

NEWSLETTER

Topography of enthesal lesions on ultrasound

presented by
Erik Deman

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There is a high prevalence of abnormal sonographic findings at the enthesis that may be misinterpreted as inflammatory 'enthesitis' in the general population that are otherwise healthy, particularly in males, those with higher body mass index and older individuals, underscoring the need for further improvements on existing ultrasound scoring systems to more reliably distinguish enthesitis from non-inflammatory enthesopathy.

This study identified the key sonographic features and the specific enthesal sites that best discriminate between spondyloarthritis patients and healthy individuals.

This study is an important step towards identifying the simplest and least time-consuming set of lesions and enthesal sites that should be examined by ultrasound in SpA patients, to identify the most useful and feasible scoring system for routine clinical practice.



Interview with Erik Deman

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MSUS Academy: You recently published an article about the topography of enthesal lesions on ultrasound comparing axial spondyloarthritis, psoriatic arthritis, and healthy controls. Is it difficult to distinguish between them using ultrasound? [<https://pubmed.ncbi.nlm.nih.gov/41093632/#full-view-affiliation-4>]

ED: Yes, I was one of the sonographers and a co-author in that study. Differentiating sonographically between changes at the enthesis in spondyloarthritis/psoriatic arthritis and non-inflammatory changes in patients without rheumatic disease is almost impossible. Both can present with hypoechogenicity, thickening of the entheses, erosions, calcifications, and power doppler positivity. The patient's history and comorbidities are crucial; the location of the power doppler signal may also be helpful. A power doppler signal directly at the bone would be more indicative of enthesitis in the context of spondyloarthritis. The study you mentioned might provide an additional clue to the possible etiology based on the location of the changes, but it's difficult in individual cases.

MSUS Academy: Can you highlight the value of ultrasound for patients when performing synovial biopsies?

ED: We together have already performed several ultrasound-guided synovial biopsies of wrists, knees, and ankles together. Of course, this can also be done arthroscopically by our orthopedic colleagues, but this requires anesthesia, operation theater, postoperative monitoring, etc., and is considerably more invasive. We now know from studies that ultrasound-guided synovial biopsy yields equally good results regarding the sample material and is much less invasive. This means the patient receives local anesthesia, feels no pain during the procedure, and experiences no significant pain afterward. Ultrasound helps us to guide the biopsy needle to the synovitis and to avoid damaging blood vessels, nerves, or other structures. Patients perceive the procedure as non-traumatic.

Interview with Erik Deman

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MSUS Academy: Under ultrasound guidance, the double-layered synovial sheath of the shoulder rotator interval can be injected, as you've shown recently. [<https://pmc.ncbi.nlm.nih.gov/articles/PMC12643902/>]. How do you inject the shoulder and in which clinical situations do you recommend it?

ED: It was a great honor and a pleasure to collaborate with colleagues like Vincenzo Ricci, M. Becciolini, and of course, you at the Institute of Anatomy in Basel on this study.

I primarily perform shoulder infiltrations for glenohumeral osteoarthritis, glenohumeral arthritis, adhesive capsulitis, and bursitis. However, diagnostic questions often arise, such as whether an inflammatory process is present in the case of a shoulder joint effusion or an effusion in the subacromial/subdeltoid bursa, whether crystals are present, or even if there is an infection. I usually perform a glenohumeral infiltration/puncture from the dorsal side in a cross-sectional approach over the glenohumeral joint, preferably in plane. Occasionally, for example, if a patient has difficulty sitting or if there is a large amount of effusion around the long head of the biceps tendon, I also puncture the bicipital groove, but not for infiltration, rather for diagnostic purposes. I usually puncture the subacromial/subdeltoid bursa from the front/lateral side, precisely where the effusion/bursitis is most visible. Here, too, I prefer the in-plane approach.

MSUS Academy: Finally, do you have any advice for young colleagues in training using musculoskeletal ultrasound?

ED: For young colleagues still in training to become musculoskeletal sonographers, I especially recommend that they thoroughly familiarize themselves with sonographic anatomy. The goal should be to be able to name all the structures we see on the ultrasound screen. I find it very helpful to read sonoanatomy papers, look at ultrasound images from experienced colleagues or watch ultrasound videos, most of which are freely available on various platforms. You never stop learning in sonography; you constantly discover new structures and can continue to develop your skills, which is very rewarding.

MSUS

Publication of the month

Link

Ultrasound-guided injection of the rotator interval synovial lining: A cadaveric validation



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Ultrasound-guided injection of the rotator interval synovial lining: A cadaveric validation

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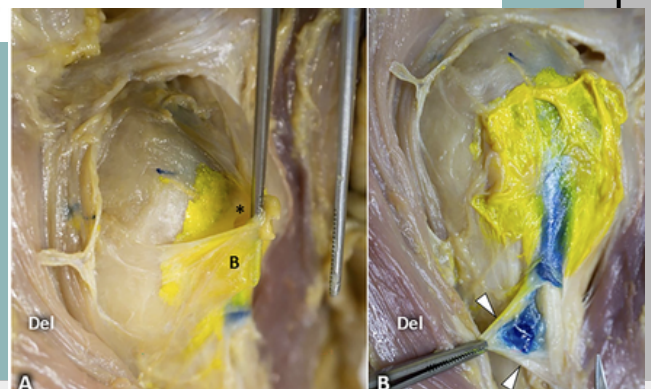
Introduction: Ultrasound-guided injections of the rotator interval (RI) are commonly performed in clinical practice targeting the anatomical interface between the long head of the biceps tendon (LHBT) and the biceps reflection pulley (BRP). Herewith, cadaveric validation of the exact placement of the injectate inside the synovial compartment of the RI is lacking in the pertinent literature. The purpose of this study was to investigate the correct placement and the spread patterns of different dye volumes within the synovial space of the RI of the shoulder in cadaveric samples.

Method: The RI of both shoulders of two cadavers (1 male, 1 female, Thiel's embalming technique) was injected with blue-colored dye under ultrasound guidance, using the in-plane technique and lateral-to-medial approach. Targeting the LHBT-BRP interface, 0.5 mL and up to 1.5 mL of blue dye were injected, respectively, in both cadavers. The bursal tissue overlying the RI was also injected in both cadavers using 1.0 mL of yellow dye. Subsequently, a layer-by-layer anatomical dissection was performed to test the placement and spread of the blue dye within the synovial space of the RI.

Results: The blue dye was correctly placed within the synovial sheath of the RI in all cadaveric shoulders (4/4), and no communication with the overlying bursal cavity was identified. A distal spread of the dye around the extracapsular portion of the LHBT was observed in all cadaveric samples. Notably, proximal spread of the blue dye inside the (capsular space and the synovial cavity of the) glenohumeral joint was identified only in shoulders which were injected with 1.5 mL of volume (2/4). The anatomical exploration of the RI demonstrated the presence of a double-layer synovial lining with an inner lumen and a fenestrated proximal edge located below the BRP. Three-dimensional and multiplanar reconstruction computed tomography (CT) scans demonstrated a mean value of 32.5 mm for the length of the capsular tunnel (CaT) of the LHBT.

Conclusion: Under ultrasound guidance, the double-layered synovial sheath of the shoulder RI can be injected. The mixture may spread distally, around the extracapsular segment of the LHBT, and proximally inside the capsulotransverse space of the glenohumeral joint.

Level of evidence: Basic Science, Level V; Cadaveric/Anatomy Study



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