

Arthroscopic Scaphotrapeziotrapezoidal

Chapter 22 Interposition Arthroplasty

Introduction

Isolated osteoarthritis of the scaphotrapeziotrapezoidal (STT) joint is rare, but very painful. As a general rule, conservative treatment is used. If this fails, STT fusion is traditionally the next treatment option, but the repercussions for joint mobility are problematic. Isolated resection of the distal tubercle of the scaphoid is another option¹; however, secondary collapse can lead to pain recurrence. Interposition arthroplasty avoids this pitfall. Arthroscopic surgery gives the surgeon a better view of the STT joint, which makes it easier to resect the distal tubercle, and postoperative recovery is faster.

Operative Technique

Patient Preparation and Positioning

The procedure is performed under regional anesthesia. The patient's arm is secured to the table. Upward traction can be placed either on the long fingers or on the thumb alone. If traction is placed on the thumb, only 2 to 3 kg of counterweight is needed and if traction is placed on the long fingers, 5 to 6 kg of counterweight is needed.

Midcarpal Joint Debridement

This procedure requires only a midcarpal joint approach. The ulnar midcarpal (MCU) portal is the most straightforward entrance to the joint. A shaver is introduced through the radial midcarpal (MCR) portal to debride the joint. The scope and shaver positions are then reversed to finish the midcarpal joint debridement.

Scaphotrapeziotrapezoid Joint Exploration

The STT joint can be easily examined with the scope in the MCR portal. From the midcarpal joint, the medial and distal faces of the scaphoid are followed while the scope passes between the scaphoid and the capitate (Fig. 22.1). When the scope reaches the STT joint, the view may be hindered by widespread synovitis. The joint must first be cleaned out through the 1–2 or STT portal. A needle is inserted between the first and second compartments, ~1.5 cm below the trapeziometacarpal joint. Because

this joint is straight, the natural angulation of the carpal bones is not a factor as it is when the positions of other portals are determined. The scope is held stationary and used to find the needle tip inside the joint (Fig. 22.2).

A small horizontal incision is made. Mosquito forceps are used to pass through the capsule, and the shaver is inserted into the joint. Synovectomy is performed until the entire joint is completely debrided; any small cartilage fragments are also removed (Fig. 22.3).

Distal Resection of the Scaphoid

A bur is introduced into the 1–2 portal. The tubercle on the distal pole is resected under visual control, starting at its dorsal section and gradually proceeding toward its volar section (Fig. 22.4a, b). The resection must be uniform. It is also important to ensure that no bone lip remains, especially on the medial portion against the capitate (Fig. 22.5). When the resection is properly carried out, the scope (2–3 mm), which is still in the MCR portal, can easily be moved into the STT joint. Nevertheless, it is easier to directly inspect the quality of the resection through the 1–2 portal (Fig. 22.6).

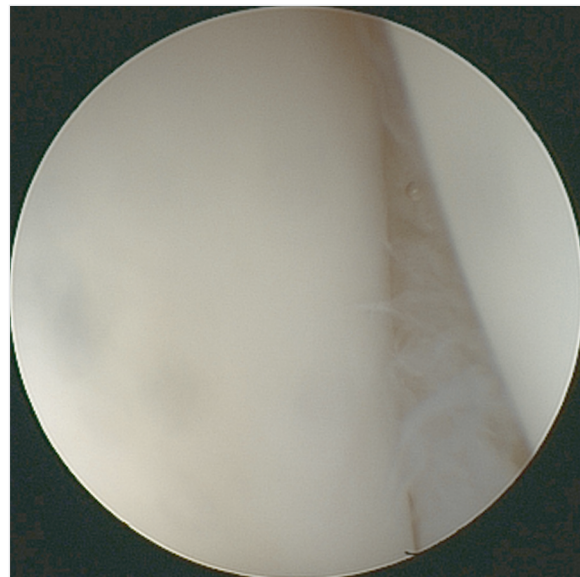


Fig. 22.1 Arthroscopic view of the scope moving from the radial midcarpal (MCR) portal into the scaphotrapeziotrapezoidal (STT) joint while passing between the scaphoid on the left and the lateral side of the capitate on the right.



Fig. 22.2 Intraoperative view of the needle in the 1–2 portal being located with the scope's transillumination feature.

