The efficiency of tenosynovectomy during A1 pulley release in patients with trigger finger

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Introduction

- Stenosing flexor tenosynovitis
  - One of the most common condition among upper extremity disease
  - Middle aged women, ring finger
  - Lifetime prevalence of trigger finger: 2.2% nondiabetics above 30 ages group
  - Usually associated with carpal tunnel syndrome
- PIJP contracture of flexor tenosynovitis
  - Prolonged trigger finger may develop flexion contracture at the proximal interphalangeal joint (PIPJ)
  - Flexor digitorum superficialis (FDS) contracture with degeneration
  - Intra-articular pathologuy
  - Various treatment options for PIJP contracture
    - Ulnar slip resection of FDS
    - Flexor digitorum profundus (FDP) reduction tenoplasty
- PIJP contracture and adhesion of flexor tendons
  - Dense synovial tissues encircled the FDP and FDS and these two tendons seemed to move as a monotendon
  - Flexor monotonod (FDS, FDP) could not deliver the distal interphalangeal joint (DIPJ) flexion force properly
  - Flexion force of DIPJ may be dispersed into PIJP and metacarpophalangeal joint (MCPJ)
  - Balance between extension and flexion would be broken
  - PIJP would become gradually flexed

Purpose of study

- To clarify the efficiency of tenosynovectomy during A1 pulley release in patients with flexor tenosynovitis
- Flexor deformity of the PIJP might be relevant to the severe adhesion between FDP and FDS tendons

Materials & Methods

- Inclusion criteria
  - Patients who performed primary A1 pulley release with tenosynovectomy
- Exclusion criteria
  - Neuromuscular disease
  - Severe hand osteoarthritis
  - Simultaneously operated for carpal tunnel release (CTR) or trigger thumb surgery
- Operative procedure
  - FDS and FDP tendons were exposed and marked at same level using surgical marker to evaluate the excursion
  - The subjects were instructed to flex the DIPJ with fixed middle phalanx and full extension of PIJP position, and difference between extent of excursion of FDS and that of FDP were measured
  - After tenosynovectomy, same procedures were performed to evaluate difference between extent of excursion

Measurement of Clinical outcomes

- Preoperative work-up
  - Careful physical examination including PIJP flexion contracture and pain Visual analog scale (VAS)
  - Hand and finger both X-ray series

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Results

Patients demographic data

<table>
<thead>
<tr>
<th>Number of digits involved</th>
<th>34</th>
</tr>
</thead>
<tbody>
<tr>
<td>Index</td>
<td>3  (8.8%)</td>
</tr>
<tr>
<td>Middle</td>
<td>21 (61.8%)</td>
</tr>
<tr>
<td>Ring</td>
<td>9  (26.5%)</td>
</tr>
<tr>
<td>Little</td>
<td>1  (2.9%)</td>
</tr>
<tr>
<td>Number of patients</td>
<td>27</td>
</tr>
<tr>
<td>Men</td>
<td>10 (37%)</td>
</tr>
<tr>
<td>Women</td>
<td>17 (63%)</td>
</tr>
<tr>
<td>Average age at operation</td>
<td>62.9 ± 10.7 (44-91) yrs</td>
</tr>
</tbody>
</table>

Difference of excursion, PIJP contracture, and pain VAS

<table>
<thead>
<tr>
<th>Excursion difference (mm)</th>
<th>8.01 ± 1.28</th>
<th>7.51 ± 1.35</th>
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</thead>
<tbody>
<tr>
<td>PIJP contracture (degree)</td>
<td>6.89 ± 7.79</td>
<td>1.56 ± 3.99</td>
</tr>
<tr>
<td>pain VAS</td>
<td>4.37 ± 2.00</td>
<td>2.24 ± 1.23</td>
</tr>
</tbody>
</table>

Significance: (T0) – (T1) ** P < 0.05

Other results

- In twenty-eight patients (82%), full extension was achieved following only tenosynovectomy with A1 pulley release procedures.
- After six months, it also remained fully extended
- Complications were not observed

Discussion & Conclusions

- Postoperative follow up
  - Outpatient clinic follow up at two weeks, six weeks, six months postoperatively
  - Re-checking the PIJP flexion contracture, pain VAS
  - Clinical outcomes were measured before and six months after surgery

- Discussions
  - FDP seemed to move more than FDS during flexion of DIPJ
  - If enough tenosynovectomy are not conducted, thickened tendon couldn’t easily pass distal pulley during ROM exercise
  - As a result, persistent triggering and progressive flexion contracture could be occurred

Conclusion

- Performing sufficient tenosynovectomy in A1 pulley release was crucial to resolving the proximal interphalangeal joint (PIJP) contracture and also improving clinical manifestation

Reference