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Rodrigues JN, Becker GW, Ball C, Zhang W, Giele H, Hobby J, Pratt AL, Davis T. Surgery for Dupuytren's contracture of the fingers. *Cochrane Database of Systematic Reviews* 2015, Issue 12. Art. No.: CD010143. DOI: 10.1002/14651858.CD010143.pub2.

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[Intervention Review]

Surgery for Dupuytren's contracture of the fingers

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Editorial group: Cochrane Musculoskeletal Group. Publication status and date: New, published in Issue 12, 2015.

Citation: Rodrigues JN, Becker GW, Ball C, Zhang W, Giele H, Hobby J, Pratt AL, Davis T. Surgery for Dupuytren's contracture of the fingers. *Cochrane Database of Systematic Reviews* 2015, Issue 12. Art. No.: CD010143. DOI: 10.1002/14651858.CD010143.pub2.

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ABSTRACT

Background

Dupuytren's disease is a benign fibroproliferative disorder that causes the fingers to be drawn into the palm via formation of new tissue under the glabrous skin of the hand. This disorder causes functional limitations, but it can be treated through a variety of surgical techniques. As a chronic condition, it tends to recur.

Objectives

To assess the benefits and harms of different surgical procedures for treatment of Dupuytren's contracture of the index, middle, ring and little fingers.

Search methods

We initially searched the following databases on 17 September 2012, then re-searched them on 10 March 2014 and on 20 May 2015: the Cochrane Central Register of Controlled Trials (CENTRAL), *The Cochrane Library*, the British Nursing Index and Archive (BNI), the Cumulative Index to Nursing and Allied Health Literature (CINAHL), EMBASE, the Latin American Caribbean Health Sciences Literature (LILACS), Ovid MEDLINE, Ovid MEDLINE-In-Process and Other Non-Indexed Citations, ProQuest (ABI/INFORM Global and Dissertations & Theses), the Institute for Scientific Information (ISI) Web of Science and clinicaltrials.gov. We reviewed the reference lists of short-listed articles to identify additional suitable studies.

Selection criteria

We included randomised clinical trials and controlled clinical trials in which groups received surgical intervention for Dupuytren's disease of the index, middle, ring or little finger versus control, or versus another intervention (surgical or otherwise). We excluded the thumb, as cords form on the radial aspect of the thumb and thus are not readily accessible in terms of angular deformity. Furthermore, thumb disease is rare.

Data collection and analysis

A minimum of two review authors independently reviewed search results to select studies for inclusion by using pre-specified criteria, assessed risk of bias of included studies and extracted data from included studies.

We grouped outcomes into the following categories: (1) hand function, (2) other patient-reported outcomes (e.g. satisfaction, pain), (3) early objective outcomes (e.g. correction of angular deformity), (4) late objective outcomes (e.g. recurrence) and (5) adverse effects.

Main results

We included 14 articles describing 13 studies, comprising 11 single-centre studies and two multi-centre studies. These studies involved 944 hands of 940 participants; of these, 93 participants were reported twice in separate articles describing early and late outcomes of one trial. Three papers reported the outcomes of two trials comparing different procedures. One trial compared needle fasciotomy versus fasciectomy (125 hands, 121 participants), and the other compared interposition firebreak skin grafting versus z-plasty closure of fasciectomy (79 participants). The other 11 studies reported trials of technical refinements of procedures or rehabilitation adjuncts. Of these, three investigated effects of postoperative splinting on surgical outcomes.

Ten studies (11 articles) were randomised controlled trials (RCTs) of varying methodological quality; one was a controlled clinical trial. Trial design was unclear in two studies awaiting classification. All trials had high or unclear risk of at least one type of bias. High risks of performance and detection bias were particularly common. We downgraded the quality of evidence (Grades of Recommendation, Assessment, Development and Evaluation - GRADE) of outcomes to low because of concerns about risk of bias and imprecision.

Outcomes measured varied between studies. Five articles assessed recurrence; two defined this as reappearance of palpable disease and two as deterioration in angular deformity; one did not explicitly define recurrence.

Hand function on the Disabilities of the Arm, Shoulder and Hand (DASH) Scale (scores between 0 and 100, with higher scores indicating greater impairment) was 5 points lower after needle fasciotomy than after fasciectomy at five weeks. Patient satisfaction was better after fasciotomy at six weeks, but the magnitude of effect was not specified. Fasciectomy improved contractures more effectively in severe disease: Mean percentage reduction in total passive extension deficit at six weeks for Tubiana grades I and II was 11% lower after needle fasciotomy than after fasciectomy, whereas for grades III and IV disease, it was 29% and 32% lower.

Paraesthesia (defined as subjective tingling sensation without objective evidence of altered sensation) was more common than needle fasciotomy at one week after fasciectomy (228/1000 vs 67/1000), but reporting of complications was variable.

