THE PROGNOSIS OF FASCIECTOMY FOR ABDUCTOR DIGITI MINIMI AND PRETENDINOUS CORDS IN DUPUYTREN’S DISEASE OF THE LITTLE FINGER

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ABSTRACT
Thirty-nine consecutive patients with little finger Dupuytren’s contracture underwent open fasciectomy. Diseased abductor digiti minimi (ADM) pretendinous (PT) cords were identified. The mean pre-operative PIPJ contracture was 77° in the PT group and 66° in the ADM group. Mean residual deformity was 12° in the PT group and 9° in the ADM group. At six months, ten out of 27 patients had developed a recurrent deformity in the PT group (mean 24°) and seven out of 11 in the ADM group (mean 18°). There was no statistically significant difference between the two groups at any stage. Dupuytren’s contracture of the little finger is as a result of an ADM cord in 29% of cases. In this series it led to an isolated contracture of the PIPJ in the majority of cases and rarely affected the MCPJ. Disease of the ADM cord was not associated with a difference in contracture or prognosis compared to a PT cord.

Keywords: Dupuytren’s; Fasciectomy; Abductor Digiti Minimi; Correction; Recurrence.

INTRODUCTION
Dupuytren’s disease is a benign fibroproliferative condition, which affects the superficial palmar and digital fascia. This results in the formation of fibrous cords and nodules, leading to flexion contractures of the digits. In the UK population the most commonly operated digit is the little finger.1 The disease arises from a pretendinous cord in the palm, which may become a spiral, lateral or central cord in the finger. However, a cord arising from the abductor digit minimi has also been highlighted as an important deforming force in disease of the little finger.2,3

The abductor digiti minimi (ADM) forms part of the hypothenar eminence. It arises from the pisiform bone and the tendon of flexor carpi ulnaris and inserts into the ulnar side of the base of the little proximal phalanx and into the extensor expansion. Diseased fascia most commonly arises from the ADM tendon. This has a variable pattern of insertion, with the majority of ADM cords inserting into the middle phalanx flexor sheath.2

There is little in the published literature analysing the effect of the ADM cord on Dupuytren’s contracture. The initial literature is some 20 years old.2,3 The only series available in the recent literature is by Meathrel and Thoma (2004) who retrospectively reviewed a series of patients with little finger Dupuytren’s disease.4 They concluded that the presence of an ADM cord leads to increased pre- and post-operative contracture. However, this study relied on operation note descriptions without post-operative follow-up. We could find no prospective studies...
on the maintenance of correction achieved at little finger fasciectomy.

This study prospectively analyses a single surgeon cohort of patients with little finger Dupuytren's disease in order to establish its effect on pattern of disease and outcome of surgical correction.

MATERIALS AND METHODS

All patients attending our institution between March 2006 and March 2007 were included in this study. Thirty-nine consecutive patients with symptomatic, isolated Dupuytren's disease of the little finger were identified. All patients underwent open surgical fasciectomy. There were eight female patients. The mean age was 64.6 years (SD 10).

All procedures were performed or directly supervised by the senior author (R. K. Bhatia). The flexion deformity at each joint was measured pre-operatively using a finger goniometer. Open fasciectomy was performed, under loupes magnification, with visualization of the ADM insertion in all cases. A straight incision was made on the finger and extended to a zig-zag into the palm. Diseased fascial cords were identified and the pattern of fascial involvement was based upon the appearance in the distal palm and recorded as either pretendinous (PT) or arising from ADM (Fig. 1).

There were 27 patients in the PT group and 11 in the ADM group. One patient had a combined ADM and PT involvement and was excluded from analysis. The cords were excised with careful protection of the neurovascular bundles in all cases. If correction to less than 20° was not achieved at the PIPJ, a sequential release of the A3 pulley, check-rein ligaments and accessory collateral ligaments was performed. The wounds were closed with interrupted non-absorbable, monofilament sutures, using z-plasties as required. Correction achieved at each joint was recorded immediately at the end of the procedure. All patients underwent three months of hand therapy by a specialist hand physiotherapist (D. Pearson). A standardised rehabilitation protocol, including night splintage, was applied to both groups in an identical manner.

