FIELD ORTHOPAEDICS

CASE REPORT

Use of Griplasty™ in the Revision Surgical Management of Carpometacarpal Thumb Arthritis

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Dr Stephen Umansky, MD

- Lexington Clinic, Kentucky, USA
- Board-certified in Orthopedic Surgery and holds an American Board of Orthopaedics Certificate of Added Qualification in Surgery of the Hand
- Special interest in hand, wrist, elbow, and shoulder trauma, degenerative conditions and instability

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OVERVIEW

This case report details the successful revision of a failed thumb carpometacarpal (CMC) arthroplasty using the Griplasty™ system in a 42-year-old female. The patient initially underwent carpometacarpal arthroplasty, featuring trapezium excision and ligament reconstruction and tendon interposition using flexor carpi radialis (FCR), but experienced persistent pain and instability. Revision surgery utilizing the Griplasty™ implant was performed via a Volar approach using a Wagner incision, with anchor placement in the index and thumb metacarpals, creating a robust suspension system. Postoperative radiographs confirmed anatomical restoration of the thumb CMC joint, and the patient regained functional range of motion and reported significant pain relief. This case highlights the utility of Griplasty™ not only as a primary treatment for CMC arthritis but also as a viable salvage option for failed arthroplasties, offering a less invasive approach compared to traditional tendon grafts with the benefit of early mobilization and promising functional outcomes.

CASE INTRODUCTION

The patient is a 42-year-old woman with a several year history of pain and dysfunction of her left hand due to carpometacarpal instability. Two years prior she had undergone basal joint arthroplasty with a flat fiber suture material augmenting a FCR ligament reconstruction for intractable pain refractory to splinting and activity modification.

CASE PRESENTATION

Patient presented approximately two years postoperatively, noting her thumb “never felt good but I learned to live with it.”

Upon evaluation, carpometacarpal grind testing yielded a palpable and audible crepitus which reproduced the pain she was experiencing with day-to-day activity.

Preoperative imaging demonstrated close approximation of the base of the metacarpal with the trapezoid, and loss of the continuity of the “intermetacarpal curve,” confirmation that the thumb metacarpal had subsided into the arthroplasty space.

Revision suspension with the Griplasty™ was recommended.