By five years, satisfaction (on a scale from 0 to 10, with higher scores showing greater satisfaction) was 2.1/10 points higher in the fasciectomy group than in the fasciotomy group, and recurrence was greater after fasciotomy (849/1000 vs 209/1000). Firebreak skin grafting did not improve outcomes more than fasciectomy alone, although this procedure took longer to perform.

One trial investigated four weeks of day and night splinting followed by two months of night splinting after surgery. The other two trials investigated three months of night splinting after surgery, but participants in 'no splint' groups with early deterioration at one week were issued a splint for use. All three studies demonstrated no benefit from splinting. The two trials investigating postoperative night splinting were suitable for meta-analysis, which demonstrated no benefit from splinting: Mean DASH score in the splint groups was 1.15 points lower (95% confidence interval (CI) -2.32 to 4.62) than in the no splint groups. Mean total active extension in the splint groups was 2.21 degrees greater (95% CI -3.59 to 8.01 degrees) than in the no splint groups. Mean total active flexion in the splint groups was 8.42 degrees less (95% CI 1.78 to 15.07 degrees) than in the no splint groups.

Authors' conclusions

Currently, insufficient evidence is available to show the relative superiority of different surgical procedures (needle fasciotomy vs fasciectomy, or interposition firebreak skin grafting vs z-plasty closure of fasciectomy). Low-quality evidence suggests that postoperative splinting may not improve outcomes and may impair outcomes by reducing active flexion. Further trials on this topic are urgently required.

PLAIN LANGUAGE SUMMARY

Surgery for Dupuytren's disease of the fingers

Review question

We conducted a review of the effects of surgery for people with Dupuytren's disease of the fingers and found 13 studies with 940 participants; 93 participants were reported twice in separate articles describing early and late outcomes of one trial.

Background

Dupuytren's disease is common. Patients develop scar-like tissue under the palmar skin of the hand that draws their fingers into the palm and can affect function.

This condition can be surgically treated by cutting out the disease, then stitching the skin back into place (fasciectomy) or replacing it with a graft of skin taken from elsewhere on the body (dermofasciectomy). Alternative approaches involve breaking the cord of disease to straighten the finger. This can be done by moving a needle back and forth through the cord until it snaps, as when rubbing a rope repeatedly over a rock (needle fasciotomy), or by injecting into it an enzyme that digests a piece of the cord (collagenase). This weakens one spot, allowing the surgeon to snap the cord and straighten the finger. As the condition is related in part to genetics, it tends to come back, even

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after successful treatment. As the latter two treatments leave the broken ends of the cord behind, recurrence may be quicker after these procedures than after traditional excisional surgery. However, recovery might also be quicker. The most effective treatment is unclear.

Study characteristics

After searching for all relevant studies up to May 2015, we found 13 studies (14 articles) that met our inclusion criteria. However, only three compared different operation types. The others compared aspects of one operation type. One study presented early and late outcomes.

Key results

What happens to people with Dupuytren's disease up to five weeks after needle fasciotomy compared with fasciectomy?

- Hand function may be slightly better after needle fasciotomy than after fasciectomy (low-quality evidence).
- People who have had needle fasciotomy may be more satisfied than those who have had fasciectomy (low-quality evidence).

• Fasciectomy probably straightens fingers better than needle fasciotomy in people with advanced disease, but probably no difference is apparent in people with milder disease (low-quality evidence).

• A feeling of tingling in the fingers is probably more common after fasciectomy than after needle fasciotomy during the first week after treatment (low-quality evidence).

What happens to people with Dupuytren's disease five years after needle fasciotomy compared with fasciectomy?

- Satisfaction may be better after fasciectomy than after needle fasciotomy (low-quality evidence).
- Recurrence may be more common after needle fasciotomy than after fasciectomy (low-quality evidence).

What happens to people with Dupuytren's disease up to 36 months after z-plasty closure of a limited fasciectomy compared with use of small 'firebreak' skin grafts (a form of dermofasciectomy)?

• Little or no difference in outcomes is likely between patients who had z-plasty and those who had small skin grafts, although skin graft procedures take longer to perform (low-quality evidence).

What happens to people with Dupuytren's disease who wear a splint at night after surgery?

• Wearing a splint at night after surgery probably does not help to straighten fingers nor to improve hand function, and it may slightly worsen the patient's ability to make a full fist (low-quality evidence).

Side effects in people with Dupuytren's disease after surgery and in those who wear a splint at night after surgery

Reporting of complications was variable. We often do not have precise information about side effects and complications, particularly rare but serious side effects. Side effects may include altered feeling in the fingers or reduced ability to make a full fist. Rare complications may include injury to the tendons that pull the fingers into the palm.