Distal end revision of ventriculoperitoneal shunts sparing minilaparotomy

Technical note

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Distal end malfunction of a ventriculoperitoneal shunt occurs secondary to outgrown, disconnected, fractured, or occluded peritoneal catheters. Replacement of such catheters normally requires a minilaparotomy. The authors describe a simple technique for peritoneal catheter replacement without minilaparotomy.

KEY WORDS • malfunction • shunt revision • ventriculoperitoneal shunt

Successful reimplantation of a distal peritoneal catheter of a ventriculoperitoneal (VP) shunt is often difficult due to outgrowth, disconnection, or blockage of the peritoneal catheter. The authors present a method of reimplanting the peritoneal catheter without laparotomy.

Operative Technique

After skin incision, the catheter and its accompanying fibrotic tract are identified and dissected using a blunt hemostat. The tract is brought to the surface and partially opened using Bovie cautery to expose the white silastic catheter (Fig. 1b). Three mosquito clamps applied at 90° angles to the distal fibrous tract may help to prevent accidental retraction of the tract. The old catheter is then cut at the level of its exposure and the proximal portion is removed as much as possible while the distal portion is secured with a bulldog clamp. After advancing a new catheter linking the scalp and low thoracic incisions and securing its proximal end to the distal valve port, the patency of the newly assembled shunt component is verified by observing free flow of cerebrospinal fluid from the tip. Then the distal portion of the old catheter is pulled out and the new catheter is gently advanced into the peritoneal cavity through the old fibrous tract. We have encountered no difficulty removing this distal portion because there rarely was any mineralization around the catheter below the level of incision. Finally, the fibrous tract around the catheter is completely transected to prevent tethering. The incisions are then closed in layers.

Discussion

Distal end malfunction of a VP shunt often results from outgrown, disconnected, fractured, or occluded catheters. In these cases, a distal end revision with complete catheter replacement is the solution. Although minilaparotomy for reintroduction of the peritoneal tubing is usually not associated with significant morbidity, its potential complications include postoperative ileus, incisional hernia, and bowel perforation. A distal end revision technique sparing minilaparotomy could therefore avoid these potential complications.
risks. In that sense, laparoscopic insertion of peritoneal catheters was introduced as an alternative. However, the need for dedicated personnel for round-the-clock care, as well as unavailability of the equipment at many centers, requires simpler techniques. We are aware of two other distal end revision techniques sparing minilaparotomy. However, both are limited to elective lengthening of outgrown catheters. Moreover, although they avoid laparotomy, they still carry the risks of bowel perforation and/or disconnection. Our technique is simple, effective, and safe, and allows simultaneous testing of other shunt components.

References


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