Multiflanged Ventricular Portnoy Catheter for Hydrocephalus Shunts

By

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With 1 Figure

Summary

In 77 patients with hydrocephalus the Portnoy ventricular catheter was incorporated in ventriculoatrial or ventriculoperitoneal shunts. Occlusion of the catheter by brain debris was avoided and the number of choroid plexus obstructions was reasonable low (5%). The flanges of the catheter cannot prevent the catheter from being pushed into the brain parenchyma. The ideal ventricular catheter has not yet been found, but the multiflanged Portnoy catheter seems to be the best at present.

One of the commonest complications in the operative treatment of hydrocephalus with ventriculoatrial or ventriculoperitoneal shunts is obstructions of the ventricular catheter. At revision the ventricular catheter is found filled with brain debris or embedded in choroid plexus.

In 1971 Portnoy described a new ventricular catheter with seven umbrella like flanges at the tip (Fig. 1). The tip is radiopaque and the seven flexible silicone flanges are 8 mm in diameter and 0.1 mm thick, situated at intervals of 2 mm, the holes of the catheter being situated between the flanges.

Portnoy’s ventricular catheter has been used in the neurosurgical department of Odense University Hospital since 1971 and the preliminary results will be reported and discussed.

Material

The Pudenz valve system is the most commonly employed shunt system in our department. About 2/3 of our shunts have been ventriculoatrial and 1/3 ventriculoperitoneal. It is our routine to put the ventricular catheter through an occipital burrhole, with its tip in the frontal horn of the lateral ventricle.
Our series consists of 77 patients. The catheter was used in primary shunt operations in 55 cases, and in another 22 cases it replaced another type of ventricular catheter.

In the primary operation group of patients (Table 1), the majority have been under observation for more than one year. In four cases (7%) it was necessary to change the catheter. Three patients had catheters which were too long. One was changed twice, at three and four months, and the other two at four months. All three shunts have functioned well since reoperation, for more than two years. The last patient developed a cystic closure of the lateral ventricle one year after establishment of the shunt. The catheter was replaced without difficulty. There were no cases of immediate obstruction due to brain debris, and growth of choroid plexus into the catheter was not observed.

In the group of patients who underwent secondary operations (Table 2), the majority have been under observation for more than two years. Most of them had been operated on several times before the Portnoy catheter was introduced. In six cases (27%) further revisions were necessary. Two patients had their catheters shortened one week and one month respectively after operation, since when both have functioned satisfactorily for more than two years. In four patients the catheters were replaced because of choroid plexus obstruction. This was done twice in one patient, at four and six months after operation. One had the catheter replaced at six months postoperatively, one at 10 months and one at one year, after which, during a follow up period of one to two years, all shunts have functioned well. Obstruction of the catheter by brain debris occurring shortly after operation has not been seen.