

Use of a Fascia Lata Interposition Graft to Manage Persistent Pain Following Trapeziectomy for Carpometacarpal Osteoarthritis of the Thumb

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1. Abstract

Persistent pain after trapeziectomy is relatively common, frequently caused by coexisting scapho-trapezio-trapezoidal arthritis and/or impingement of bases of first and second metacarpals. A variety of treatment options have been described including revision ligament reconstruction tendon interposition and use of interposition material. This paper describes a simple technique using fascia lata autograft interposition, producing good outcome in a small series of patients, with minimal donor site morbidity and good pain relief.

2. Keywords: CMC; STT; Osteoarthritis; Trapeziectomy; Fascia lata; Interposition graft

3. Introduction

Osteoarthritis of the carpometacarpal (CMC) joint of the thumb, also referred to as the trapeziometacarpal joint or the basal joint of thumb, is a common cause of disability and has a reported overall prevalence of almost 15%, while in the elderly (those aged 70 years and over) the prevalence of the condition is approximately 26% in women and 13.4% in men [1,2]. Moreover, CMC osteoarthritis is one of the leading reasons to carry out hand surgery in the United Kingdom [3]. Treatment of the early-stages of

CMC osteoarthritis focuses on symptom control and improvement alongside slowing the progression of joint degeneration with the use of nonsteroidal anti-inflammatory drugs and activity modification [4]. Other methods of controlling the symptoms include splinting the joint and intra-articular corticosteroid injections [5-7].

Management of later stages of the disease frequently involves surgery to remove the arthritic joint [4]. The gold standard operation is the simple trapeziectomy (removal of the trapezium). This operation, that was first proposed in 1947, is still frequently employed to treat these patients' symptoms [8-10]. There are now a multitude of different techniques that surgeons can opt to utilize that build upon this original concept, including partial trapeziectomy, ligament reconstruction and insertion of a prothesis or interposition using allograft, such as fascia lata [11-13]. It is increasingly common nowadays for surgeons to carry out both a ligament reconstruction and tendon interposition (LRTI) [14,15]. When there is scapho-trapezio-trapezoid (STT) osteoarthritis alongside

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CMC osteoarthritis, trapeziectomy can also be combined with a partial resection of the radial edge of the trapezoid to prevent secondary impingement between this bone and the base of the first metacarpal [16].

However, these operations have been associated with a number of complications and it has been observed that persistent pain following trapeziectomy is a frequent challenge faced by hand surgeons [17]. Chronic pain may occur when a patient has an element of STT osteoarthritis prior to surgery and the scapho-trapezoid joint was not adequately treated whilst performing the primary excision of the trapezium [18]. Another reported complication that can occur post-trapeziectomy and which can lead to pain is scapho-metacarpal impingement, where there is subsidence of the first metacarpal proximally, or, potentially, medially due to involvement of the base of the index metacarpal [19,20]. There are studies both in favour of and against a hemi-trapezoid excision [21,22]. Other techniques range from revision LRTI to use of costochondral autograft as interposition [23,24].

To overcome these complications and the resulting pain, the senior author utilises a simple technique of use of autologous fascia lata interposition graft that has not previously been described. Fascia lata has the advantages of lack of rejection, being readily available in abundant quantity and low donor site morbidity, causing no functional deficit. This is why fascia lata is used as an autograft for a variety of indications. This article presents a description of the surgical technique alongside a report of a number of cases where this surgical intervention has been employed.

4. Surgical Technique

For access, the original trapeziectomy incision is used. A thorough debridement of the STT joint area and the adjacent surfaces of the bases of first and second metacarpals is performed, both to remove all osteophytes and to create some space. At this point, if

any form of LRTI was performed at the time of initial trapeziectomy this is likewise removed.

To access fascia lata, a 5 to 6 cm long vertical incision is made over the anterolateral aspect of upper thigh. With some retraction it is possible to harvest a strip of fascia lata, measuring approximately 10x6 cm through this incision. The wound is closed in layers, after which a padded dressing is applied and a small concertina type vacuum drain is left in situ that is removed after 2 to 3 hours and prior to the patient's discharge.

The strip of fascia lata is cleared of any attached adipose tissue and folded over and over to create a longitudinal strip approximately 1 to 1.5 cm wide. A running 4/0 polypropylene suture is applied to both long borders to maintain the shape of the strip of fascia lata.

