Comparison of vasovasostomy techniques in rats utilizing conventional microsurgical suture, carbon dioxide laser, and fibrin tissue adhesives.

Authors: Ball RA, Steinberg J, Wilson LA, Loughlin KR

Publication Date: 1993

Abstract:

An evaluation of vas reanastomoses in rats comparing suture only, carbon dioxide (CO2) laser-assisted, and fibrin-based tissue adhesive was performed in our laboratory. A cohort of 60 known fertile male Sprague Dawley rats initially underwent lower midline abdominal exploration and transection of their vas deferens bilaterally, followed by immediate microsurgical vasovasostomy by one of the three experimental methods. All groups initially had the severed vasa ends coapted by two or three transmural (mucosa through serosa) sutures of 10-0 nylon under an operating microscope. The conventionally sutured group had an additional four to six nylon 10-0 sutures placed externally in the serosa only to complete the anastomosis. The CO2 laser-assisted group underwent laser welding with denaturation of the serosa to seal the anastomosis. A fibrin-based tissue adhesive, produced by combining human cryoprecipitate and thrombin, was placed topically over the coapted vas ends to seal the anastomosis in the third group. Postoperative evaluation revealed similarities among the three surgical groups with the fibrin-based tissue adhesive group resulting in the highest patency rate (89%) and pregnancy rate (85%) as well as the lowest granulation rate (18%) and shortest operative time (27 minutes). The laser-assisted group resulted in the lowest pregnancy rate (68%), while the sewn anastomosis group had the lowest patency rate (76%). Both laser-assisted and conventionally sewn vasectomy reversals required significantly longer operative time (39 and 46 minutes, respectively) compared with the fibrin-based tissue adhesive-assisted procedures ($p < 0.01$). This study provides evidence that alternative microsurgical

techniques may be utilized to perform uncomplicated, expeditious, and successful vasectomy reversals.