Comparison between suture and fibrin glue on repair by direct coaptation or tubulization of injured mouse sciatic nerve.

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Abstract:

Purpose The aim of this study was to evaluate and compare the effectiveness of classical suture and sutureless repair with fibrin glue, by using or not a resorbable collagen tube, after sciatic nerve transection. Material and methods Twenty-five mice were used in this study, divided in five groups. They were submitted to sciatic nerve transection and immediate repair of the nerve stumps by either direct suture or fibrin glue adhesion or by the tubulization technique in which the nerves stumps were sutured or glued to a collagen tube (experimental groups). A control group was designed as the best regeneration condition, by using a crush lesion (control group). After eight weeks, the regenerated nerves were processed for light and electron microscopy. Motor function analysis was performed using the sciatic functional index. Results Quantitative analysis of regenerated nerves between experimental groups showed that those repaired by direct contact of the stumps with fibrin glue showed significant increase in the myelin and fiber areas. The tubulization groups, repaired by suture or fibrin glue, provided similar results. G-ratio analysis revealed that the regenerating axons of all experimental groups presented values equivalent to control (crushing group). Conclusions These results suggest that the use of fibrin glue in nerve repair by either direct coaptation or tubulization is an alternative to conventional suture repair, particularly in case of small-size-nerve reconstruction. © 2013 Wiley Periodicals, Inc. Microsurgery 33:468-477, 2013.