

Effect of fibrin adhesive application in microvascular anastomosis: a comparative experimental study.

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Abstract:

BACKGROUND: Microvascular anastomosis is the most critical step during free flap transfers or replantations. Although the conventional suture is still considered the standard technique, it is technically difficult, time consuming, and traumatic to the vessel wall. The aim of this study was to evaluate the effectiveness of fibrin adhesive to overcome these problems when applied in microvascular anastomosis.

METHODS: Sixty-eight Wistar rats were used in this study. Eight animals were used in a pilot study to determine the minimum amount of suture stitches required per anastomosis when the fibrin adhesive was applied. In the definitive study, we performed 30 anastomoses in the femoral artery and 30 anastomoses in the carotid artery. In each artery, half of the anastomoses were performed using interrupted sutures without fibrin adhesive (control groups), and the other half were performed using fibrin adhesive and fewer sutures (experimental groups).

RESULTS: The application of fibrin adhesive significantly reduced the number of sutures and the time taken to perform the anastomosis. The anastomotic bleeding was also significantly reduced in both experimental groups. The immediate and late patency rates were not compromised by fibrin glue application. No significant differences were observed in the histologic analysis of the anastomosed vessels between the two techniques.

CONCLUSIONS: The application of fibrin adhesive did not result in any harmful effects in the microvascular anastomosis. The authors encourage the clinical application of fibrin adhesive in more complex cases, when more than one microvascular anastomosis is required.