Article published online: 2024-12-11

Technical Report

The Rotator Interval Bursa (RIB) Technique: Sequential Rotator Interval and Subacromial Subdeltoid Bursa Injection

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Indian J Radiol Imaging

Abstract

Shoulder pain is a common and increasing indication for patients being referred for pain relief injections. To address this, patients are offered corticosteroid injections for the glenohumeral joint as well as the subacromial subdeltoid (SASD) bursa under ultrasound guidance, which allows direct visualization of the needle and target structures with a more confident and real-time needle placement. We demonstrate a new technique, the rotator interval bursa (RIB) technique, of sequential injection of the glenohumeral joint targeting the rotator interval as well as the SASD bursa via the anterior approach with a single prick.

Keywords

- ultrasound
- shoulder pain
- anterior approach
- RIB technique
- corticosteroid injection
- rotator interval
- subacromial-subdeltoid bursa

Introduction

Shoulder pain is a common and ever-increasing indication for patients being referred for pain relief injections. The common causes include osteoarthritis, impingement syndromes leading to rotator cuff pathologies, and adhesive capsulitis. In many instances, the clinical and radiological findings indicate the coexistence of multiple factors that may generate pain. Hence, patients are offered steroid injections for the glenohumeral joint as well as the subacromial subdeltoid (SASD) bursa to address these issues,[1] and combinations of injections have been documented to be more effective.[2]

Ultrasound guidance scores over fluoroscopy as it allows direct visualization of the needle along with soft tissue structures with greater confidence and accurate needle placement.[3]

Traditionally, glenohumeral joint injection is performed under ultrasonography guidance via a posterior approach, with the infraspinatus as an acoustic window.[4] The anterior approach of injecting the rotator interval (RI) has also been described and is preferred by some authors, especially in cases of adhesive capsulitis, as it is widely accepted that the RI is often the site of origin of pathology. The SASD bursa, which is a superficial structure, is injected via the anterior or posterior approach depending on the operator and patient comfort.[5]

A recent technique of injecting both sites sequentially via a single prick has been described by Shirodkar et al, who used a posterior approach.[6]

The authors describe another technique of sequential injection of the glenohumeral joint targeting the RI as well as the SASD bursa via the anterior approach.

DOI https://doi.org/10.1055/s-0044-1796640.
ISSN 0971-3026.

Thieme Medical and Scientific Publishers Pvt. Ltd., A-12, 2nd Floor, Sector 2, Noida-201301 UP, India

Technique

We describe a simple new technique to target the RI as well as the SASD bursa: the rotator interval bursa (RIB) technique (►**Video 1**).

Video 1

Ultrasound video showing the rotator interval bursa - RIB technique used to target the rotator interval as well as the subacromial subdeltoid bursa. Online content including video sequences viewable at: https://www.thieme-connect.com/products/ejournals/html/10.1055/s-0044-1796640.

- The patient lies in a lateral decubitus or semi-reclining position with the affected shoulder facing the operator. Ultrasound was performed to mark the site of entry into the RI (►**Fig. 1A**).
- The site is prepared using standard aseptic precautions. Local anesthetic (lignocaine 2 or 1%) is injected into the subcutaneous tissues, and the SASD bursa and the needle (38 mm, 22 gauge) are advanced under ultrasound guidance from the lateral to the medial approach into the RI (►**Fig. 1B**).
- A small amount of lignocaine is injected into the RI to confirm correct needle placement.
- The needle is left in place, and the syringe is exchanged with a preloaded syringe containing a mixture of 80 mg (2 mL) of triamcinolone, 4 mL of 1% lignocaine, and 4 mL of 0.25% bupivacaine (►**Fig. 2A, B**).
- Five milliliters of this cocktail are injected into the RI. In cases of adhesive capsulitis, if hydrodilatation is indicated, the syringe may be exchanged and 10 to 20 mL of saline is injected into the RI.
- The needle is then withdrawn under guidance to reach the SASD bursa (►**Fig. 2C, D**) overlying the supraspinatus tendon.
- Once accurate needle positioning is confirmed, the remaining 5 mL of the mixture is injected into the SASD bursa, and the needle is withdrawn.
- This procedure can also be done by injecting the bursa first, followed by injection into the RI along the same route. Staying medial to the RI ensures the injectate does not flow down the biceps tendon sheath.
- The site of injection is covered with a small dressing.
- Ultrasound of the posterior glenohumeral joint space can be performed as a final step to confirm distension of the joint capsule by the injectate (►**Fig. 3**).

