A MODIFICATION OF TORKILDSEN'S VENTRICULOCISTERNOSTOMY

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Arne Torkildsen's conception of ventriculocisternostomy for the treatment of obstructive hydrocephalus has earned a valued place in the neurosurgeon's armamentarium. It is commonly performed by leading a catheter from the lateral ventricle downward along a subgaleal or subperiosteal tract to the cerebellar dura mater and thence into the cisterna magna. Occasional complications defeat the purpose of the operation. These include necrosis and, sometimes, more or less extensive infection in the integuments of the tube, obstruction of the tube by kinking over the edge of the trephine opening, leakage of fluid through the cerebellar dura mater around the catheter, with development of false meningoceles, and migration of the tube in one direction or the other. In attempts to avoid these hazards, we gradually developed the principle of confining the tube to the subdural and subarachnoid spaces.

TECHNIQUE

We operate with the patient seated, but any position may be used if the neck is flexed adequately. A midline incision is made from inion to 3rd cervical spinous process, and the upper end is curved laterally for 3 or 4 cm. A midline suboccipital craniectomy is performed and the cranial removal is continued upward on one side under the muscular attachment to uncover the lower edge of the transverse sinus for 3 or 4 cm. If a cannula was left in the lateral ventricle, it is removed or occluded at this stage. The dura mater is incised in the form of a U, the bend of which encroaches slightly on the cervical dura mater. The resulting flap is turned upward. The upper edge of the cerebellum is separated from the sinus well lateral to the midline and is depressed gradually to expose the inferior surface of the tentorium. An avascular-appearing area, 1 to 2 cm. anterior to the edge of the sinus, is opened with a crucial incision, exposing the inferior surface of the cerebrum. This is cauterized and is nicked with a pointed knife. A cannula is passed forward and upward into the floor of the lateral ventricle. The distance from tentorium to ventricle is noted. A #10 French rubber catheter is provided with one or two accessory openings near its tip. It is marked below its lowest opening with the distance between tentorium and ventricle by a silver clip temporarily closed upon it. The brain cannula then is withdrawn and the catheter is passed forward along its tract into the ventricle. This usually is not difficult to do. Should the catheter not follow the tract easily on the first passage, it may be stiffened by putting a 22-gage spinal puncture needle through its wall 5–6 cm. behind the tip and advancing this up the lumen to serve as a stilette. The needle is removed as the catheter enters the ventricle. The catheter is advanced until the silver clip reaches the tentorium. The clip is removed and the catheter is passed 3–4 cm. further into the ventricle. The catheter is aspirated and irrigated to clear it of detritus. Excessive drainage of fluid may be prevented by closing the tube temporarily with a silver clip.

We consider it important to anchor the distal tip of the catheter within the cisterna magna. The tube is measured down to a point slightly below the bottom of the U flap of dura mater.
It is cut off obliquely here with the opening slanting inward, to present the largest possible aperture to the cistern. No accessory openings are made in this end of the tube for fear of one becoming plugged by granulations. A mattress stitch is passed through dura mater, arachnoid, catheter, and back through the same layers, to be tied outside the dura mater. This insures permanent, subarachnoid fixation of the end of the tube.

The dural flap now is replaced and sutured as water-tight as possible. We do this with a continuous locked cotton suture on a tiny staphylorrhaphy needle held in a tonsil hemostat.