

Assessment of cryoprecipitate-thrombin solution for dural repair.

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Abstract:

Background. After resection of cranial and skull base tumors, fibrin- thrombin solutions can provide a temporary biologic seal of dural closures until final healing occurs. We investigated several variables affecting the strength of these 'tissue glues' for repair of dural defects using in vitro methods to model clinical repairs. Methods. The competence of human cryoprecipitate-thrombin (CPT) 'tissue glues' in providing a watertight seal for patched rat fascia and human cadaveric dural defects was assessed. A saline column was fabricated to allow for controlled pressure (up to 700 mm) to be applied over an open aperture containing the repaired defect. Variables of repair included time after repair, defect size, and mixing temperature. Results. Wide variations in the strength of different cryoprecipitate glues were found. Time allowed after repair did not significantly affect the repair strength. Cooling the components of the glue solution prior to mixing significantly increased repair strength. Similar results were found for different defect sizes. Conclusions. Under controlled in vitro conditions, integrity of fibrin glue repairs varied widely. This was not attributable to differences in solution fibrinogen concentration. Cooling the 'tissue glue' components prior to mixing significantly increased repair strength of patched tissue defects.