

Trapeziometacarpal Osteoarthritis Treated with Trapeziectomy and Dual-Tendon (APL and FCR) Suspensionplasty: A Case Report

Y. Yahyaoui^{1*}, M. Zeroual¹, A. Achkoun¹, M. Nassiri¹, M. El Kasseh¹, M. Habbab¹, R. Chafik¹

¹Orthopedic and Trauma Surgery Department A, Ibn Tofail Hospital, CHU Mohammed VI Marrakech Morocco

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*Corresponding author: Y. Yahyaoui

Orthopedic and Trauma Surgery Department A, Ibn Tofail Hospital, CHU Mohammed VI Marrakech Morocco

1. Abstract

Case Report

Background: Trapeziometacarpal (TMC) osteoarthritis often inflicts profound pain and functional limitations on patients [1]. Simple trapeziectomy provides robust pain relief but frequently causes proximal migration (subsidence) of the first metacarpal, compromising thumb stability [2]. This case report outlines a soft-tissue-only suspensionplasty that bypasses bone tunnel creation by transposing an Abductor Pollicis Longus (APL) tendon slip directly onto the distal insertion of the Flexor Carpi Radialis (FCR) [3]. **Case Description:** A 72-year-old, left-hand-dominant female presented with a 3-year history of worsening left thumb base pain from Eaton-Littler Stage III TMC osteoarthritis [4]. Following a complete excision of the trapezium, stabilization was achieved without osseous drilling. An APL tendon slip was isolated, keeping its distal attachment, and woven securely under tension to the sturdy distal insertion of the FCR tendon at the base of the second metacarpal [3]. This construct acted as a functional dynamic sling. **Discussion:** Standard ligament reconstruction often relies on drilling bone tunnels, a step that adds technical complexity and poses a distinct risk of metacarpal fracture [5]. In contrast, anchoring the APL directly to the FCR distal insertion exploits native anatomical support, avoiding hardware or bone trauma while effectively combating vertical subsidence [3,6]. **Conclusion:** At the 2-month follow-up mark, the patient enjoyed complete resolution of pain, near-perfect opposition (Kapandji score of 9/10), and clear functional recovery [7]. Post-operative imaging verified a well-preserved trapezial space. This tunnel-free approach offers a reliable, low-morbidity option for treating severe thumb basal joint arthritis [3].

Keywords: Trapeziometacarpal osteoarthritis, Trapeziectomy, Suspensionplasty, Abductor Pollicis Longus, Flexor Carpi Radialis, Eaton-Littler stage III.

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2. INTRODUCTION

Basal joint or trapeziometacarpal (TMC) osteoarthritis of the thumb remains a leading cause of hand disability and pain, particularly among postmenopausal women [1]. When conservative protocols fail to offer relief, surgical options are considered [8]. While simple trapeziectomy has a long history of success for eliminating pain, it introduces the risk of the first metacarpal shifting proximally [2]. This subsidence frequently leads to a shortened thumb column, a loss of key pinch strength, and an overall reduction in hand function [2,5].

To preserve the trapezial space, various suspensionplasty and ligament reconstruction techniques have evolved over the years [5,8]. This case report highlights a surgical variation designed to counter subsidence through a pure soft-tissue suspension mechanism [3]. By anchoring a slip of the Abductor

Pollicis Longus (APL) tendon directly to the stable distal insertion of the Flexor Carpi Radialis (FCR), the technique creates a dynamic sling that stabilizes the thumb ray without the need for drilling bone tunnels [3,6].

3. CASE PRESENTATION

Patient History & Physical Examination

The patient is a 72-year-old, left-hand-dominant female who presented with a 3-year history of severe, progressive pain localized to the base of her left thumb. Her pain was continuously aggravated by routine pinching, gripping, and manual chores, significantly diminishing her independent quality of life.

A physical workup revealed:

- Exquisite local tenderness over the TMC joint space.
- A highly painful, positive grind test.

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- Restricted thumb mobility, primarily impacting palmar abduction and opposition.
- Appreciable deficits in both key pinch and grip strength when compared to her right hand.

Radiographic Evaluation

Standard anteroposterior and lateral pre-operative imaging of the left hand revealed advanced,

end-stage trapeziometacarpal osteoarthritis. Notable features included complete joint space obliteration, pronounced subchondral sclerosis, osteophytic overgrowth, and a subtle radial subluxation of the first metacarpal base, categorizing the joint as an Eaton-Littler Stage III [4].



Figure 1: Pre-operative radiograph. Anteroposterior view of the hand showing severe trapeziometacarpal joint space narrowing, marginal osteophytes, and subluxation

4. Surgical Technique

The operation was carried out under regional upper-limb anesthesia with a pneumatic arm tourniquet inflating the field.

Exposure: Access to the TMC joint was achieved using a standard dorso-radial incision. Great care was taken throughout the approach to isolate, mobilize, and safeguard the radial artery and the longitudinal sensory branches of the superficial radial nerve.

Excision: A longitudinal capsulotomy laid open the joint, allowing for systematic, sharp dissection of the trapezium. The bone was removed in its entirety [2], after which the resulting trapezial cavity was thoroughly curetted and washed with saline to eliminate lingering osteophytic debris.

Suspension Construct: A reliable slip of the APL tendon was identified, isolated, and divided

proximally while carefully preserving its intact distal insertional footprint [3]. Attention was then turned toward the volar-ulnar aspect of the void to identify the distal insertion of the FCR tendon at the base of the second metacarpal. Rather than utilizing a drill to fashion a bone tunnel [5], the freed APL slip was transposed into the void and woven directly onto this sturdy distal FCR insertion site [3]. It was anchored firmly under physiological tension using non-absorbable sutures. This design produced a structural soft-tissue hammock that directly suspends the first metacarpal base to counter vertical migration [3,6].

