Experimental study on effective application of fibrin glue.

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Abstract:

Purpose. Fibrin glue is effective for maintaining hemostasis after anastomosis and for filling needle holes after cardiothoracic and vascular surgery, but few experimental studies concerning methods of application to obtain more effective hemostasis have been reported. Methods. Bolheal was used as the fibrin glue. Fibrinogen solution (A, 0.3 ml) and thrombin solution (B, 0.3 ml), components of fibrin glue, were applied to the needle holes by the following four methods: group 1 (n = 8), drip method; group 2 (n = 8), spray method; group 3 (n = 8), rub-and-spray method; group 4 (n = 8), rub-andrub method. Additional studies were done in groups 3 and 4 to evaluate the hemostatic effect with different curing times and temperatures. Results. The pressure at which the fibrin sealant ruptured were significantly higher in group 3 (109 +/- 16 mmHg) and group 4 (113 +/- 7) (for both groups: $P < 0.05$ vs. group 1 (22 +/- 8) and group 2 (64 +/- 10)). The pressure increased with prolongation of the curing time, and significant differences were noted between the pressures at = 2 min and that at 30 s (both groups: $P < 0.05$ vs. 30 s). The curing temperature had no significant influence in the two groups. Microscopically, the glue effectively plugged the needle holes in groups 3 and 4 Conclusion. Compared with the current drip and spray methods, more effective hemostasis was obtained by rubbing on the fibrin glue.