# Arthroscopic Management of Scaphoid-Trapezium-Trapezoid Joint Arthritis

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**KEYWORDS**

• STT arthritis • Arthroscopy • Scaphoid-trapezium-trapezoid joint • Wrist • Arthritis

**KEY POINTS**

- Scaphoid-trapezium-trapezoid (STT) joint arthritis is a condition that can lead to hand impairment and chronic pain if untreated.
- Several solutions have been proposed, although the arthroscopic management of this condition showed advantages compared with other techniques.
- The arthroscopic management of STT joint arthritis reduces the symptoms without impairing the function of the hand for a long time.

## INTRODUCTION

It is now widely accepted that the thumb constitutes the most important part of the human hand and it defines the whole function of the organ its belongs to. The scaphoid-trapezium-trapezoid (STT) joint is crucial to the proper functioning of the thumb and therefore of the hand. STT joint arthritis, although it is reported to be less common than the carpometacarpal (CMC) joint arthritis, still represents 16% of arthritis in the hand.[1] The classic clinical presentation of this condition consists of pain on the radial side of the wrist and at the base of the thumb, swelling, and tenderness over the STT joint. Limitation of the thumb range of motion due to pain can occur, especially during thumb abduction and opposition. Grip strength reduction is often present too. STT joint arthritis may be associated as well with flexor carpi radialis tenosynovitis or a palmar ganglion cyst.

Both conservative and surgical treatments have been proposed for the treatment of STT joint arthritis. The role of arthroscopic surgery in this field has constantly grown over the past decade, from being considered a mere curiosity or an adjunctive gesture to a traditional procedure to a valuable option for the management of this condition. The evident advantages to an arthroscopic approach are the reduced invasiveness, the possibility of sparing precious intracarpal ligaments, and finally the capacity to better visualize the articular surfaces.

The aim of this article is to review the arthroscopic management of the STT joint arthritis in its entirety.

## SCAPHOID-TRAPEZIUM-TRAPEZOID ARTHROSCOPY FOR ARTHRITIS

### *Anatomy and Pathogenesis of Scaphoid-Trapezium-Trapezoid Arthritis*

The STT joint consists of a complex structure that is mainly stabilized by 3 ligaments: the scaphotrapezial ligament, the scaphocapitate ligament, and the capitate-trapezium ligament.[2] In cases of partial or total failure of 1 or more of these structures,

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STT arthritis develops. Continuous mechanical overload could also lead to STT arthritis. The radial artery and the sensory branches of the radial nerve pass closely to the joint and they should be spared during any surgical procedure in the area.

As happens in other circumstances (such as in the CMC joint), compressive forces and repetitive loading of the thumb produce mechanical stress and inflammatory factors released leading to ligament partial or total rupture, followed by instability, cartilage degeneration, and subchondral bone sclerosis. The most common location of degenerative changes in the scaphoid is considered the ulnar area of articular facet of the distal scaphoid.

Alteration of the fine anatomy at this level may produce joint inflammation, volar rotation of the scaphoid, and rupture of the joint capsule. All 3 events may cause synovitis of the flexor carpi radialis tendon that, as discussed previously, is often associated with STT arthritis together with volar ganglion cysts.[3]

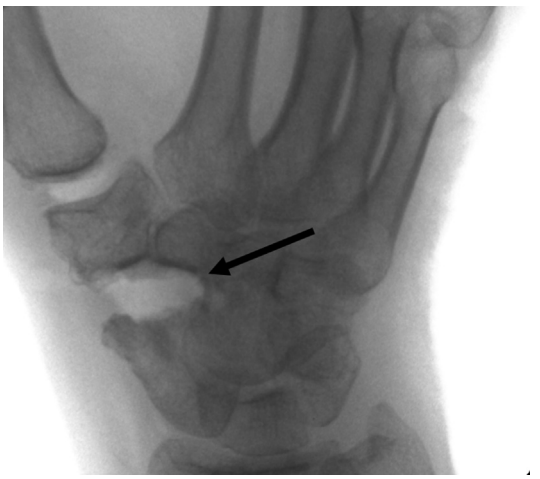

**Fig. 1.** Intraoperative radiograph of a right hand after an arthroscopic resection arthroplasty for STT arthritis. The arrow points toward the radial aspect of the capitate that remained intact, showing that a selective débridement has been performed.

### *Classification and Traditional Treatment Options*

The most widely used classification for STT arthritis is the radiographic classification proposed by Crosby and colleagues,[4] who divided this pathology into 3 different stages[5]: in the first stage there are signs of arthritis without reduction of the articular space; in the second, the articular line is still visible but reduced, whereas in the last stage the articular line is not entirely visible anymore and bone scleroses, erosion, and irregularity are present. The classification also includes a stage zero where no sign of arthritis can be recognized on radiographs.

Traditionally the conservative treatments aim to reduce pain and to improve grip strength. These therapies consist of splinting, nonsteroidal antiinflammatory drugs, and physical therapy. Usually conservative treatments have been advocated for patients who suffer from symptomatic STT arthritis in Crosby stage I or II. Conservative treatments for advanced stages can be proposed in those cases of patients declining any kind of surgical procedure or when the latter is not advisable due to the general health condition of the patient.

In cases of failure of conservative treatments or of isolated advanced symptomatic STT arthritis, surgical treatment has been previously proposed. Surgical options include silicone implants,[6] STT arthrodesis,[7,8] and resection arthroplasties,[9,10] with or without tendon or capsular interposition,[11,12] and prostheses or spacer was also suggested.[13–15] Resection arthroplasty of the STT joint (**Fig. 1**) with or without a prosthetic spacer has been previously described by our group, by means of both open and arthroscopic surgery,[5,16] to prevent the dorsal intercalated segmental instability (DISI) deformity that might follow after resection of the distal scaphoid.

### *Indications and Contraindications for Scaphoid-Trapezium-Trapezoid Arthroscopy*

Indications for STT arthroscopy are all the conditions where a patient is suffering from symptomatic isolated STT arthritis and there was a previously failed attempt to treat the condition conservatively for a minimum period of 2 months. The arthroscopic approach can be proposed independently of the Crosby radiographic degenerative stage.

In cases of both CMC joint arthritis and STT arthritis, the indication has to be weighed case by case. In cases of STT joint arthritis accompanied by early arthritis of the CMC joint, the indication of arthroscopy is still good and no contraindication should be present. STT arthroscopy can also be combined with CMC joint arthroscopy for the treatment of both conditions.

STT arthroscopy is, therefore, not indicated in all cases of combined severe STT and CMC joint arthritis where other more aggressive procedures may be indicated, such as trapeziectomy.

In cases of isolated STT arthritis combined with a wide scapholunate angle or in the presence of DISI, may be indicated after having completed the resection arthroplasty, to insert a pyrocarbon spacer to give more stability to the scaphoid.