



Department of Radiology
UNIVERSITY OF WISCONSIN
SCHOOL OF MEDICINE AND PUBLIC HEALTH

Musculoskeletal Imaging and Intervention Section Procedures
Calcific Tendinitis Barbotage

PREAMBLE

Clinical symptoms of calcific tendinitis usually result during the resorptive phase. Although nonspecific, symptoms may include pain and limited range of motion. There may be associated subacromial-subdeltoid bursitis/calcific bursitis. The most common location of hydroxyapatite deposition is within the supraspinatus tendon.

RISKS

- Bleeding
- Infection
- Pain

MODALITY

- Ultrasound

PRE-OPERATIVE WORKUP

- Informed consent

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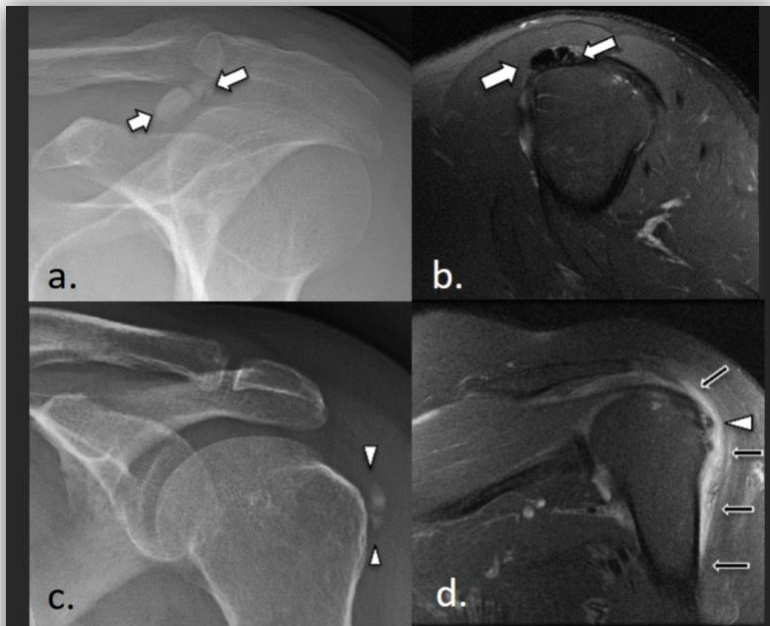
Musculoskeletal Imaging and Intervention

MATERIALS

- Alcohol, ChloraPrep applicator, sterile drape
- 10 mL syringes for skin anesthetic and steroid/anesthetic mixture
- 3x 10 mL syringes for barbotage
- 1% lidocaine (for skin numbing & barbotage); buffered with 8.4% sodium bicarbonate
- 1 mL triamcinolone acetonide (Kenalog 40 mg/mL)
- 1% preservative-free lidocaine HCL (10 mg/mL)
- Ropivacaine HCL 0.5% (Naropin 5 mg/mL)
- 0.9% preservative-free saline for barbotage
- 30G 0.5", 22G 1.5", & 18G 1.5" needles

TECHNIQUE

1. The single-needle technique is used at our institution. Position the patient in a semi-reclined position with the ipsilateral arm behind the back in internal rotation.
2. The ultrasound transducer is placed over the target calcium deposit along the long axis of the tendon. Assess for traversing vessels to avoid with Doppler. Mark the skin at the lateral aspect of the transducer.
3. Prep and drape as per usual and perform local anesthesia.
4. Guide an 18G 1.5" needle into the center of the calcium deposit in a **single pass** to avoid fenestration (at this stage). A syringe containing a 50:50 mixture of 1% lidocaine and sterile saline is connected to the needle.
5. Continuous small pumps are applied to the syringe plunger to cause calcium breakdown. Orient the needle and syringe to keep the syringe below the calcification. Calcific debris should flow retrograde into the syringe.
6. Exchange the syringe once it becomes cloudy with debris, as needed.
7. Repeat until the calcification has significantly broken down, or aspirate is clear. Mechanical fenestration of the calcification with the needle is a useful tactic if there are any sizeable clumps of calcification leftover following lavage.
8. A SASD steroid injection is performed immediately following lavage.
 - a. Inject 3 mL of a solution containing 1 mL triamcinolone acetonide (Kenalog 40 mg/mL), 1 mL preservative-free 1% lidocaine, and 1 mL 0.5% ropivacaine HCL.



Different stages of calcific tendinitis. a and b. In a patient with quiescent calcific tendonitis, a radiograph (a) and sagittal T2 FS MRI image (b) demonstrate a large cluster of calcifications (white arrows) in the supraspinatus tendon. Note the lack of surrounding edema and overlying bursitis. Large deposits can result in mild chronic pain and may cause limitations in motion due to mechanical obstruction. **c and d.** In a different patient in the resorptive stage, a radiograph (c) demonstrates more indistinct calcifications (white arrowheads), and a coronal T1 FS post-Gadolinium image (d) reveals associated marked enhancement of the overlying subdeltoid bursa (black arrows), consistent with bursitis.

