Fibrin glue-assisted end-to-side anastomosis of rat femoral vessels: Comparison with conventional suture method.

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Abstract:

Conventional methods of microvascular anastomosis using sutures cause vessel narrowing, foreign body reactions, and intravascular thrombosis. Although fibrin glue seems to be the ideal material to perform a microvascular anastomosis, its success has been limited. Excess fibrin used in some of the earlier methods has caused vessel narrowing and intravascular thrombosis. We evaluated the quality of end-to-side anastomosis using fibrin glue applied with a new technique and minimal sutures, and compared the results to those obtained with a standard suture technique. End-to-side anastomosis of femoral vessels was performed in 32 male Sprague-Dawley rats. Fibrin glue was topically applied at the anastomotic site, after inserting only two corner sutures. The fibrinogen component obtained from single donor human cryoprecipitate, was combined with bovine thrombin (500 IU per milliliter). In the control group (N = 16), the anastomosis was performed using eight to ten interrupted 10/0 nylon sutures. Fibrin glue-assisted anastomosis took less time, caused less bleeding at the anastomotic sites, and achieved a patency rate comparable to that provided by the suture technique. We have shown that a new, atraumatic technique of microvascular anastomosis with cryoprecipitate-thrombin glue and only two sutures, can produce excellent patency rates. This technique is easy to perform, inexpensive, and does not involve new equipment.