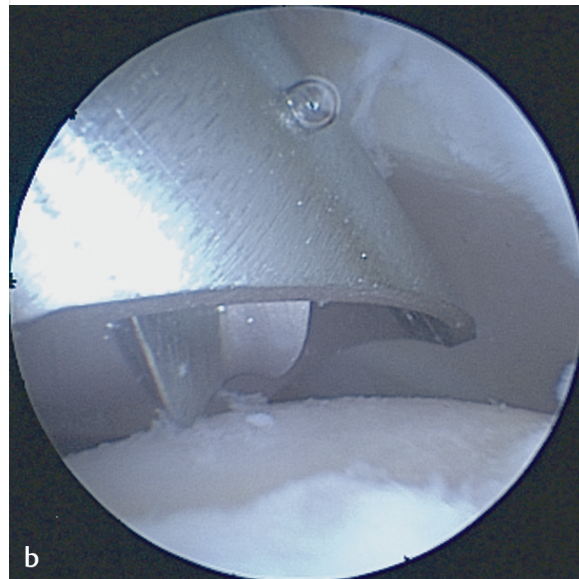
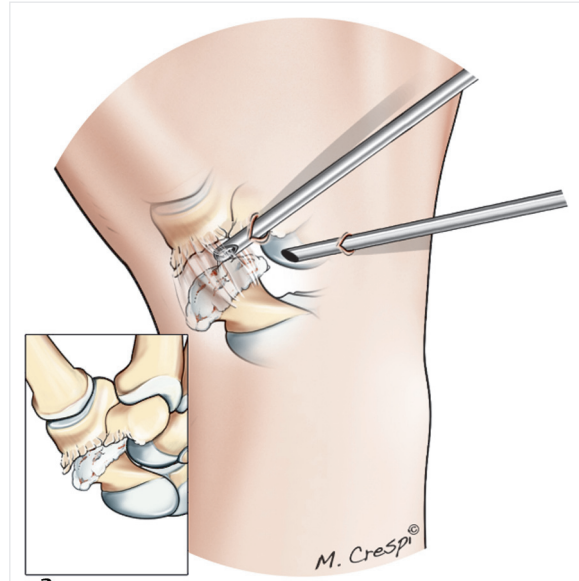


Fig. 22.4a, b Drawing (a) and arthroscopic view (b) of the initial burring of the scaphoid's distal facet.

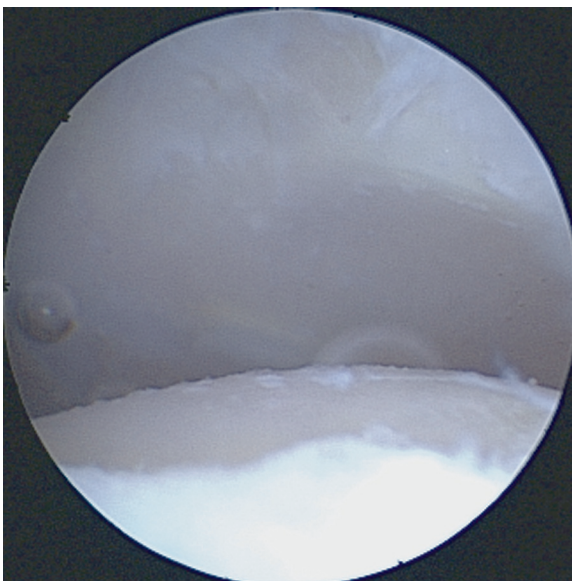


Fig. 22.3 Arthroscopic view of the scaphotrapeziotrapezoidal (STT) joint after the inflamed synovial tissue has been excised by the shaver; the cartilage on the scaphoid's distal facet on the bottom is gone, as is the cartilage on the proximal facets of the trapezoid and trapezium.

Implant Selection

Different types of implants are available. We prefer using a thin, pyrocarbon implant with a dual concave shape. Various methods can be used to select the proper implant size. Although trial implants can be used, the implant's excellent primary stability makes it difficult to subsequently remove arthroscopically. A simpler method consists of using a graduated probe, inserted into the STT joint through the 1–2 portal. The probe's tip hooks onto the anterior part of the scaphoid. The scope is then used

