

## Selective Neurectomy and Fractional Lengthening in Spastic Hand Deformity: A Case Report

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### INTRODUCTION:

Spasticity in the hands can significantly impair function and quality of life in individuals with conditions such as cerebral palsy, stroke, or traumatic brain injury. Selective neurectomy is a surgical approach aimed at reducing spasticity and improving hand function by targeting specific nerves contributing to the abnormal muscle tone<sup>1</sup>.

### REPORT:

We present the case of a 45-year-old female patient with a history of a cerebrovascular event from a ruptured arterio-venous malformation. The patient was presented with a clenched fist and limited range of motion. Post Botulinum toxin injection showed improvement, and the patient could function. Under general anesthesia, careful dissection was performed to identify the motor branches of the ulnar nerve to flexor carpi ulnaris and median nerve branches to flexor carpi radialis muscle. Using microsurgical techniques, 2/3 of the identified nerves were selectively transected, aiming to reduce spasticity while preserving motor function. Fractional lengthening was performed on the flexor digitorum profundus<sup>2</sup>. Following surgery, the patient underwent a comprehensive rehabilitation program focusing on hand therapy, range of motion exercises, and functional training. Spasticity in the affected hand was notably reduced, leading to improved ease of movement and decreased muscle stiffness. The patient reported high satisfaction with the outcome of the procedure and noted improvements in activities of daily living.



**Figure 1:** Intraoperative pictures of selective neurectomy and fractional lengthening

### CONCLUSION:

This case report highlights the successful use of selective neurectomy and fractional lengthening in the management of spastic hand deformity. The procedure resulted in significant improvements in hand function and reduction in spasticity, leading to enhanced independence and satisfaction. Selective neurectomy represents a promising option for individuals with similar clinical presentations, although further research is needed to validate its efficacy and long-term outcomes.

### REFERENCES:

1. Gras M, Leclercq C. Spasticity and hyper-selective neurectomy in the upper limb. *Hand Surg Rehabil* 2017;36:391–401.
2. Arnaout A, Leclercq C. Fractional Lengthening of the Forearm Flexor Muscles: Anatomic Study. *J Hand Surg Am.* 2022 Aug;47(8):792.e1-792.e5.