The effect of autologous fibrin tissue adhesive on postoperative cerebrospinal fluid leak in spinal cord surgery: a randomized controlled trial.

Authors: Nakamura H., Matsuyama Y., Yoshihara H., Sakai Y., Katayama Y., Nakashima S., Takamatsu J., Ishiguro N.

Publication Date: 2005

Abstract:

STUDY DESIGN: A prospective randomized study evaluating the efficacy of autologous fibrin tissue adhesive for decreasing postoperative cerebrospinal fluid (CSF) leak in spinal cord surgery. OBJECTIVE: To compare postoperative CSF leak in 3 groups (i.e., autologous fibrin tissue adhesive used, commercial fibrin glue used, and no fibrin tissue adhesive used) of patients undergoing spinal surgery who needed dural incision. SUMMARY OF BACKGROUND DATA: Spinal cord operations, particularly when dural incision is inevitable, sometimes involve postoperative CSF leak. Because CSF leak is a serious complication, countermeasure is necessary to prevent it after dural suture. Commercial fibrin tissue adhesive was formerly used. Because the possibility of prion infection was widely noticed, commercial fibrin tissue adhesive containing animal components has been used less often. METHODS: In 13 of 39 cases in which dural incision would be made, 400 mL whole blood was drawn, and autologous fibrin tissue adhesive was made of plasma. Cases were divided into 3 groups: (1) dural closure alone, (2) use of autologous fibrin tissue adhesive after dural closure, and (3) use of commercial fibrin tissue adhesive after dural closure. The primary outcome measure was determined as postoperative (3 days) volume of drainage fluid, and results were analyzed using the analysis of variance. The secondary outcome measure was general blood test, coagulation assay, and plasma fibrinogen, and these were analyzed also using the analysis of variance. RESULTS: There was a significant difference in the primary outcome between the autologous and control

groups. No complications such as infection or continuous CSF leak were observed in any case. The mean volume of drainage fluid was 586.2 mL in the group with autologous fibrin tissue adhesive and 1026.1 mL in the group without fibrin tissue adhesive. The volume of drainage fluid was significantly lower in the former group than that in the latter group. There was no statistical difference between the volumes of the group with autologous adhesive and with commercial adhesive (639.2 mL). CONCLUSIONS: We used autologous fibrin tissue adhesive as a new sealant after dural closure instead of commercial fibrin tissue adhesive. No definitive CSF leak was observed, and the volume of drainage fluid was significantly lower in the group with autologous fibrin tissue adhesive than that in the group without fibrin tissue adhesive. The use of autologous fibrin tissue adhesive was superior to that of commercial fibrin tissue adhesive in cost.