Conclusion

We found this technique to be simple and effective for administering steroids that target the RIB and the SASD bursa via a single prick. This ensures better patient comfort and satisfaction with good results. This approach may be used as an alternative to the GIBPS technique,[5] which uses a posterior approach for the same benefit.

The Name of the Department(s) and Institution(s) to Which the Work Should Be Attributed
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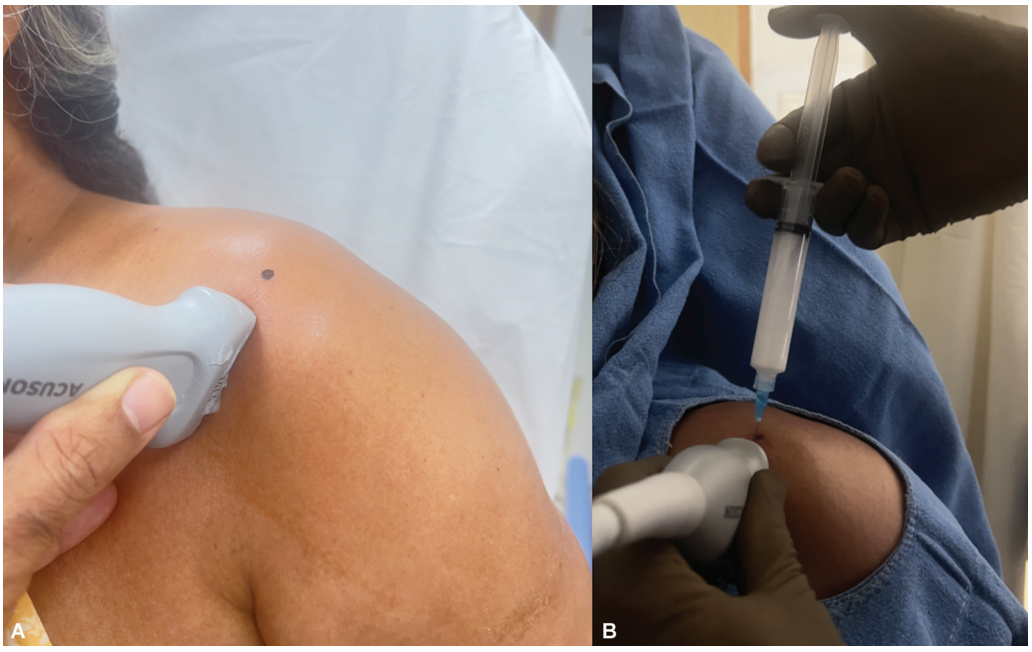

Fig. 1 A photograph of a patient in semi-recumbent position on a bed shows (**a**) the probe position in (**A**) and the needle with a syringe containing the injectate in (**B**) for sequential injection of the glenohumeral joint targeting the rotator interval as well as the subacromial subdeltoid bursa via the anterior approach.

