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Short Communication on a Comparison of Two versus Five Epineural Sutures to Achieve Successful Polyethylene Glycol (PEG) Nerve Fusion in a Rat Sciatic Nerve Repair Model

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Description

Peripheral nerve injuries pose a significant challenge in clinical practice. Understanding optimal repair techniques is crucial for improving patient outcomes. Recently Poly-Ethylene Glycol (PEG) nerve fusion for nerve repair has been an area of much research interest, as it allows for immediate nerve function by preventing Wallerian degeneration [1]. While early data has been promising for this powerful tool, optimal technique has yet to be fully elucidated. The study by Simon et al., addresses a critical aspect of PEG fusion, particularly focusing on the number of epineural sutures required for successful polyethylene glycol nerve fusion in a rat sciatic nerve repair model [2].

The results of the study are noteworthy. Both the 2 and 5 epineural suture groups achieved a 100 % success rate in PEG fusion, indicating that either approach is effective in promoting nerve fusion. Furthermore, there were no significant differences observed in Nerve Conduction Velocity (NCV) or tetanic force generation between the two groups, suggesting comparable functional outcomes. 2 and 5 sutures represent the extreme amounts of suture material that a surgeon might reasonably use in a rat sciatic nerve epineural repair. As these both performed in a similar fashion, it would suggest that both a 3 and 4 epineural suture repair would be successful as well.

The findings provide valuable insights for peripheral nerve surgeons. While the study primarily focused on immediate postoperative outcomes, it highlights the feasibility of achieving successful PEG fusion with either two or five epineural sutures. Additionally, the absence of significant differences in

functional parameters underscores the potential equivalence of these techniques in promoting nerve regeneration.

However, the study does have limitations. The lack of long-term functional assessments and survival data restricts the comprehensive evaluation of repair techniques. Future studies could address this limitation by investigating the long-term effects of varying suture techniques on functional recovery and nerve regeneration. Other technical factors beyond simply the number of sutures warrant consideration as well applied as we learn more about PEG fusion. Typically, in suture neurotomy without PEG, a tension free repair is preferred to allow motor and sensory axons to reconnect and heal appropriately to their mating axons [3]. With PEG, a tighter nerve approximation may be necessary, but this remains to be studied.

In conclusion, Simon et al., study contributes significantly to the understanding of PEG nerve fusion and emphasizes the importance of considering suture techniques in peripheral nerve repair. By demonstrating comparable success rates and functional outcomes between two and five epineural sutures, the study provides valuable guidance for clinicians in optimizing surgical techniques for peripheral nerve injuries. While PEG fusion demonstrates remarkable potential as a powerful tool aiding in nerve repair, more work remains necessary to understand how to optimize PEG fusion to achieve maximal functional outcomes.

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on the original manuscript.

Conflict of Interest

The authors declare no conflicts of interest. The study received financial support from Rowan University Camden Health Research Initiative Grant.

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