A Spence Wells artery forceps is passed through the trapeziectomy incision and then through the interspace between the bases of the first and second metacarpal until it comes into contact against the dermis of the skin in the first web. The blades of the artery forceps are opened slightly and a small incision is made between the tips of the forceps. Subsequently, a second pair of artery forceps is passed through this incision in the first web inside (by a railroading technique if necessary) after which the first forceps is removed. One end of the fascia lata strip is then grasped in the artery forceps and the terminal end pulled through into the incision in the first web. A 3/0 polypropylene suture is used to fix this end with the skin.

The remaining length of the fascia lata strip is rolled like an anchovy, stabilised by a few 4/0 polypropylene interrupted sutures. This is then pushed into the trapeziectomy space and the dorsoradial joint capsule is closed as much as possible.

The wounds are covered with non-adhesive paraffin tulle, gauze, wool roll and crepe bandage. No cast or splint is used. The patient is discharged on the same day after 2 to 3 hours once the drain from the donor

site in the thigh is removed.

The skin sutures of the radial wound are removed after 10 to 14 days. The single suture in the first web stabilising the distal end of the fascia lata strip is removed after 3 to 4 weeks. The rehabilitation regime involves gentle mobilisation, building up to return to normal activities by 4 weeks (Figure 1 and 2).



Figure 1: Show some examples of the scarring at the donor site on the upper thigh, and the two scars on the hand – the trapeziectomy scar, and a small scar in the dorsum of the first web.



Figure 2: Show some examples of the scarring at the donor site on the upper thigh, and the two scars on the hand – the trapeziectomy scar, and a small scar in the dorsum of the first web.

5. Results

This technique has been used successfully in 10 patients in 12 hands. The patients were mostly women (8 women, 2 men) with an average age of 64.1 years (range 48 to 73 years) at the time of surgery. Surgery was performed on the right hand on seven occasions and left on five. Two patients had surgery to both hands. The patients were followed for an average of 15 months after surgery (range 6 to 22 months).

All patients reported improvement in their pain. Only complications reported were a small seroma at the donor site in one patient that resolved spontaneously without any intervention and a small patch of numbness around the scar at the donor site at one patient.

All patients reported that they would be happy to have a similar procedure in the opposite hand. Two patients did request for the same when needed.

6. Discussion

Residual pain after trapeziectomy is relatively common and often arises from concomitant osteoarthritis of STT joints and/or impingement between the bases of first and second metacarpals (REF).

A variety of treatment options have been described ranging from revision LRTI, hemitrapezoidectomy and interposition of costochondral grafts.

We describe a simple and quick technique that has given us uniformly good result with low complication rate.

Our series is relatively small as they pertain to the practice of a single surgeon.

Other limitations include no randomisation, lack of a double-blind control and a relatively modest follow up period.

However, based on our early experience, we would recommend this technique for persistent post-trapeziectomy pain.

References

1. [Deveza LA, Hunter DJ, Wajon A, Bennell KL, Vicenzino B, Hodges P, et al. Efficacy of combined conservative therapies on clinical outcomes in patients with thumb base osteoarthritis: protocol for a randomised, controlled trial \(COMBO\). *BMJ Open*. 2017; 7: e014498.](#)
2. [Haara MM, Heliövaara M, Kröger H, Jari P, Arokoski, Pirjo Manninen, Alpo Kärkkäinen, et al. Osteoarthritis in the carpometacarpal joint of the thumb: Prevalence and associations with disability and mortality. *J Bone Joint Surg Am*. 2004; 86: 1452-1457.](#)
3. [Wildin C, Dias JJ, Heras-Palou C, Bradley MJ, Burke FD. Trends in elective hand surgery referrals from primary care. *Ann R Coll Surg Engl*. 2006; 88: 543-546.](#)
4. [Bakri K, Moran SL. Thumb carpometacarpal arthritis. *Plast Reconstr Surg*. 2015; 135: 508-520.](#)