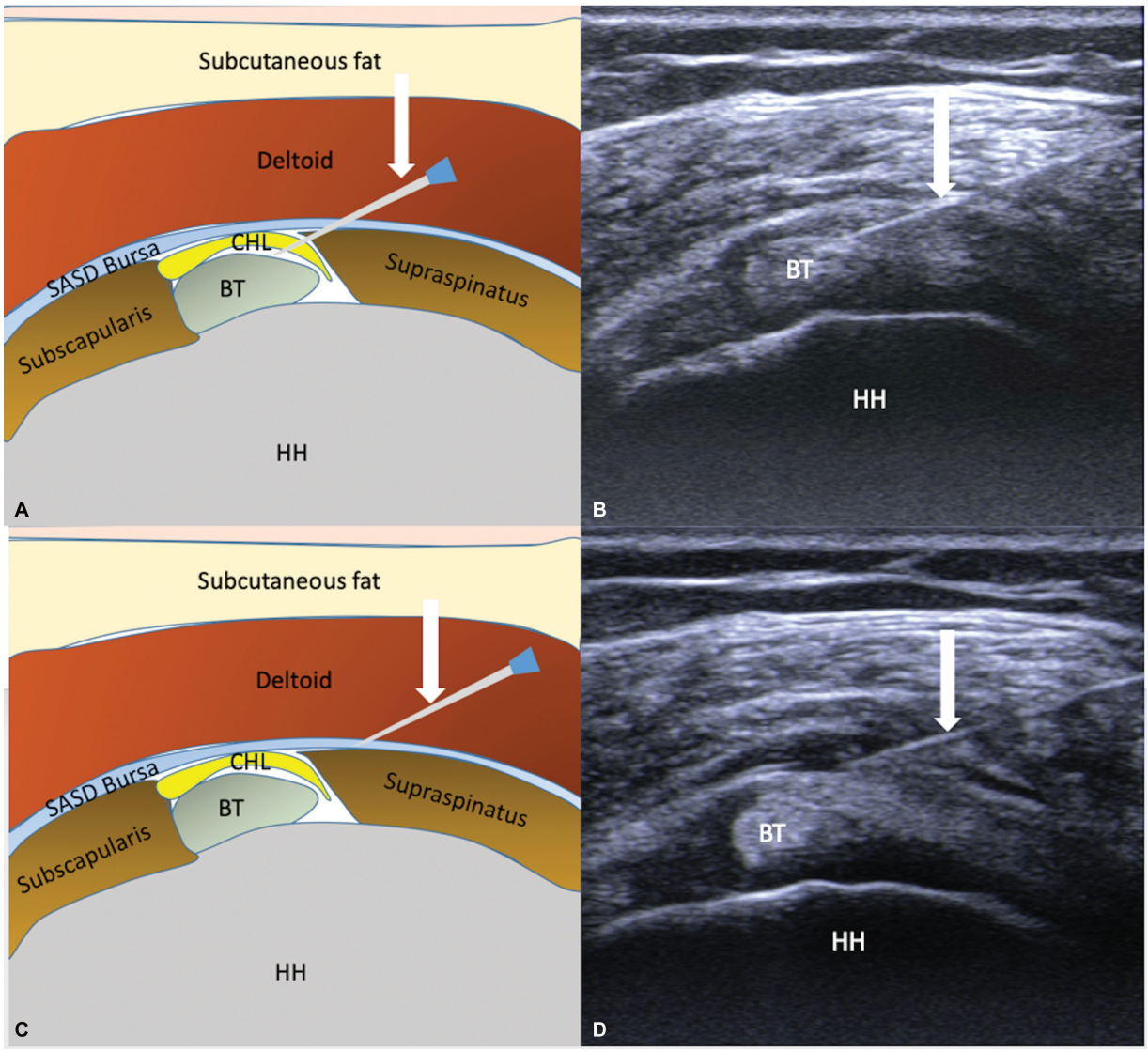

Fig. 2 Ultrasound-guided rotator interval bursa - RIB technique. Schematic diagram and ultrasound image of sequential injection of the glenohumeral joint with the needle (*white arrow*) targeting the rotator interval (**A**, **B**) and the SASD bursa (**C**, **D**) via the anterior approach. BT, biceps tendon; CHL, coracohumeral ligament; HH, humeral head; SASD, subacromial subdeltoid.

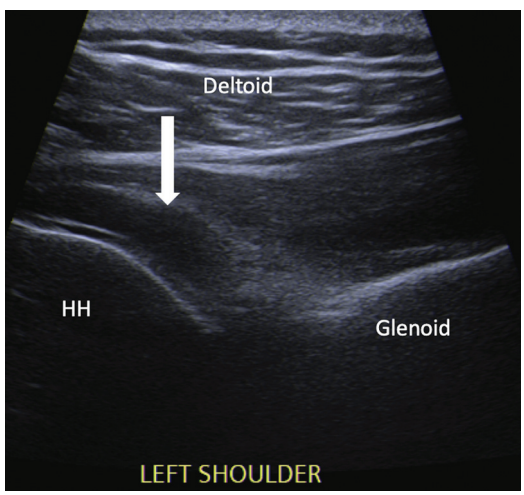

Fig. 3 Transverse ultrasound image of the left shoulder showing joint fluid (*arrow*) in the posterior glenohumeral space. HH, humeral head.

Patient Consent

Written informed consent was obtained from the subject described in this report.

Funding

None.

Conflict of Interest

None declared.

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