osteoplastic bone flap was turned to encompass the area of calcification. The dura was indented by a smooth, ossified, dome-shaped mass which projected from the inner surface of the bone flap (see Fig. 2). This large mass was opened and found to consist of a thin bony shell, which became continuous with the inner surface of the skull. Within the cavity defined by the bony shell lay a fibrotic sac, measuring 5×4×1 cm., containing 15 cc. of dark yellow fluid. The entire inner surface of the calcified shell was lined with numerous fine bony spicules. The area of ossification extended posteriorly to the edge of the old burr hole on the right. The dura was not opened. Throughout the operation there was con-

Fig. 1A. Antero-posterior roentgenogram of skull showing calcification in right superior parietal region. Note the silver clips at the previous operative site in the posterior fossa.

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Fig. 1B. Lateral roentgenogram of skull showing extent of calcification from the previous parieto-occipital burr hole anteriorly to the coronal suture.
siderable oozing from bone, which was finally controlled. The fibrotic sac was easily removed. The bony shell which separated this from the dura had been fractured by the elevation of the osteoplastic flap and remained partly on the dura and partly on the under surface of the bone flap. It was now carefully removed piecemeal. The flap was then replaced and the wound closed in the usual way.

**Postoperative Course.** The patient tolerated the procedure well, but 6 weeks later the flap had to be removed because of infection. Recurrence of the hemangioblastoma necessitated the insertion of a ventricular shunt to relieve the obstructive hydrocephalus. He died on May 31, 1963.

**Autopsy.** At postmortem the only intracranial pathology was a severe hydrocephalus and residual hemangioblastoma of the right cerebellar hemisphere. There was no evidence of abnormality of the cerebral cortex in the right superior parietal region, or the site of the postoperative skull defect and calcified extradural hematoma. The dura in this area was thickened. This was considered to be due to the inflammatory reaction after the operation since the dura had appeared thinner than usual at the time of operation.

**Discussion**

There have been 7 previous reports of epidural hematoma following ventricular drainage for obstructive hydrocephalus. Calkication and ossification of subdural hematomas is also well documented, but calcification or ossification in an epidural hematoma is exceedingly rare. Epidural calcification has been reported at the site of a postoperative wound infection. Using serial skull films, Kia-Noury and Wiedemann observed the development of epidural calcification at the site of a craniotomy done 2 weeks before for a traumatic epidural hematoma. This was confirmed at reoperation. In 1944, Grant reported a case of chronic epidural hematoma which was probably due to an injury 6 years earlier. The preoperative roentgenograms showed no evidence of calcification. At operation, however, the dura was found to be separated from the hematoma by a thin calcified shell. Del Vigo reported a case in which an ossified epidural hematoma was discovered surgically 6 months after the trauma. The plain skull films had shown no evidence of calcification.

Calcification was visible in the preoperative x-rays. Since the site of greatest ossification was in direct connection with the old burr hole, there seems to be little doubt that the hemorrhage also originated at this point.

**References**