Previous studies have shown that the majority of recurrences occur within three months of operation. We therefore determined the final outcome as the residual contracture present at six months post-operation and prognosis as the likelihood of persistent deformity. At the final assessment the same observer (D. Pearson) measured the contracture present at each joint using a finger goniometer.

Differences in degree of contracture were analysed pre-operatively, immediately post-operatively and at final assessment using the non-parametric Mann-Whitney U-Test. Significance level was set at p < 0.05.
Table 1 The Pattern of Joint Deformity Between the Abductor Digiti Minimi (ADM) and Pretendinous (PT) Cord Groups.

<table>
<thead>
<tr>
<th></th>
<th>ADM</th>
<th>PT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean PIPJ Contracture</td>
<td>66°</td>
<td>77°</td>
</tr>
<tr>
<td>SD</td>
<td>26.6</td>
<td>29.5</td>
</tr>
<tr>
<td>N</td>
<td>11</td>
<td>21</td>
</tr>
<tr>
<td>Mean MCPJ Contracture</td>
<td>50°</td>
<td>51°</td>
</tr>
<tr>
<td>SD</td>
<td>N/A</td>
<td>16.2</td>
</tr>
<tr>
<td>N</td>
<td>11</td>
<td>21</td>
</tr>
<tr>
<td>TOTAL (Patients)</td>
<td>11</td>
<td>27</td>
</tr>
</tbody>
</table>

RESULTS

The pattern of clinical deformity was different between the two groups. All patients in the ADM group had a PIPJ flexion contracture (mean 66°, SD 26.6°). This was an isolated contracture in ten patients. Only one patient had a combined MCPJ (30°) and PIPJ (20°) deformity. This contrasted with the PT group, where only six patients had an isolated PIPJ contracture and combined deformity was much more frequent (21 out of 27 patients) (see Table 1).

All MCPJ contractures were fully correctable. Eight patients had recurrence of deformity at six months (mean 16.7°, SD 7.5°).

Ten patients with PIPJ contractures in the PT group and six in the ADM group achieved full correction at surgery. Two patients in the PT group had significant contractures (90° and 120°) that achieved minimal correction despite sequential capsuloligamentous release. After excluding these two outlying patients, the mean residual PIPJ contraction was 12° (SD 15°) in the PT group and 9° (SD 11°) in the ADM group.

At the final six-month assessment, ten out of 27 patients had developed a recurrence of a PIPJ deformity in the PT group (mean 24°, SD 12°) and seven out of 11 in the ADM group (mean 18°, SD 11°) (see Table 2).

There was no statistically significant difference between the two groups at any stage.

DISCUSSION

This study confirms previous findings that an ADM cord is present in approximately 30% of patients with little finger Dupuytren’s disease. There appears to be a difference in the pattern of joints affected. The ADM cord in this series resulted in an isolated PIPJ contracture and spared the MCPJ in all but one case. The PT cord in contrast affected the MCPJ in the majority of cases with more variable involvement of the PIPJ. This is in concordance with Barton’s description of ADM involvement which identified that, although variable, the majority of ADM cords arise solely from the ADM tendon and insert into the middle phalanx flexor sheath.

Flexion contracture of the PIPJ is a difficult problem for hand surgeons especially involvement of the little finger. Complete correction is often difficult and recurrence rates are high. Capsuloligamentous release has been proposed to improved outcomes in some series but others, even by the same group, have been unable to demonstrate a significant advantage. Van Giffen compared the results of limited fasciectomy, segmental fasciectomy and dermofasciectomy and was unable to demonstrate superiority of any technique as all had equally high rates of recurrent and residual deformity.

In this series we also had a relatively high level of recurrence of MCPJ contracture. All of these were in patients with combined PIPJ and MCPJ deformity, four of which had initial deformity of > 60°, a group prone to higher levels of recurrence. The small number of patients in our cohort limits this study. Larger, multi-centre series would be beneficial to ensure that the lack of significance demonstrated was not due to type II error. In addition, longer follow-up may show increased recurrence however previous studies have shown that loss of correction occurs predominately in the first three months, which is within the timescale of our analysis.

In conclusion, we have confirmed that the ADM cord is a common deforming force in Dupuytren’s disease of the little finger, particularly in patients with an isolated PIPJ contracture. This remains a challenging problem for hand surgeons but the cause of the deformity, either ADM or PT cords, does not appear to affect the outcome of fasciectomy.
References
