Novel dural closure technique using polyglactin acid sheet prevents cerebrospinal fluid leakage after spinal surgery.

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Publication Date: 2005

Abstract:

OBJECTIVE: Extradural or subcutaneous cerebrospinal fluid (CSF) leakage is a common complication after spinal surgery and is associated with the risks of poor wound healing, meningitis, and pseudomeningocele. Numerous methods to prevent postoperative CSF leakage are available, but pressure-tight dural closure remains difficult, especially with synthetic surgical membranes. The efficacy of a novel dural closure technique was assessed by detecting extradural or subcutaneous CSF leakage on magnetic resonance imaging.

METHODS: The novel dural closure technique using absorbable polyglactin acid sheet and fibrin glue and the conventional procedure using only fibrin glue were evaluated retrospectively by identifying extradural or subcutaneous CSF leakage on magnetic resonance imaging scans in the acute (2-7 d) and chronic (3-6 mo) postoperative stages after spinal intradural surgery in 53 patients.

RESULTS: The incidence of extradural and subcutaneous CSF leakage was significantly lower ($P < 0.05$) in the acute (20%) and chronic (0%) stages using polyglactin acid sheet and fibrin glue in 15 patients compared with that in the acute (81%) and chronic (24%) stages using only fibrin glue in 38 patients. One patient in the fibrin glue-only group required repair surgery for cutaneous CSF leakage.

CONCLUSION: The combination of polyglactin acid sheet and fibrin glue can achieve water-tight

closure after spinal intradural surgery and can minimize the risk of intractable postoperative CSF leakage. This simple, economical technique is recommended for dural closure after spinal intradural surgery.