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Comparison of digital nerve repair techniques: a systematic review

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Abstract

Introduction: Digital nerves are the most injured upper limb peripheral nerves [1]. There are numerous different methods of repair, with no standardised treatment options or guidelines.

This systematic review aims to evaluate literature that investigated the biomechanical strength of digital nerve repairs through varying methods in cadaveric models.

Aims/Hypothesis: The aim of the study is to evaluate the literature available for digital nerve repairs and directly compare which surgical method yields the best results. The primary outcome is maximum load to failure of the repaired digital nerve following biomechanical (tensile) strength testing. We postulate that out of all the repair methods, augmentation of repair with fibrin glue or additional conduit will increase the load to failure compared to suture only repair.

Methodology: We utilised the PRISMA methodology to conduct the systematic review. The following databases were searched: Embase, Medline, Cochrane, and Web of Science. Studies were reviewed and screened by two researchers following an inclusion and exclusion strategy to retrieve relevant papers.

Results: A total of seven papers were included in the final review; these papers reported biomechanical data on cadaveric digital nerve repairs. Due to heterogeneity of methods between papers, a combination of quantitative and qualitative analysis of the results was made.

Conclusion: The use of minimal suturing with conduit or glue or both has the ability to increase the maximum load to failure of digital nerve repairs compared to suture only methods. This has additional benefits to decrease the number of sutures required for repair. This thereby reduces potential scarring and inflammation.

Keywords: *digital nerve; repair techniques; peripheral nerves; review*

Reference

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