Fig 1. Different stages of calcific tendinitis

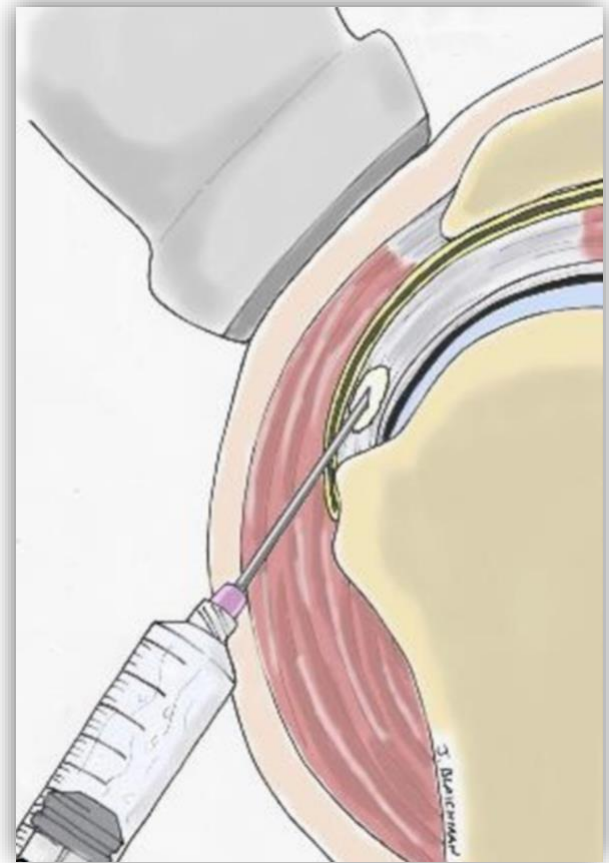


Fig 2. An illustration demonstrates proper technique with the needle tip guided along the long axis of the tendon into the center of the calcific deposit without disruption of the posterior wall. Fenestration of the calcification is avoided to allow build-up of internal pressure within the calcification with each pump of the plunger.



Fig 3. Longitudinal US image demonstrates the needle tip appropriately positioned within a calcific deposit during barbotage.

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Fig 4. Longitudinal US image of the right infraspinatus tendon demonstrating a calcific focus at the footprint.

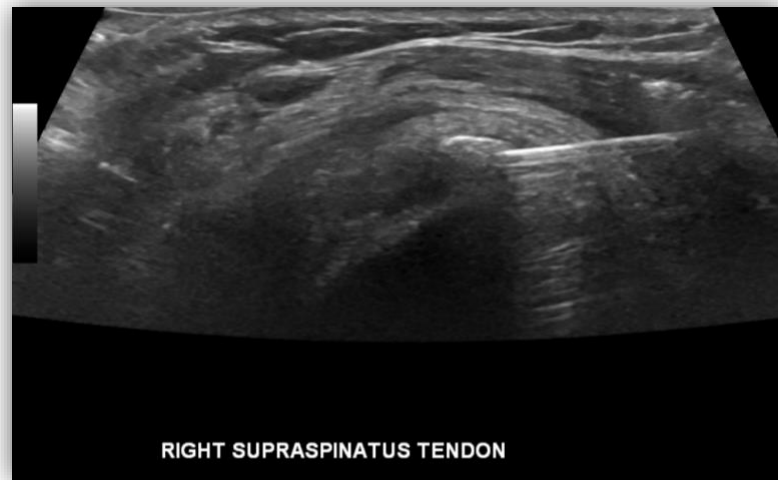


Fig 5. Longitudinal US image of the right supraspinatus tendon showing an 18G needle being placed within the substance of a calcific focus within the tendon.

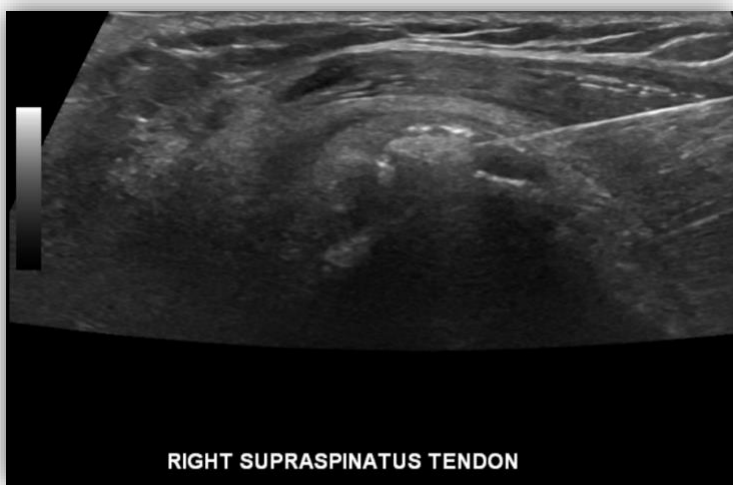


Fig 6. Longitudinal US image of the right supraspinatus tendon demonstrating the needle being retracted following barbotage of the calcific deposit.



Fig 7. Longitudinal US image of the right supraspinatus tendon demonstrating injection of the SASD bursa following calcific lavage.

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