Application of fibrin glue in microvascular anastomoses: Comparative analysis with the conventional suture technique using a free flap model.

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Abstract:

Background: Several studies have already reported the utilization of fibrin glue in microvascular anastomoses to minimize the number of sutures and to decrease the operative time. Despite the good results obtained in most of these experiments, its clinical application has not launched. The aim of this study was to clarify the controversies around the safeness of fibrin glue application in microvascular anastomo-ses, and also to demonstrate the potential benefits of fibrin glue application in a realistic free flap model. Methods: Twenty-seven rabbits were used in this study. The experimental model consisted of a free groin flap transfer to the anterior cervical region. The flap's circulation was restored by means of an end-to-side anastomosis between the femoral and carotid arteries, and an end-to-end anastomosis between the femoral and external jugular veins. The animals were divided into two groups (n = 10) according to the anastomosis technique: Group I (conventional suture) and group II (fibrin glue). Results: The number of sutures required to complete the arterial and venous anastomoses was reduced in 39 and 37% in group II, respectively. Despite this reduction, the anastomoses maintained adequate patency rates and mechanical strength. Both arterial and venous anastomoses benefited from fibrin glue application, which made them easier and faster to perform. The flaps' ischemic time and the total operative time were also significantly shortened. Conclusions: In this study, the application of fibrin glue in microvascular anastomoses was safe and reliable. The risk-benefit ratio of fibrin glue application in microvascular anastomoses is favorable for its use.