

End-to-side (ETS) **neurorrhaphy** is a promising procedure for peripheral nerve repair, yet controversies regarding the efficacy of this repair in facial nerve anastomosis for facial paralysis still exist.

Thirty rats were divided into three groups: intact control group, direct facial-hypoglossal ETS neurorrhaphy, and end-to-end (ETE) neurorrhaphy. Nerve regeneration was assessed with vibrissae motor performance, electrophysiological tests, retrograde labeling, and histomorphological analysis at 4 and 8 months postoperatively.

Both ETS and ETE neurorrhaphies resulted in Axon regeneration and functional recovery of the recipient nerve but did not reach the level of intact controls. Significantly higher numbers of myelinated axons and labeled neurons giving regenerating fibers were found in group ETE compared with group ETS at both time points, consistent with the functional and electrophysiological recovery. Group ETS showed significantly smaller fiber diameter and thinner myelin thickness than group ETE at 4 months, but the difference became nonsignificant at 8 months. ETS neurorrhaphy had a very slight effect on the donor nerve, as determined electrophysiologically and histomorphologically. Sparsely distributed double-labeled neurons and relatively large amounts of single-labeled neurons contributing to reinnervation were found through double retrograde neuronal labeling in group ETS. Further quantitative analysis of the percentage of double-labeled neurons showed a pronounced tendency to decline from 19.8% at 4 months to 6.0% at 8 months postoperatively.

Successful reinnervation after ETS neurorrhaphy could be achieved through both collateral sprouting and terminal sprouting, with the latter seeming to be the principal origin of motor nerve sprouting ¹⁾.

¹⁾

Liu P, Zhang Z, Liao C, Zhong W, Li P, Zhang W. Dynamic Quantitative Assessment of Motor Axon Sprouting after Direct Facial-Hypoglossal End-To-Side Neurorrhaphy in Rats. J Reconstr Microsurg. 2018 Apr 1. doi: 10.1055/s-0038-1636539. [Epub ahead of print] PubMed PMID: 29605955.

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