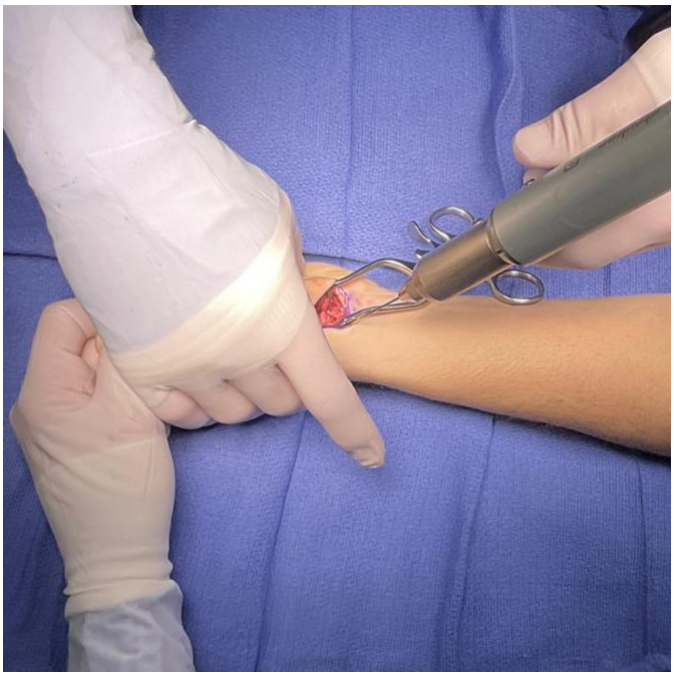
Below: Pre-Operative Imaging

SURGICAL APPROACH

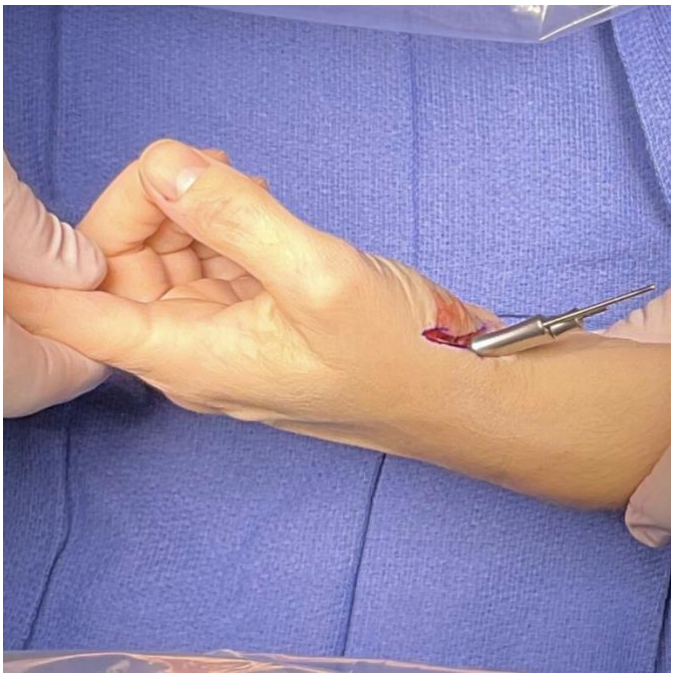
The prior Wagner incision was utilized. The trapezium had already been excised, there was an interpositional FCR tendon “anchovy” which was excised.

Radiographs were obtained to confirm that the thumb metacarpal base was reducible and able to be approximated to the index metacarpal base with no bony fragments or trapezoid impingement.

The 1.2mm Trajectory K-wire was placed in the trapezial articulation of the index metacarpal and oriented at approximately a 45-degree angle to and through the far cortex, which was confirmed radiographically.



The 1.6mm Guide K-wire was placed through the Parallel Guide Assembly and confirmed radiographically.

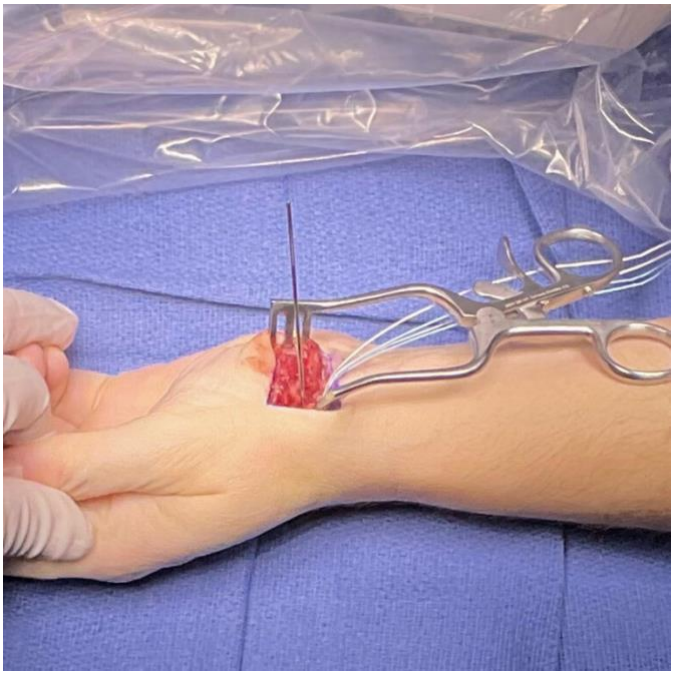


The 2.4mm Cannulated Drill Bit placed over the 1.2mm Trajectory K-wire and drilled bi-cortically.

Next, the Index suture on the T-Handle (labeled I) was positioned over the drilled pilot hole of the index finger and the 1.6mm Guide K-wire was inserted into the guide hole of the T-Handle such that the anchor holder was at the pilot hole of the index metacarpal and the Guide K-wire was captured into the Guide hole on the T-Handle. The Index anchor was then delivered through to the far cortex of the index metacarpal.