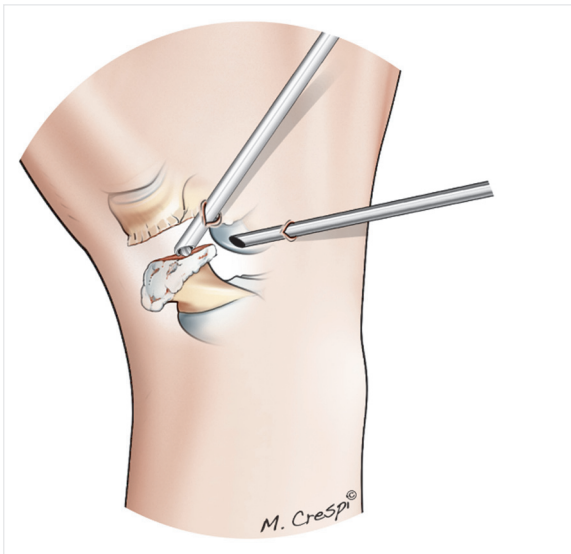


Fig. 22.5 Drawing of the scaphoid's distal facet being resected with a shaver.

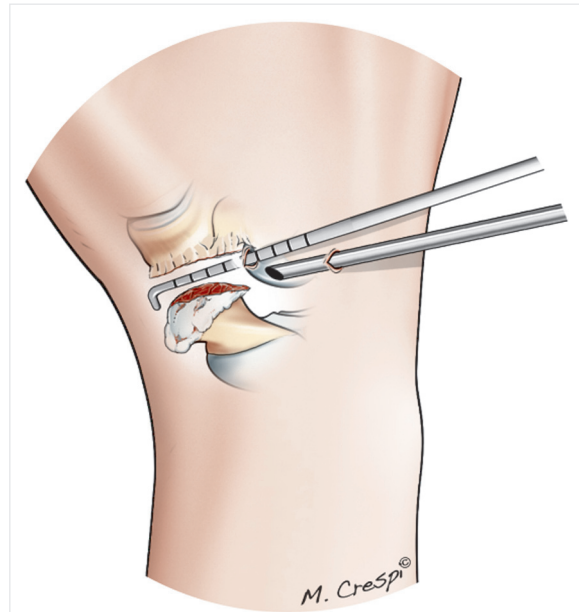


Fig. 22.7 Drawing of the implant size being measured with a graduated probe.

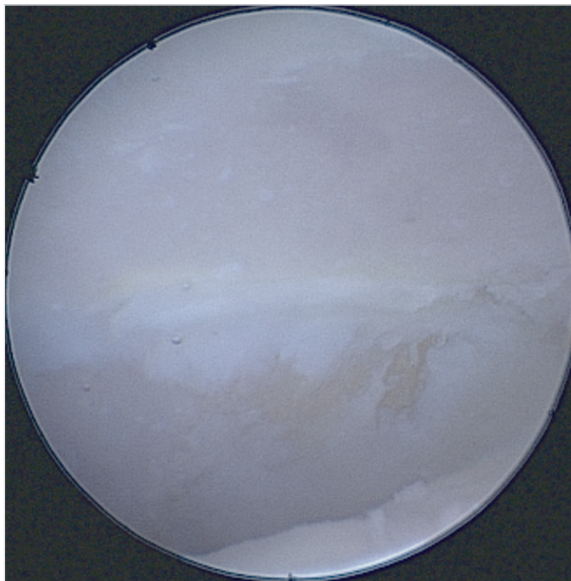


Fig. 22.6 Arthroscopic view of the open space in the scaphotrapeziotrapezoidal (STT) joint after the scaphoid's distal facet has been resected; the scope is inserted directly into the STT joint through the 1-2 portal.

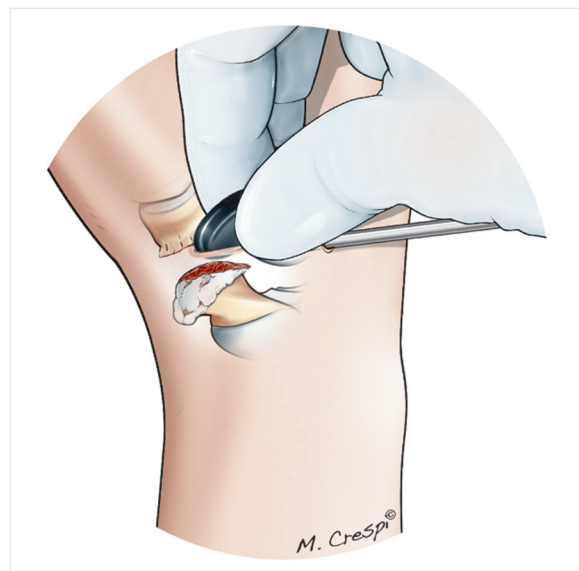


Fig. 22.8 Drawing of the implant being directly inserted into the scaphotrapeziotrapezoidal (STT) joint through a slightly wider 1-2 portal.

to count the number of marks on a graduated probe to determine the implant size (**Fig. 22.7**).

