Division of Plastic & Reconstructive Surgery

# Adjunctive Complete Brachioradialis Tenotomy with Nerve Release for Decompression of the Superficial Branch of the Radial Nerve in the Forearm

Elspeth JR Hill, MD, PhD, MRes; William N Pelfrey, MD; Jessica Hasak, RN; Susan E Mackinnon, MD

Washington University in St. Louis School of Medicine

## Introduction

Management of Wartenberg syndrome, or compression of the superficial branch of the radial nerve at the interval between the extensor carpi radialis longus and brachioradialis tendons, remains a challenge.

Surgical treatment of resistant symptoms typically involves release of the nerve with or without neurolysis. Symptom resolution is variable and often incomplete.

In this case series, we describe our experience with adjunctive complete tenotomy of the brachioradialis tendon for decompression of the superficial branch of the radial nerve.

## Methods

**Study design**: Retrospective review of 30 consecutive patients treated by a single surgeon.

**Cohort**: Patients who underwent surgical decompression of the superficial branch of the radial nerve (**Figure 1**) as indicated by any of the following over the compression site in the forearm:

1. Tinel's sign
2. Suggestive provocation testing
3. Scratch-collapse testing

**Outcome**: Changes in visual analogue scale (VAS) for pain severity and impact on quality of life (**Figure 2**) between pre-operative and final post-operative visits.

**Statistical analyses**: Changes in VAS scores were assessed by Wilcoxon signed-rank test. The influence of patient characteristics (e.g. age, sex, handedness, etc.) on VAS scores was assessed by linear regression.

## Results

Median post-operative follow-up: 78 days (IQR 41 to 180 days).

Patients often underwent other nerve procedures concurrently:

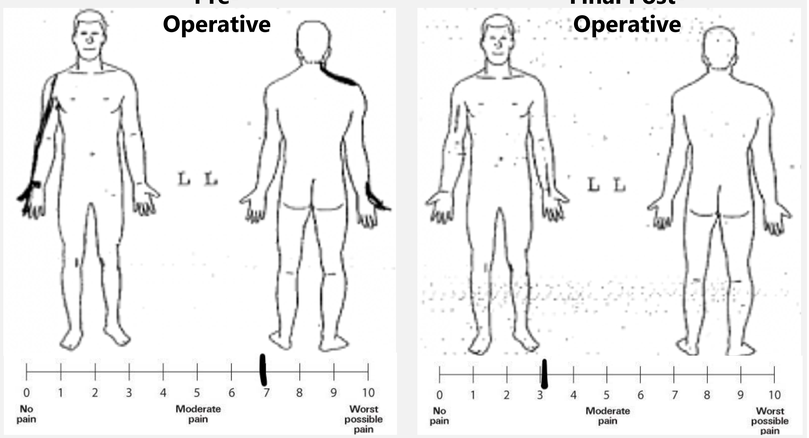
- 8 underwent decompression of the posterior interosseus nerve.
- 8 received operations to address other upper extremity nerves, including carpal tunnel release.

Among those receiving **only** radial nerve procedures:

- Pre-operative: median pain 6/10 and quality of life impact 8/10.
- Post-operative improvements: pain reduced **2/10 (p=0.025)** and quality of life improved **2/10 (p=0.0049)**.

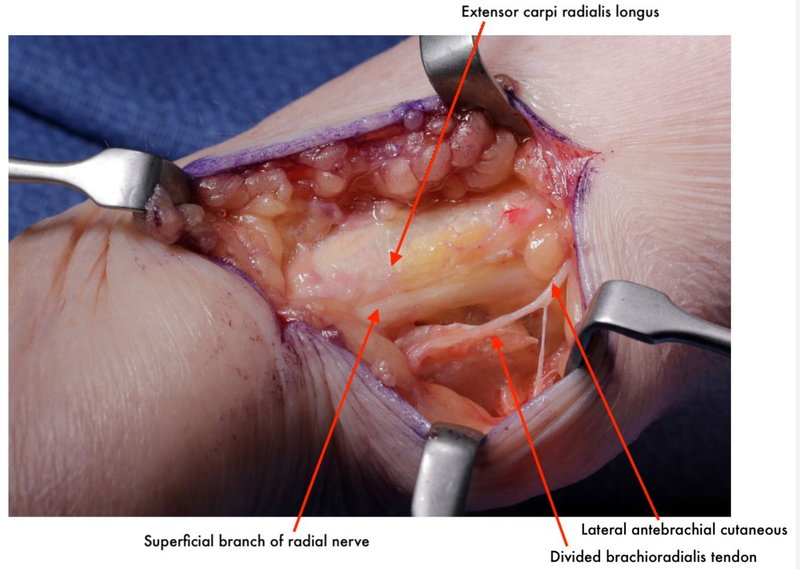
Younger patients had larger improvements in pain **(b= 0.21, 95% CI 0.10 to 0.31, p=0.0013)** and quality of life **(b= 0.23, 95% CI**

**Figure 2**




Pain diagrams and pain visual analogue scales for a single patient.

**Figure 1**




Demonstration of complete brachioradialis tenotomy with nerve release.

## Conclusions

Most patients in this series experienced substantial improvements in pain and quality of life.

Younger patients tended to experience the greatest improvements.

Complete brachioradialis tenotomy with nerve release is a promising method for decompression of the superficial branch of the radial nerve in the forearm.

Larger, comparative studies are needed to evaluate the superiority of this method over alternative techniques.