

# Adhesive Capsulitis “Frozen Shoulder”: A Cool Musculoskeletal Case

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## Introduction

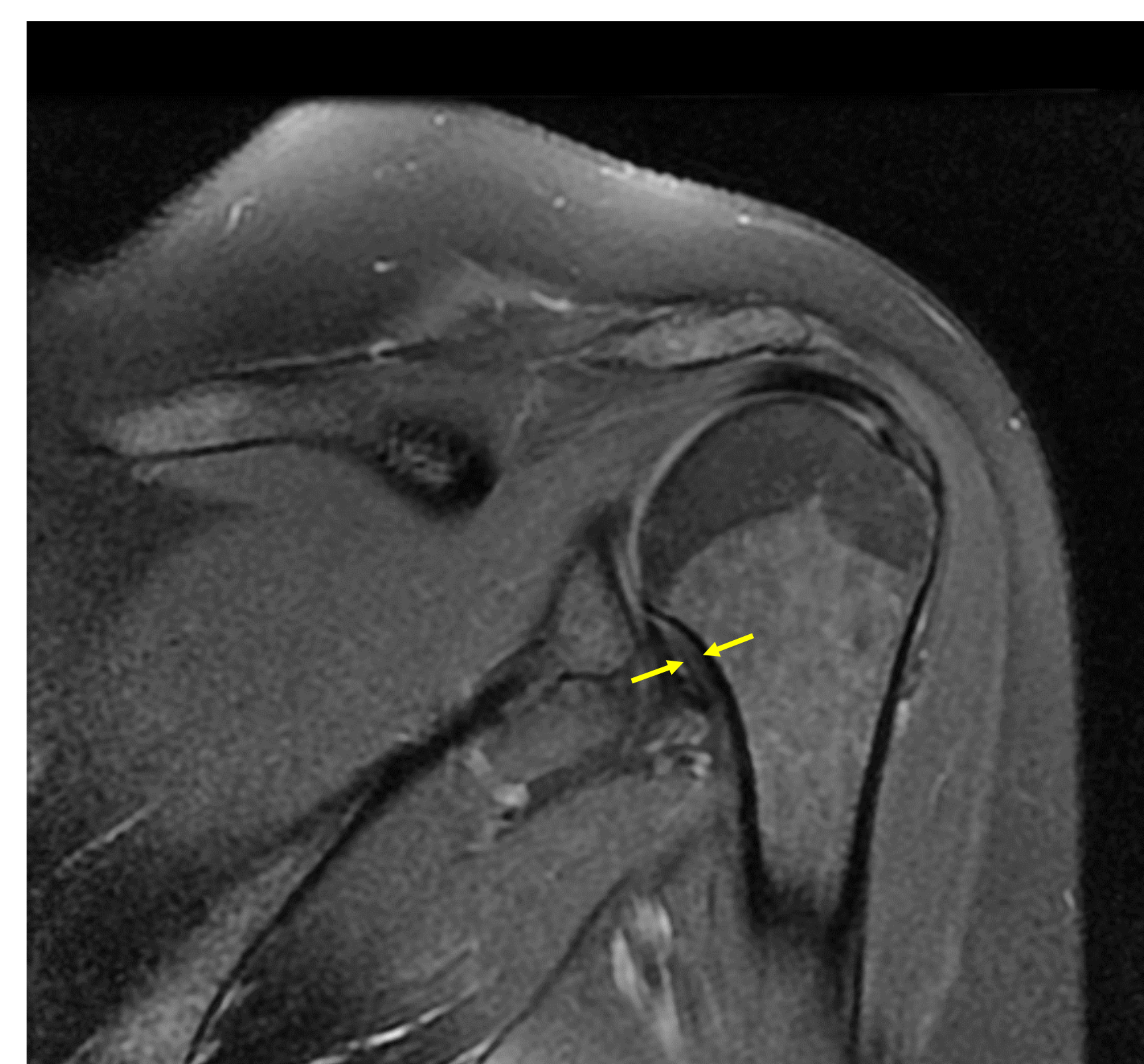
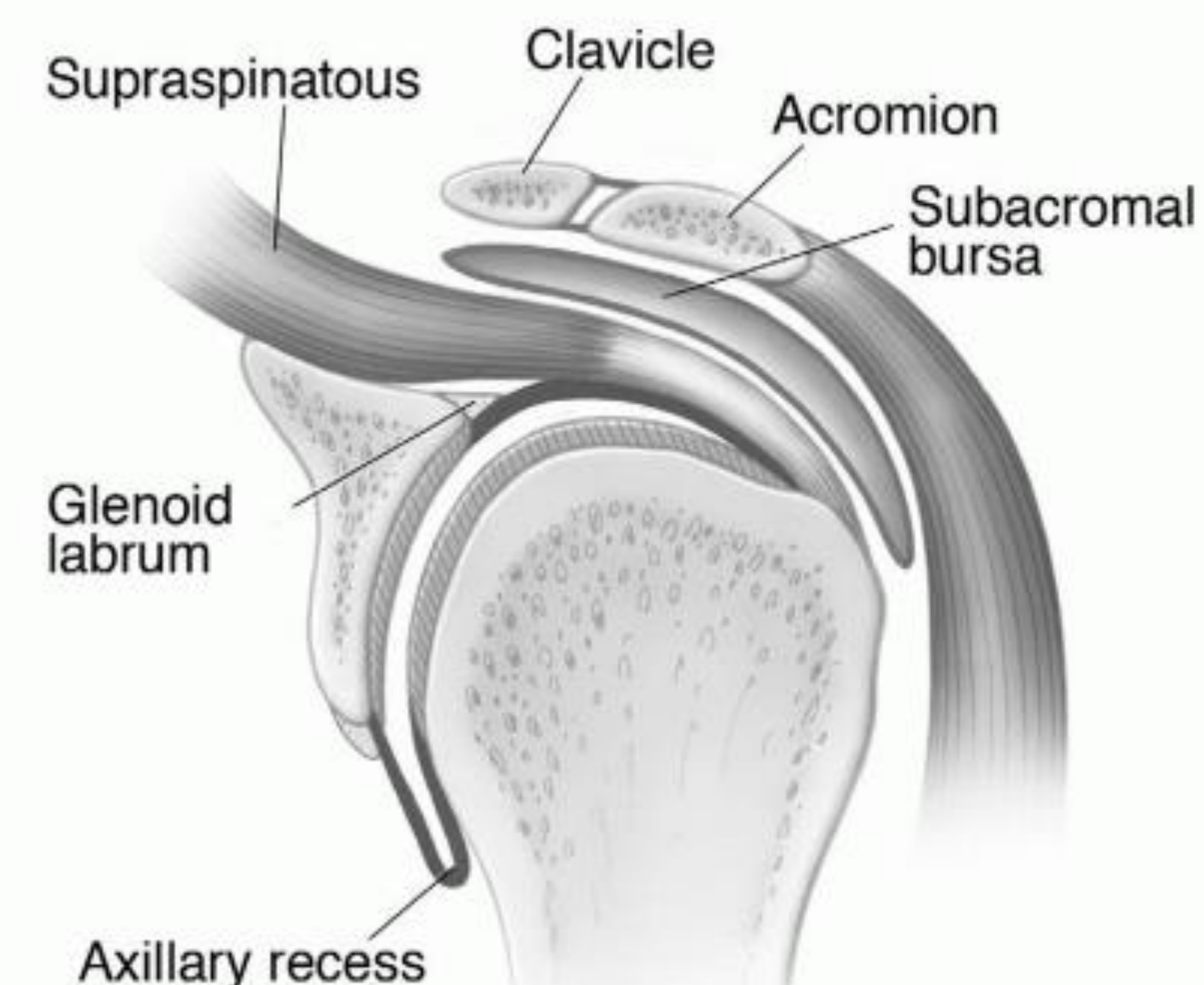
Adhesive capsulitis (AC) is a inflammatory process of progressive capsular retraction. Diagnosis is difficult on symptoms alone because adhesive capsulitis mimics more common entities such as impingement syndromes and rotator cuff tears.<sup>(1)</sup> Thus, magnetic resonance (MR) can display specific characteristics that aid in diagnosis.