Implant Placement

First, the 1-2 portal incision must be extended to about 1 cm to insert the implant. The capsule also has to be opened

further, while avoiding the superficial branch of the radial nerve. The capsule can be opened safely by introducing mosquito forceps into the joint and spreading them.

The implant is either inserted directly with the fingers (**Fig. 22.8**) or with forceps where the tips have been "dressed" so as not to damage the pyrocarbon. A piece of surgical drain tubing can be placed on the forceps tips for

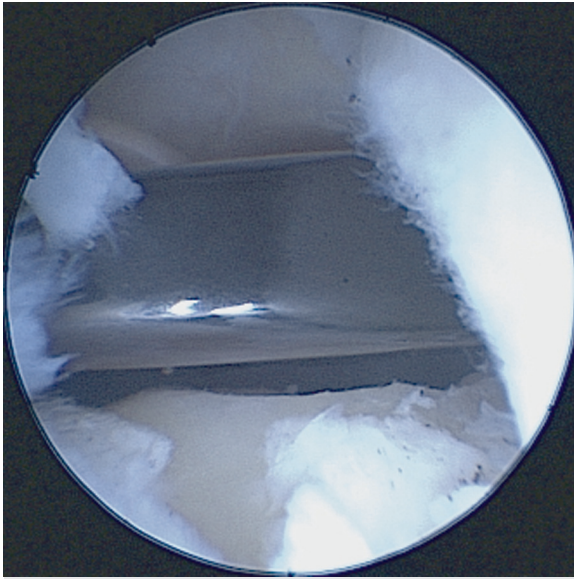


Fig. 22.9 Arthroscopic view of the implant in the proper position, with the scaphoid at the bottom, trapezoid at the top, and capitate on the right.

this purpose. The implant must be positioned so that one of the implant's concave sides fits into the natural concavity of the trapezium and trapezoid. The implant will spontaneously settle into the correct position, and its primary stability is excellent (**Fig. 22.9**).

Closure and Postoperative Care

After releasing the hand traction, the capsule is closed with one cross-stitch of resorbable suture. The 1–2 portal incision can be closed with one or two skin sutures, which are removed at the first dressing change (**Fig. 22.10**). The

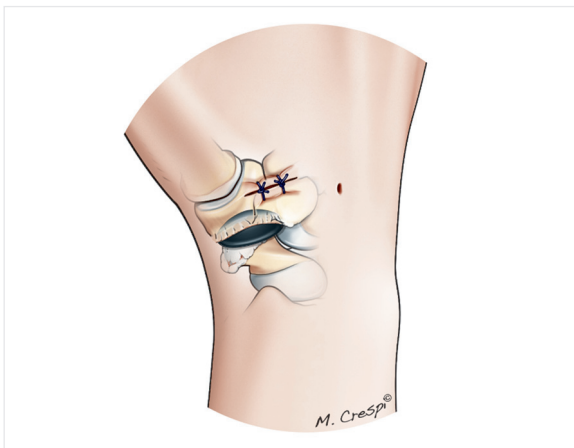


Fig. 22.10 Drawing of the implant in position and the wider portal skin incision closed.



a



b

Fig. 22.11a, b X-rays of a clinical case of isolated scaphotrapeziotrapezoidal (STT) osteoarthritis, before (**a**) and after (**b**) interposition arthroplasty with a pyrocarbon implant.

joint is immobilized with a thumb abduction splint for 1 month (**Fig. 22.11a, b**). Rehabilitation is typically performed by the patient. The patient must be informed that a fully functional, pain-free wrist requires 3 months of recovery time.

Conclusion

Arthroscopic treatment of isolated STT osteoarthritis is straightforward for patients and provides stable, long-term results. Interposition arthroplasty preserves carpal height, and it does not burn any bridges: a secondary procedure can still be performed later if the arthritis progresses to the trapeziometacarpal joint.

Reference

1. Normand J, Desmoineaux P, Boisrenoult P, Beaufile P. The arthroscopic distal pole resection of the scaphoid: clinical results in STT osteoarthritis [in French]. *Chir Main* 2012;31(1):13-17

