

Overall assessment of regeneration in peripheral nerve lesion repair using fibrin glue, suture, or a combination of the 2 techniques in a rat model. Which is the ideal choice?.

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Abstract:

BACKGROUND: Nerve repair with fibrin glue is an alternative to conventional suture technique, although there is no definitive experimental evaluation of the 2 techniques. This experimental study was undertaken to evaluate nerve regeneration after sciatic nerve repair with fibrin glue and to compare it with repair performed with suture and a combination of both techniques.

METHODS: Eighty-six male Wistar rats were subjected to right sciatic nerve transection and immediate repair with 4-stitch nylon suture (group A), fibrin glue (group B), or a combination of both techniques (group C). Walking track analysis to assess functional recovery was performed preoperatively and 12 weeks postoperatively. Before nerve section and after a 24-week interval, the nerve and motor action potentials (MAPs) were evaluated. Histomorphometric evaluation was carried out 24 weeks after nerve section. Differences between groups were evaluated for significance using the Kruskal-Wallis or analysis of variance methods.

RESULTS: Animals of group B presented better results than those of group A when the functional evaluation was applied ($P < .05$). When nerve conduction velocity was evaluated at reoperation and the ratio between conduction velocity at reoperation and before the nerve section in MAP evaluation were measured and compared in the 3 groups, the rats of group B presented better results than those of group A ($P < .05$). Animals of group C presented better results than those of group A when

the ratio between nerve conduction velocities was considered. There was no difference between the nerve repair methods when histomorphometric evaluation was performed.

CONCLUSION: In a rat model, nerve repair using fibrin glue provided better conditions for regeneration than suture after sciatic nerve transection.