Sealing effect of fibrin glue spray on protection of cerebrospinal fluid leakage through the dura mata. [Japanese]

Authors: Terasaka S., Sawamura Y., Abe H.

Publication Date: 1994

Abstract:

Fibrin glue, a biologic adhesive, is made with highly concentrated human fibrinogen and clotting factors. It has become used frequently in neurosurgical procedures, in particular in the closure of the dura mata to prevent cerebrospinal fluid leakage. This report evaluates sealing effects of the fibrin glue on cerebrospinal fluid leakage through the dura. (1) Three manipulations for application of fibrin glue were used; i.e., layer, mixture and spray methods. These methods were compared to estimate their sealing effects on water leakage through a 1.2 mm pore in an artificial dura. The burst pressure was significantly higher when the spray method was used than when the other two methods were used. (2) Dural incision was made and then sutured at intervals of 2mm, 3mm, 4mm, 6mm, and 8mm. Fibrin glue was applied by a spray method on the sutured dura. The burst pressure of the fibrin plate was over 80cmH<inf>2</inf>O on every interval of dural suture. (3) Dural defects 2mm, 4mm, 6mm, and 8mm in diameter were made, and then spray of fibrin glue was used to shield the defects. The fibrin clot spreading to the inner and outer surfaces of the pore defect was plug-shaped. The fibrin plug tolerated water pressure over 200cmH<inf>2</inf>O, in every size of pore. In conclusion, the optimal method for using fibrin glue on the surface of the dura was a spray method. Fibrin plate/clot made by the spray method sealed the dural tear or pore so well that it sustained a water pressure of over 80cmH<inf>2</inf>O, which is far higher than normal pressure of the intracranial cerebrospinal fluid.