The use of single-donor fibrin glue prepared by recycled cryoprecipitation in experimental liver surgery.

Authors: Balint B., Cernak I., Petakov M., Bugarski D., Malicevic Z., Mandic-Radic S., Taseski J.

Publication Date: 2002

Abstract:

The purpose of the study was to evaluate the hemostatic effectiveness of fibrin glue (FG) prepared by a modification of cryoprecipitation technique in experimental rat liver surgery. FG component 1 was prepared by triple or 'recycled' cryoprecipitation method from single-donor plasma. Rats subjected to liver incision, partial and total lobectomy were treated with FG on the surgical cut surface or underwent standard surgical technique. The efficacy of FG-treatment was evaluated on the basis of the 24-hour survival ratio and peripheral blood hematological parameters. The mean values of fibrinogen, FXIII, fibronectin and horizontal tensile strength of FG were 54.2 +/- 19.9 g/l, 13.5 +/- 3.6 IU/ml, 3103.1 +/- 148.9 mg/l, and 1.076 +/- 0.18 N/cm², respectively. The survival of FG-treated rats subjected to partial and total lobectomy was significantly higher in comparison to the FG-nontreated animals, accompanied with higher values of red blood cell counts, hemoglobin concentration and hematocrit. When liver incision was performed, although there were no differences in survival rate, FG-treated animals had significantly higher values of the tested hematological parameters. The presented results demonstrated that by using 'recycled' cryoprecipitation it is possible to obtain high quality single-donor FG with successful hemostatic therapeutical effects, as confirmed in the experimental rat model of liver surgery.