## Background

The incidence of adhesive capsulitis (AC) is approximately 3-5% in the general population.<sup>(2)</sup> It typically affects women more frequently than men and incidence of AC is 2-4x higher in the diabetic population. Clinically, AC can be broken into 3 stages. The first of which is the “freezing” painful stage, where pain worsens with active and passive ROM. The 2<sup>nd</sup> “frozen” transitional stage consists of pain at the end of ROM that limits arm movement. The 3<sup>rd</sup> stage is the “thawing” stage when ROM and shoulder mobility starts to improve. The total process typically lasts 12 to 18 months.

## Case History

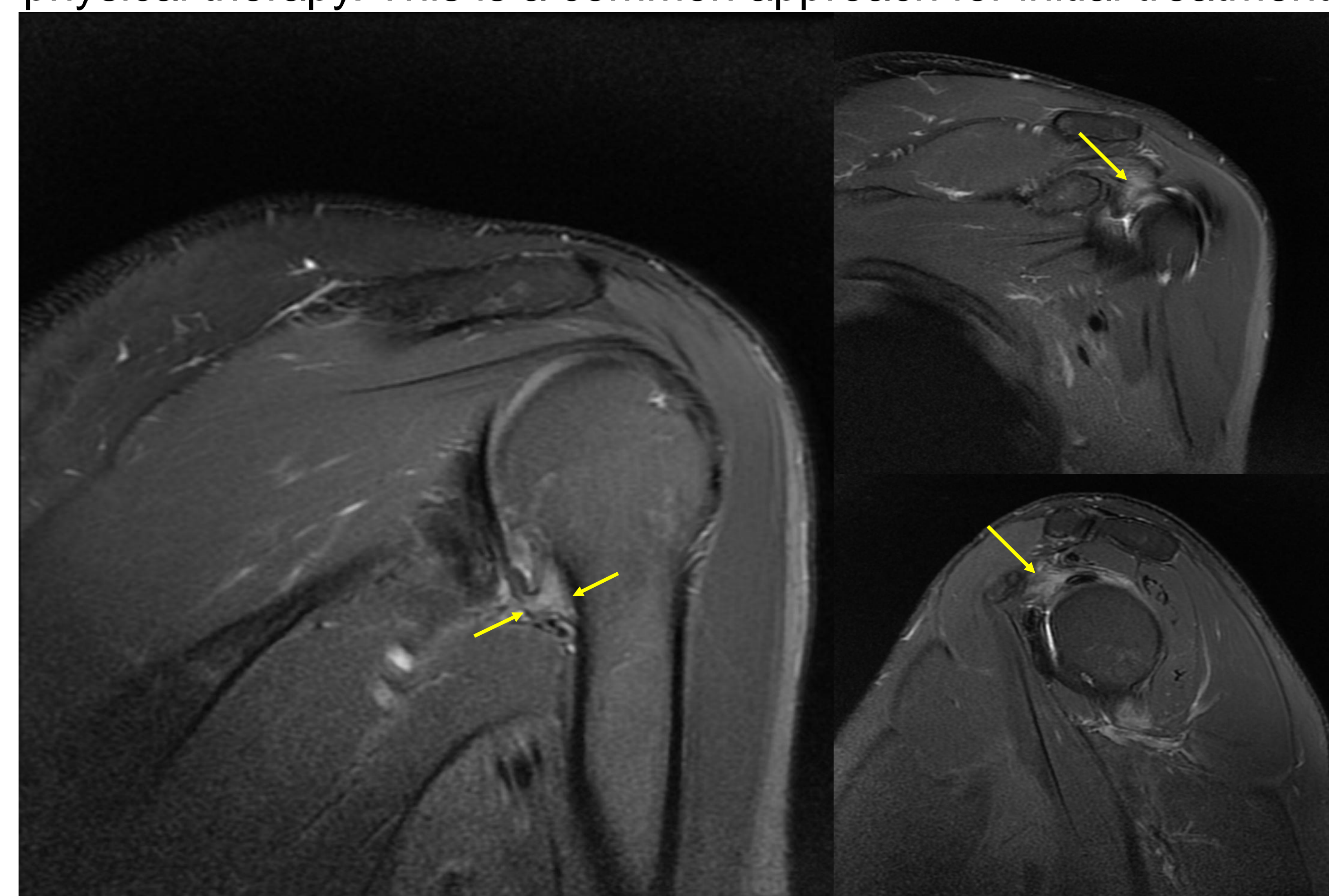
A 38-year-old male with history of left shoulder pain for 15 months. At initial presentation, he was diagnosed with left shoulder bursitis and a rotator cuff sprain. The patient’s pain increased in severity over the last 4 months, described as a constant aching pain, worse with abduction. Physical exam showed limited active range of motion (ROM) with abduction and external rotation. The physician suspected rotator cuff tear or shoulder impingement. Shoulder radiographs were negative, and subsequent MRI of the shoulder was obtained. The normal shoulder is discussed in figure 1.



