

Use of fibrin glue to minimize bleeding of microvascular repairs in hypertensive rats.

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Abstract:

The purpose of this study is to describe our technique of applying fibrin glue at the microvascular anastomotic site and to evaluate the effect of fibrin glue on anastomotic hemostasis and patency under various high pressure states using dopamine-induced acute hypertension in rats. A total of 72 male Wistar Kyoto rats, 10 weeks old, were used in this study. Under urethane anesthesia, end-to-end anastomosis of the left femoral artery was performed using 10-0 nylon suture by the standard interrupted suture technique. Pasteurized fibrin glue was then topically applied upon the suture line of the anastomosis. Thirty-six normotensive rats were divided into three groups based on the number of sutures (4, 6, or 8) used to complete the anastomosis. Groups were subdivided, half receiving fibrin glue application and half without. Thirty-six dopamine-induced acutely hypertensive rats were divided into three groups based on the blood pressure levels of 150, 200, and 250 mmHg, respectively. These groups were again subdivided, with half receiving glue applications. Microvascular anastomosis was performed using 6 nylon sutures. Patency rates and anastomotic bleeding were evaluated. The results revealed that successful anastomoses could be performed with fewer sutures when fibrin glue was used as a reinforcement at the anastomosis. Fibrin glue was also effective at the maximum blood pressure (250 mmHg) with no anastomotic leakage and no decrease in postoperative patency rate. These results suggest that conventional microsurgical suturing technique combined with fibrin glue would be effective in the prevention of leakage in microsurgical repairs, even under conditions of high blood pressure.