The anchor was tested, the 1.6mm Guide K-wire removed, and the anchor inserter T-Handle was set aside.

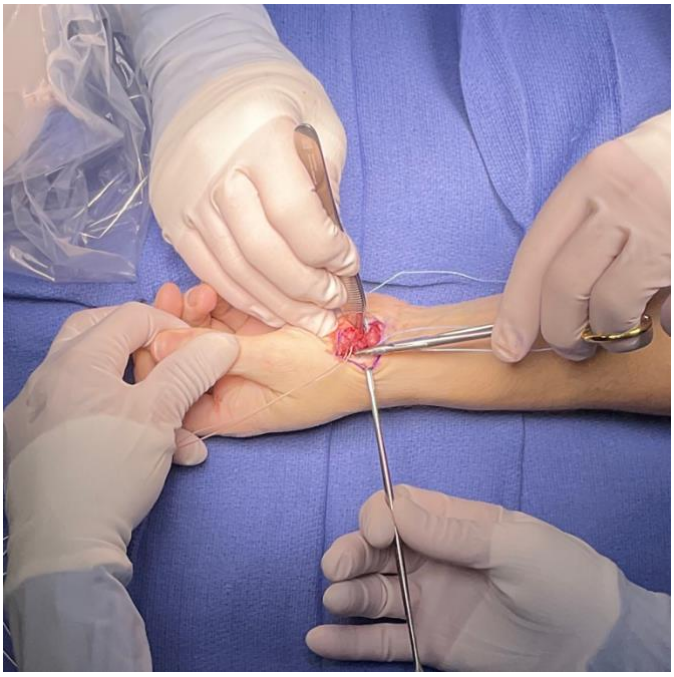
The 1.2mm Trajectory K-wire was then placed near the abductor pollicis longus insertion at the base of the thumb metacarpal and passed across the far cortex.

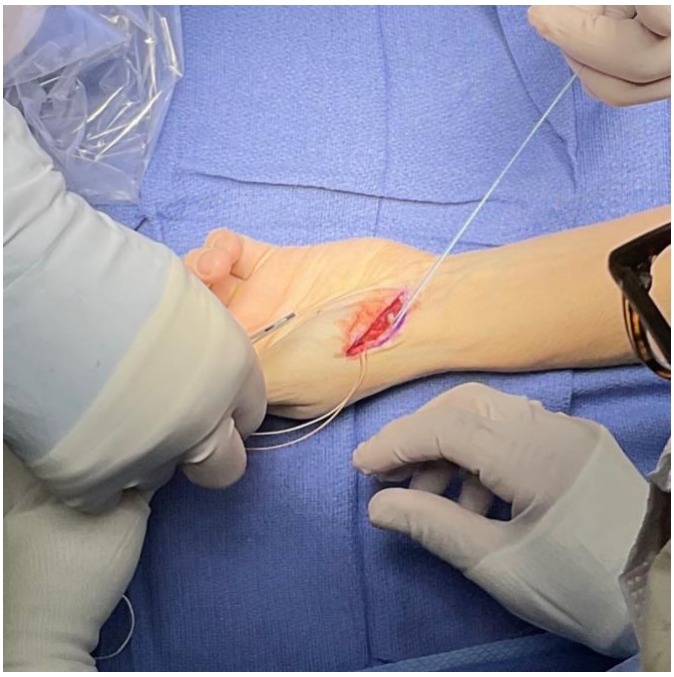


The anchor insertion steps were repeated and the thumb anchor was deployed. After testing, the 1.6mm Guide K-wire was removed and the thumb was placed into traction.

When the thumb was in anatomic position the 2 white sutures were tied using 2 provisional knots. The thumb was then assessed for range of motion (ROM) and stabilization.