5. [Colditz JC. The biomechanics of a thumb carpometacarpal immobilization splint: Design and fitting. J Hand Ther. 2000; 13: 228-235.](#)
6. [Rannou F, Dimet J, Boutron I, Gabriel Baron, Fouad Fayad, Yann Macé, et al. Splint for base-of thumb osteoarthritis: A randomized trial. Ann Intern Med. 2009; 150: 661-669.](#)
7. [Joshi R. Intraarticular corticosteroid injection for first carpometacarpal osteoarthritis. J Rheumatol. 2005; 32: 1305-1306.](#)
8. [Gervis WH. Osteoarthritis of the trapeziometacarpal joint treated by excision of the trapezium. Proc R Soc Med. 1947; 40: 492.](#)
9. [Raven EE, Kerkhoffs GM, Rutten S, Marsman AJ, Marti RK, Albers GH. Long term results of surgical intervention for osteoarthritis of the trapeziometacarpal joint: comparison of resection arthroplasty, trapeziectomy with tendon interposition and trapezio-metacarpal arthrodesis. Int Orthop. 2007; 31: 547-554.](#)
10. [Moineau G, Richou J, Liot M, Le Nen D. Prognostic factors for the recovery of hand function following trapeziectomy with ligamentoplasty stabilisation. Orthop Traumatol Surg Res. 2009; 95: 352-358.](#)
11. [Robles-Molina MJ, López-Caba F, Gómez-Sánchez RC, Cárdenas-Grande E, Pajares-López M, Hernández-Cortés P. Trapeziectomy With Ligament Reconstruction and Tendon Interposition Versus a Trapeziometacarpal Prosthesis for the Treatment of Thumb Basal Joint Osteoarthritis. Orthopedics. 2017; 40: e681-e686.](#)
12. [Givissis P, Sachinis NP, Akritopoulos P, Stavridis SI, Christodoulou A. The "Pillow" Technique for Thumb Carpometacarpal Joint Arthritis: Cohort Study With 10- to 15-Year Follow-Up. J Hand Surg Am. 2016; 41: 775-781.](#)
13. [Spaans AJ, Weijns ME, Braakenburg A, van Minnen LP, Mink van der Molen AB. Partial trapeziectomy and interposition of fascia lata allograft in the operative treatment of thumb base osteoarthritis. J Plast Surg Hand Surg. 2016; 50: 35-39.](#)
14. [Yuan F, Aliu O, Chung K, Mahmoudi E. Evidence-Based Practice in the Surgical Treatment of Thumb Carpometacarpal Joint Arthritis. J Hand Surg Am. 2017; 42: 104-112.](#)
15. [Li YK, White C, Ignacy TA, Thoma A. Comparison of trapeziectomy and trapeziectomy with ligament reconstruction and tendon interposition: a systematic literature review. Plast Reconstr Surg. 2011; 128: 199-207.](#)
16. [Gay AM, Cerlier A, Iniesta A, Legré R. Surgery for trapeziometacarpal osteoarthritis. Hand Surg Rehabil. 2016; 35: 238-249.](#)
17. [Naram A, Lyons K, Rothkopf D, Calkins E, Breen T, Jones M, et al. Increased Complications in Trapeziectomy With Ligament Reconstruction and Tendon Interposition Compared with Trapeziectomy Alone. Hand \(N Y\). 2016; 11: 78-82.](#)
18. [Irwin AS, Maffulli N, Chesney RB. Scapho-trapezoid arthritis. A cause of residual pain after arthroplasty of the trapezio-metacarpal joint. J Hand Surg Br. 1995; 20: 346-352.](#)
19. [Putterie G, Créteur V, Mouraux D, Robert C, El-Kazzi W, Schuind F. Trapeziometacarpal osteoarthrosis: clinical results and sonographic evaluation of the interposed tissue after trapeziectomy and first metacarpal suspension by external minifixation at a minimal two-year follow-up. Chir Main. 2014; 33: 29-37.](#)
20. [Ladd AL, Messana JM, Berger AJ, Weiss AP. Correlation of clinical disease severity to radiographic thumb osteoarthritis index. J Hand Surg Am. 2015; 40: 474-82.](#)
21. [Landes G, Michael P Gaspar I, Peter Goljan I, Sidney M Jacoby I, Abdo Bachoura I, Randall W Culp. Arthroscopic Trapeziectomy With Suture Button Suspensionplasty: A Retrospective Review of 153 Cases. Hand \(N Y\). 2016; 11: 232-237.](#)
22. [Davey PA, Belcher HJCR. Effect of Coexistent Scaphotrapezoidal Osteoarthritis on](#)

[Outcome after Trapeziectomy. Scand J Plast Reconstr Surg Hand Surg. 2004; 38: 36-42.](#)

23. [Sadhu A, Calfee RP, Guthrie A, Wall LB. Revision Ligament Reconstruction Tendon Interposition for Trapeziometacarpal Arthritis: A Case-Control Investigation. J Hand Surg Am. 2016; 41: 1114-1121.](#)

24. [Glard Y, Gay A, Valenti D, Berwald C, Guinard D, Legré R. Costochondral autograft as a salvage procedure after failed trapeziectomy in trapeziometacarpal osteoarthritis. J Hand Surg Am. 2006; 31: 1461-1467.](#)

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