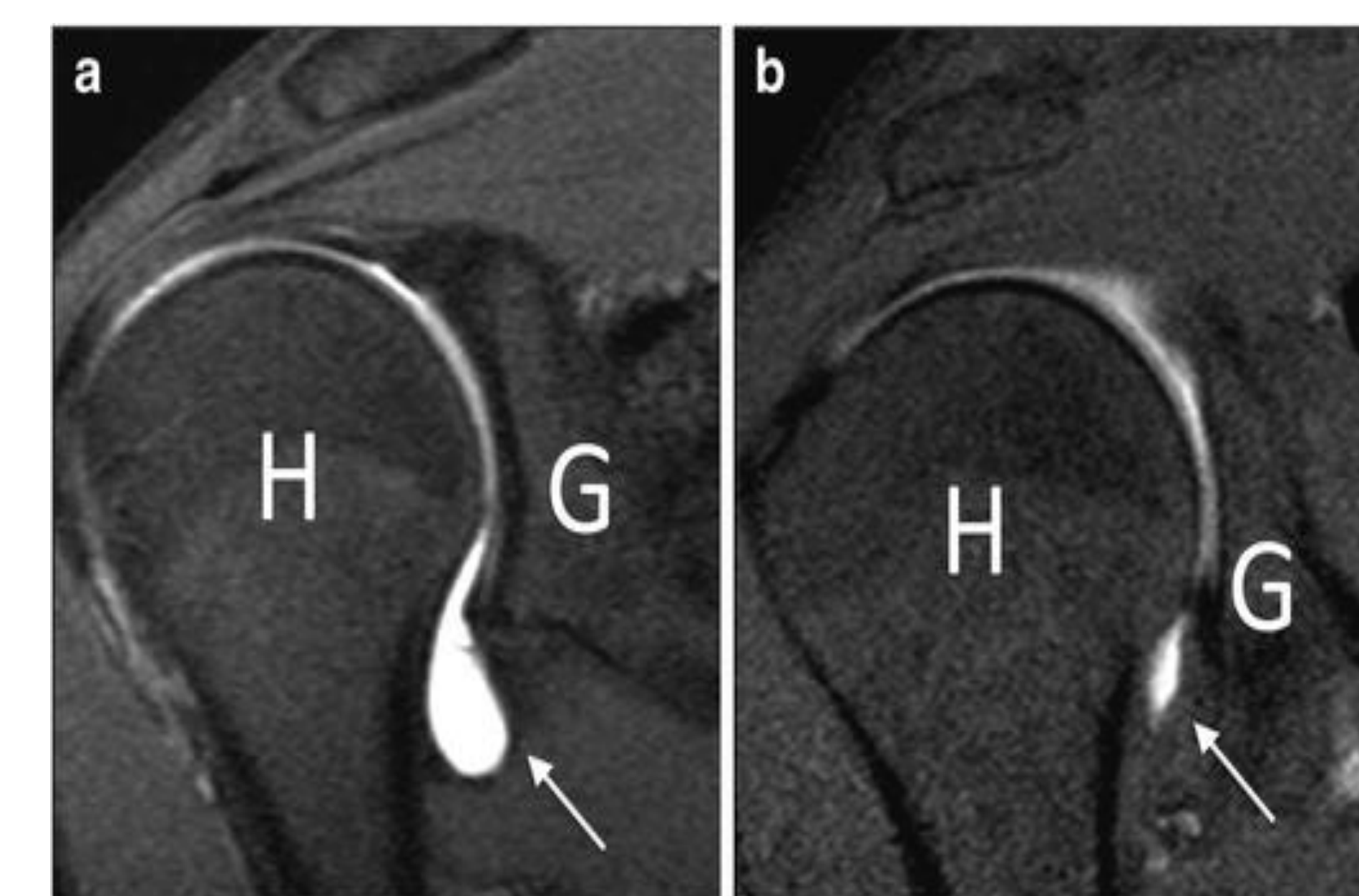
**Figure 1:** Coronal (left) illustration and coronal (right) MR demonstrate the normal anatomy of the axillary recess with a normal inferior glenohumeral ligament measuring <4mm and no synovial or joint capsular thickening (arrows, right image)<sup>(3-4)</sup>.

## Findings/Discussion

MRI of the shoulder demonstrated characteristic findings of AC including synovial and joint capsular thickening within the axillary recess, anterior joint capsular thickening with abnormal T2 hyperintensity, and abnormal soft tissue thickening within the rotator cuff interval (**figure 2**). These are findings consistent with adhesive capsulitis. Other findings include abnormal tissue encasing the biceps anchor and sub-coracoid triangle sign.<sup>(5)</sup> MR arthrography is another method of diagnosis with an advantage of real time diagnosis as iodinated contrast is injected (**figure 3**).<sup>(6-7)</sup> This patient was treated with NSAIDs, intra-articular steroid injections, and physical therapy. This is a common approach for initial treatment of AC.



**Figure 2:** Coronal MR STIR image (left) demonstrates the abnormal axillary recess with synovial and capsular thickening (small arrows) with associated T2/STIR hyperintensity consistent with synovitis. Coronal MR STIR (right upper) and sagittal MR STIR (right lower) images show anterior capsular thickening and hyperintensity within the rotator cuff interval (arrows) consistent with synovitis. These findings are consistent with adhesive capsulitis of the left shoulder.



**Figure 3:** MR arthrogram displaying advantage of real time diagnosis of adhesive capsulitis. Coronal oblique T1-weighted fat-saturated images (a) In a healthy subject, the axillary pouch is normally distensible (arrow) H humerus, G glenoid. (b) In a patient with adhesive capsulitis, the axillary pouch is contracted and poorly distended (arrow).<sup>(7)</sup>

## Conclusion

Adhesive capsulitis is an inflammatory entity that mimics rotator cuff pathology. This case demonstrates the utility of MR imaging and the typical MR radiographic findings that are critical in diagnosis.

## References

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