The Effectiveness of Surgical and Nonsurgical Management of Radial Tunnel Syndromes

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Background
The objective of our study was to compare the effectiveness of surgical and nonsurgical treatment for Radial Tunnel Syndrome (RTS). We hypothesized that RTS could be treated without surgery, if nonsurgical treatments failed, surgical intervention would be successful.

Methods
- Retrospective study
  - Reviewed medical records of 64 patients (>18 years) diagnosed with RTS (82 arms)
  - Beth Israel Deaconess Medical Center, 2004 to 2010
- Criteria for RTS Diagnosis
  - Focal pain and tenderness in the area of the radial tunnel on palpation, with no weakness, and pain affecting daily activities [1]
- Extracted pain scores
  - Pain levels were reported by patients before treatment, after conservative treatment (final visit before surgery), and after surgery
  - Adopted pain levels to Roles and Maudsley’s criteria of four levels [1]:
    1. Zero (no pain/activity limitations)
    2. Mild (occasional pain/no activity limitations)
    3. Moderate (pain with prolonged activity/limited activity)
    4. Severe (pain with minimal activity/limited activity).
- Conservative treatment involves activity modification, splinting and occupational therapy [2]
- Surgical treatment involves release of the radial tunnel to decompress the radial nerve proper, PIN and SBRN [3]

Results
- Clinical progression of conservative treatment of 82 arms (64 patients) from initial pain level to final pain level:
  Before treatment, pain level was severe in 35 arms (43%), while pain level was moderate in 47 arms (57%). After conservative treatment, pain level was mild in 28 arms (34%), and pain level was zero in 9 arms (11%). Conservative treatment was successful (mild or zero pain level) in 45% of the arms.

- Success of conservative treatment versus operative treatment by initial pain assessment of moderate or severe:
  There was no association between treatment success and operative versus conservative management in the 47 arms with moderate initial pain (P = 1.00, chi-square test). However, in the 35 arms with severe initial pain, there was a significant difference in treatment success rate based on management strategy. 8 of 11 arms (73%) with severe initial pain were successfully treated with surgery, while only 6 of 24 arms (25%) with severe initial pain were successfully treated with conservative management alone (P = 0.011, chi-square test).

- Multivariate analysis found that after controlling for comorbid lateral epicondylitis and occupation, the following factors were independent predictors of treatment success:
  - Surgical management (OR=13.5; P<0.001)
  - Female gender (OR=4.8; P=0.019)
  - Moderate initial pain (OR=7.5; P=0.003)

Limitations
- Descriptive, Retrospective Chart Review
  - No surgical control, no randomization
  - Single-center study, with single surgeon
  - Despite a seemingly large study cohort overall, small sample sizes relative to the subgroups of pain

Conclusions
- In the present, retrospective cohort comparison study, we found that conservative management was effective in nearly half of patients diagnosed with RTS
- Surgical intervention in those patients who failed conservative treatments may be successful in three-quarters of patients
- Our 75% surgical success rate seems to be consistent with the three other studies which also decompressed the PIN and SBRN (1, 4, 5)
- Prospective, randomized controlled studies are needed to compare nonsurgical and surgical interventions for RTS.

References