Closure:

The joint capsule was adapted securely over the newly established suspension bridge. Skin closure was completed using a running intradermal 4-0 Monocryl suture, and the hand was placed in a dry sterile dressing and a classic thumb spica splint.



Figure 2: Intraoperative photographs. (Left) Complete excision of the trapezium. (Right) Final construct demonstrating reconstruction of the suspension mechanism before wound closure

5. Post-operative Course & Outcomes

The early healing phase progressed smoothly without wound issues or complications. The thumb spica immobilization was maintained for 3 weeks. Upon splint removal, the patient transitioned to a dedicated occupational therapy program aimed at restoring range of motion, thumb opposition, and progressive task-specific strengthening.

By the 2-month follow-up visit:

- The patient reported being entirely free of her baseline pre-operative arthritic pain.

- Thumb mobility had recovered excellently, yielding fluent, complete opposition with a Kapandji score of 9/10 [7].
- Functional key pinch and gross grip strength had notably improved.
- Plain radiographs of the left hand confirmed a stable, well-maintained trapezial void with no evidence of early subsidence or proximal migration of the first metacarpal base.



Figure 3: Post-operative radiograph. Anteroposterior view of the hand, showing maintenance of the trapezial space (no significant proximal migration of the first metacarpal) and stable implant-free reconstruction

6. DISCUSSION

While simple trapeziectomy is highly regarded for its ability to eliminate the pain of basal joint arthritis, the empty void leaves the thumb ray vulnerable to proximal migration [2]. This column subsidence frequently results in adduction contractures of the first metacarpal, web-space narrowing, and diminished torque during pinch activities [2,5].

The specific suspensionplasty chosen for this patient—transposing a slip of the APL tendon directly onto the distal insertional fibers of the FCR—addresses these challenges through a targeted biomechanical approach [3]. Utilizing the natural, resilient insertion of the FCR at the base of the second metacarpal creates a reliable dynamic check-rein against the twin forces of proximal collapse and radial subluxation [3,6].

A major advantage of this technique over standard Thompson [9] or classic LRTI variants [5] is its complete reliance on soft-tissue structures, avoiding the need for a bone tunnel in the first metacarpal base [3]. Omitting the drilling phase preserves the native bone stock, simplifies the operative workflow, and eliminates the risk of iatrogenic metacarpal cortex fractures [5]. This feature is particularly valuable when operating on postmenopausal or elderly individuals who may have a degree of osteopenia. As highlighted by this patient's early outcomes, the procedure yields stable, hardware-free column support, reliable pain control, and early functional recovery [3].

7. CONCLUSION

Combining a total trapeziectomy with an APL-to-distal FCR transposition provided excellent pain relief and rapid functional recovery in this 72-year-old patient [3]. At 2 months post-operatively, the tunnel-free soft-tissue sling successfully preserved thumb column height and alignment, proving to be an elegant, low-morbidity solution for severe TMC osteoarthritis.

REFERENCES

1. Pellegrini, V. D., Jr. (1991). Osteoarthritis at the base of the thumb: Review of pathophysiology and

- treatment. *The Journal of Hand Surgery*, 16(6), 967–973. [https://doi.org/10.1016/s0363-5023\(10\)80055-6](https://doi.org/10.1016/s0363-5023(10)80055-6)
2. Vadgama, A., Sorene, E., & Sadek, S. (2017). Simple trapeziectomy for trapeziometacarpal osteoarthritis: A long-term follow-up study. *Journal of Hand and Microsurgery*, 9(2), 65–70. <https://doi.org/10.1055/s-0037-1601431>
3. Goubau, J. F., Goubau, L. A., & Van Hoonacker, P. (2018). Trapeziectomy combined with a tunnel-free abductor pollicis longus (APL) and flexor carpi radialis (FCR) suspension hammock technique. *Hand Clinics*, 34(3), 345–354. <https://doi.org/10.1016/j.hcl.2018.03.011>
4. Eaton, R. G., & Littler, J. W. (1973). A study of the basal joint of the thumb: Treatment of its disabilities by ligament reconstruction. *The Journal of Bone and Joint Surgery. American Volume*, 55(8), 1655–1666.
5. Tomaino, M. M. (2001). Ligament reconstruction and tendon interposition arthroplasty for trapeziometacarpal osteoarthritis. *Hand Clinics*, 17(2), 275–286.
6. Brunelli, G. A., & Brunelli, G. R. (1998). A new technique for stabilization of the thumb base after trapeziectomy in severe osteoarthritis. *Journal of Hand Surgery (British and European Volume)*, 23(4), 463–467. [https://doi.org/10.1016/s0266-7681\(98\)80121-6](https://doi.org/10.1016/s0266-7681(98)80121-6)
7. Kapandji, A. (1986). Clinical test of apposition of the thumb. *Annales de Chirurgie de la Main*, 5(1), 67–73. [https://doi.org/10.1016/s0753-9053\(86\)80011-9](https://doi.org/10.1016/s0753-9053(86)80011-9)
8. Vermeulen, G. M., Brink, S. M., Slijper, H., Feitz, R., Moojen, T. M., Hovius, S. E., & Selles, R. W. (2011). Trapeziectomy with ligament reconstruction and tendon interposition versus trapeziectomy alone for trapeziometacarpal osteoarthritis: A prospective randomized clinical trial. *The Journal of Hand Surgery*, 36(5), 767–775. <https://doi.org/10.1016/j.jhssa.2011.02.003>
9. Thompson, J. S. (1989). Suspensionplasty of the thumb using a slip of the abductor pollicis longus. *Journal of Hand Surgery*, 14(A), 356–361.