THE POSTERIOR-PERITONEAL SHUNT TECHNIQUE
FOR THE TREATMENT OF INTERNAL
HYDROCEPHALUS IN INFANTS

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Increasing reports of promising results following shunt operations in the
 treatment of hydrocephalus make worth while the report of a technique
that has been used on our service during the last 4 years with relatively
good results. The frequent complications that follow the usual subarach-
noidal-peritoneal shunt by placing the catheter in the right lower quadrant
led us to try different procedures, and finally to place the catheter in the retro-

tomental space.

TECHNIQUE

Under local anesthesia or, better, intratracheal ether, the patients are placed
face down on the operating table and the legs are elevated until the lumbar spine is
above the level of the head. Children should be firmly fastened to the table (Fig.
1A).

A vertical incision is made centering in the spine of L3, and extending to L4 and
L2 (4 cm. long in babies and longer in adults). After reflecting the spinal muscles,
laminectomy of L3 is carried out (Fig. 1C).

Two parallel threads are placed in the dura mater, including the arachnoid
membrane on it. In order to catch the arachnoid in the stitch, an assistant presses on
the fontanel or raises the head of the patient for a moment, and the increased cere-
brosinal fluid pressure in the lumbar sac will bring the arachnoid against the dura
mater. Incision of the dura mater and arachnoid is made exactly between and parallel
to the threads and not longer than 0.5 cm. A polyethylene tube (not smaller than 0.3
cm. diameter) is placed caudally in the subarachnoid space at a depth of approxi-
mately 3 cm. A lateral hole may be placed in the tube about 1 cm. from its end. The
threads are tied tightly around the tube (Fig. 2B).

A second incision about 5 cm. long is carried out just above the last rib and
following its direction, starting halfway above the spinal muscles. If the last rib is
long, a fragment of it should be removed (usually no more than 3 cm.) in order to
facilitate exposure, otherwise the incision of muscle and fascia follows the lower
dge of the rib. After exposing the renal fat, further dissection is carried out direct-
ing attention mesially rather than laterally in the cavity. With wet gauze and re-
tractors the renal fat is pushed down and detached from the diaphragm until the
liver is exposed. Usually, under the lower face of the liver the peritoneum is visual-
ized. It can be picked up with a forceps, and opened for a distance of no more than
2 cm. (Fig. 2A, C).
At this point, with a long pointed forceps, a track is made through the spinal musculature and the catheter is brought through it into the abdominal cavity, taking care to avoid acute angles by sectioning tendinous and muscular insertions until a smooth curve is obtained. Some air bubbles are permitted to remain in the catheter in order to repeatedly reaffirm the permeability of the catheter by raising and lowering the patient and observing the motion of the air bubbles.

The peritoneal end of the catheter is placed into the peritoneal opening under the liver, being careful to direct the catheter mesially and not in a lateral direction. A purse-string closure is made around the catheter and again the flow of cerebrospinal fluid is checked by watching the air bubbles move when the pressure of the

Fig. 1. (A) Position of patient for surgery. (B) Final placement of the catheter. (C) Incisions.