Nonsuture dural repair using polyglycolic acid mesh and fibrin glue: Clinical application to spinal surgery.

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Abstract:

Background: In spinal surgery, repair of the dura is difficult when it is torn or fragile or is ossified as in cases with ossification of posterior longitudinal ligament. We report our experience with a nonsuture dural repair technique in patients undergoing spinal surgery; it uses a dura substitute composed of polyglycolic acid (PGA) mesh and fibrin glue. Here, we report the efficacy and safety of nonsuture duroplasty using PGA mesh and fibrin glue (PGA-fibrin sheet). Methods: The artificial dura mater is composed of a PGA-fibrin sheet. The dural defect is covered with a patch sprayed with fibrin glue without suturing to the dura mater. We first evaluated this technique in an experimental study by performing water leakage tests. Between May 2001 and January 2005, we used it in 160 spinal surgeries that required intraoperative dura repair. Results: Our preliminary tests showed that the threshold for water pressure without leakage was 161 +/- 42 and 96.5 +/- 32 mm Hg when the unsprayed margin around the perimeter of the patch was 5 and 2 mm, respectively. Of the 160 operated patients, 10 (6.3%) experienced subcutaneous cerebrospinal fluid (CSF) leakage. Of these, 6 required a second operation; in the other 4, the CSF collection diminished spontaneously. There were no other complications such as allergic reaction, adhesion, or infection. Conclusion: In combination with CSF diversion, the PGA-fibrin sheet is a viable alternative method for dural repair in spinal surgery.