THE USE OF A METHYLMETHACRYLATE SEAL IN SPINAL FLUID OTORRHEA AND RHINORRHEA

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Cerebrospinal fluid fistulas resulting from trauma and leading to otorrhea or rhinorrhea, generally close spontaneously because of fibrosis of the dural lacera-
tion. Two patients are presented in whom surgical intervention was required to stem the flow of spinal fluid. The availability, simplicity of preparation and molding qualities of methylmethacrylate1 prompted the use of this plastic for sealing of a cranial defect in a case of spinal fluid otorrhea after attempts at surgical closure of the dura mater failed. In the case of a second patient with traumatic pneumocephalus and spinal fluid rhinorrhea, methylmethacrylate was employed to obtain a water-tight seal at the cribriform plate after dural suture was accomplished. Spence2 previously had used plastic to cover a defect of the frontal bone involving the frontal sinuses and Thomas et al.3 independently have applied a plastic seal in 2 cases of spinal fluid rhinorrhea.

CASE REPORTS

Case 1. A 26-year-old, white woman had been admitted to three different hospitals for meningitis following a head injury sustained in an automobile accident in 1956; Hemophilus influenzae and Diplococcus pneumoniae, respectively, were cultured from spinal fluid obtained by lumbar puncture on two separate occasions. Following the third incident of meningitis (pneumococcus) in November 1957, indigo carmine was injected into the lumbar subarachnoid space and resulted in the right tympanic membrane being stained blue. Exploration of the right middle fossa led to the excision of a “dural fistula.” Three weeks after craniectomy the patient again had a pneumo-
coccal meningitis and after recovery was subjected to a right simple mastoidectomy.

In July 1958 the patient was admitted to our service with clear fluid draining from her right ear. A right suboccipital craniectomy in July revealed a dural tear in the region of the mastoid process; the tear was closed by sutures. Incision of the dura mater allowed exploration of the area of the 5th, 7th, and 8th nerves but no further dural defect was found.

Within a week of operation, spinal fluid otor-
rhea again was present although at a greatly reduced rate. On Aug. 27, 1958 a right temporal craniectomy was performed and extended to the mastoid process; the dura mater was not opened but was retracted so that the petrous pyramid was visualized. Across the petrous pyramid was a fracture. This was filled with methylmethacrylate. The mastoid area was cleaned out with suction at which point clear fluid was observed to flow freely from this area. The mastoid area was then sealed with plastic so that the flow of fluid ceased.

Recovery was complicated by a superficial abscess of the skin which was incised and drained. Since the application of the methylmethacrylate seal there has been no evidence of otorrhea.

Case 2. A 38-year-old, white woman was admitted on Sept. 7, 1958 after having suffered a severe beating about the head and face.

Edema was present over the left frontal area as were abrasions and a deep laceration. The left eye was ecchymotic and clear fluid was flowing from the left nostril. There was anosmia on the left side and blood in the left ear. Roentgenograms of the skull revealed air in the subarachnoid space and the lateral ventricles; the ventricles were symmetrical about the midline and no fracture was visualized definitely.

Because of pneumocephaly and the hazard of formation of a porencephalic cyst, operation was performed. A bifrontal bone flap was made and, after opening the dura mater frontally, the supe-
rior sagittal sinus was ligated and cut. When the left frontal lobe was retracted three tears in the dura mater, measuring 4 mm., were observed; muscle was applied over the dural tears. After retraction of the dura mater and removal of several bone chips, methylmethacrylate was inserted and pressed into a fissure of the cribiform plate.

After closure, the patient made an uneventful
recovery, during and since which no sign of rhinorrhea has developed.

COMMENT

Methylmethacrylate at the stage of its polymerization, i.e., within a few minutes after the addition of catalyst to monomer, is easily molded into spheres, 0.5 to 1 cm. in size, which may be pressed, in much the same manner as bone wax, into a variety of cranial fissures in order to seal the cranial vault. Thus far, foreign-body reactions have not been noted.

A case of spinal fluid otorrhea appears to have been arrested by the use of this material. The resolution of the several cases of spinal fluid rhinorrhea now reported attest to the usefulness of a plastic sealing agent.

REFERENCES