Next, the 2 blue sutures with needles were placed through the APL insertion using a horizontal mattress stitch technique creating the "V" shaped suspension for the thumb metacarpal base.





After securing the Griplasty™ to the APL tendon at its insertion on the base of the metacarpal with the blue suture, a ballottement test demonstrated no contact of the metacarpal with the trapezoid or scaphoid with axial stress.

The remaining blue suture was used to repair the thenar musculature to the residual capsule, and routine closure of the incision was performed.

POSTOPERATIVE PROTOCOL

A light dressing was applied, and the patient was discharged in satisfactory condition with plans to begin hand therapy for gentle range of motion 5 days postoperatively.

In therapy a hand based thumb spica splint was fabricated for moderate discomfort with therapy and use.

FOLLOW UP

Two week review

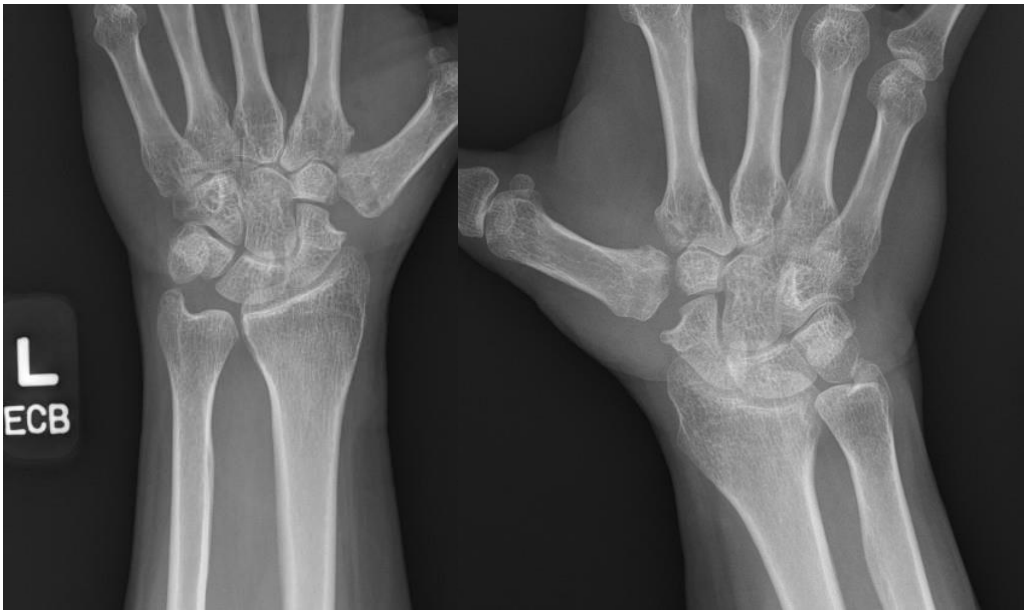
At two weeks postoperatively radiographs confirmed satisfactory suspension. Note can be made of the restoration of the thumb metacarpal to its proper length by the alignment of the intermetacarpal curve on all views. She had satisfactory/function range of motion and could oppose the thumb to all four fingertips.

Below: Two week review imaging

Six week review

At 6 weeks postop, she was extremely satisfied. She is using her hand for normal day to day activities with minimal ache. Due to the early motion she had excellent range of motion on exam (see below). She stated that this operation felt completely different than the last one, she has complete relief of preoperative pain, and feels herself getting stronger with each passing week.

Below: Six week review imaging



Below: Six week review Video

CONCLUSION

This case demonstrates the successful application of Griplasty™ in a revision CMC arthroplasty, suggesting its potential as an effective alternative to traditional techniques in similar cases. The avoidance of donor tendon grafts, a key feature of the Griplasty™ system, may prove particularly advantageous in revision scenarios where suitable tendons may be compromised. The observed early return of functional range of motion in this patient further supports the potential for expedited recovery with this approach.

Product Resources

Field Orthopaedics. (2024). Griplasty™ Surgical Technique. Brisbane, Australia: Field Orthopaedics.