Dorsal transsacral approach for anterior sacral meningocele approach

Surgical management using a posterior approach to close the meningeal sac is feasible and less invasive than an anterior approach. [1)]

This method was advocated by Adson in 1938 and was preferred due to its lower complication rate. It has the advantages of avoiding pelvic organ injury and allowing adequate exposure of neural elements, making it possible to detether the TCS simultaneously. Owing to some tumors deeply located in the hernia sac, it is difficult to resect using a posterior approach. In one case, we failed to demolish the epidermoid cyst simultaneously in one-stage operation. Nonetheless, we released the adhesion between the tumor and the adjacent nerve tissues, which facilitated total resection of the tumor during the second surgery using a transabdominal approach.

For the caudal type , the dura sac terminal and pedicle of meningocele should be adequately exposed. The dorsal wall of the stalk needs to be opened distally and inferior to the last pair of sacral nerves. Cyst exploration was performed through the pedicle corridor to search for the possible presence of filum terminal or other neural elements. Eight cases in this study were accompanied with TCS. Thickened and tightly stretched filum terminal was observed in each case. The filum terminal was resected and then the pedicle of the hernia sac was ligated. Transfixion of the residual stump and water-tight reinforcement of dura mater are mandatory to prevent CSF leakage. For the para-neural type , it is essential to clarify the association between the sac and the adjacent sacral nerve, and subsequently, fully expose them. Relieve the surrounding adhesion, incise the cyst, aspirate the CSF, and then explore the cystic cavity to search for possible existing neural elements. For this type, after identifying the location of the stalk, which is next to the sacral nerve, it can be ligated. For the nerve-root type , cystic cavity exploration is performed to recognize the direction of the sacral nerve roots, which transverse the pedicle and the sac; then, they need to be kept unimpaired. We retained a part of the cystic wall along the sacral nerve direction for nerve sleeve reconstruction. The preserved sac wall is sutured to reconstruct an integrated nerve sleeve, and then achieve a Water-tight suture of the plicated dura. Only when the intraoperative neurophysiological monitoring indicates the nerves as nonfunctional, can the meningocele with involved nerves be ligated simultaneously; otherwise, the nerves should be protected by folded residual sac (like hand-in-glove), and then achieve a Water-tight suture. We also tried to repatch the sacral defect with the titanium graft to consolidate the bone and prevent the meningocele recurrence with the 3D printing guidance. The complications related to the management of ASM depend on the surgical approach and techniques. A prudent operation is needed to avoid the sacral nerve roots injury, Water-tight suture of the dural sac to prevent postoperative CSF leakage and prevent iatrogenic injury to the rectum, bladder, and ureters. [2)].

1)
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2)
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