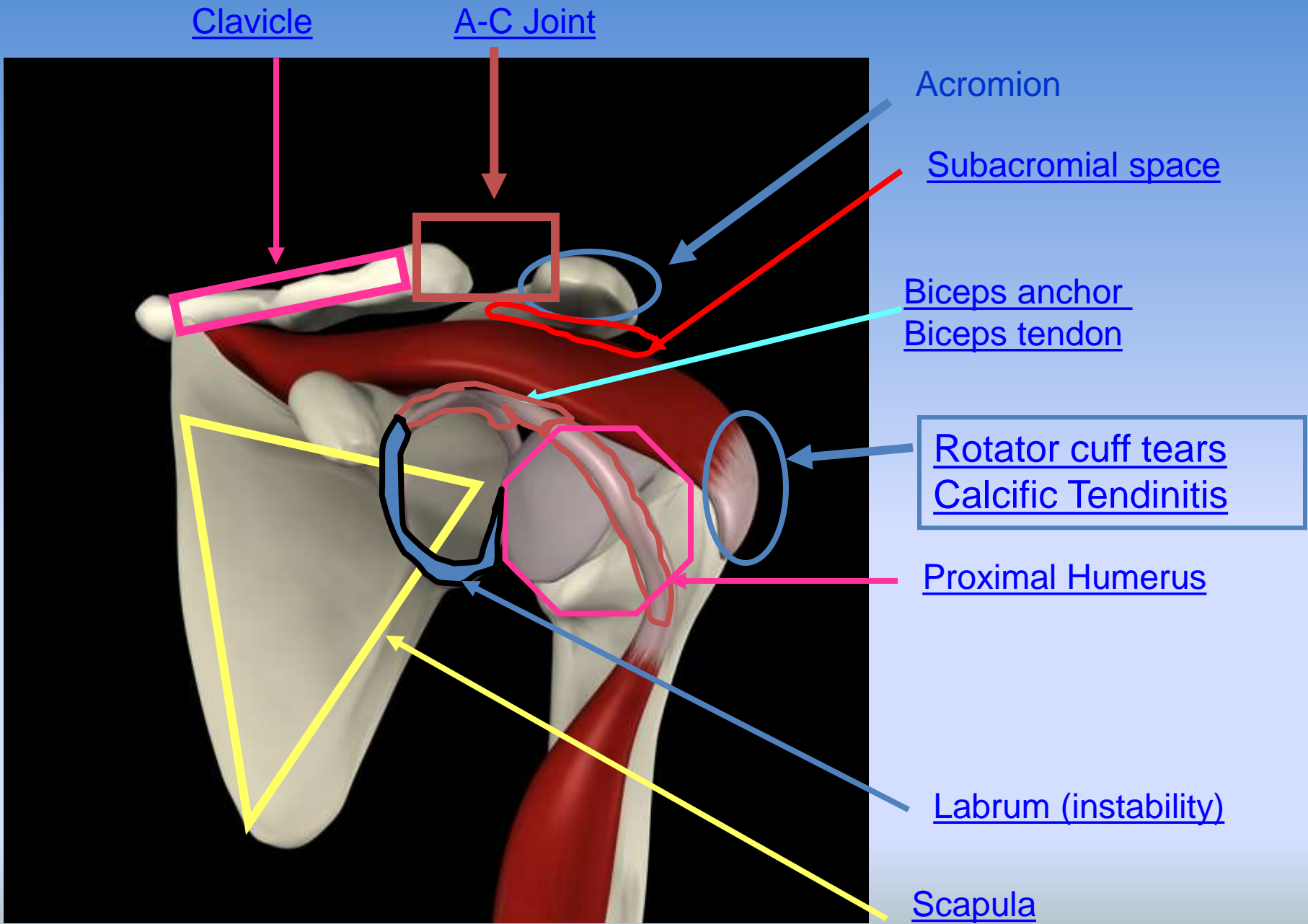


Clinical examination and Imaging in shoulder disease



M. N. Naderi

Fellowship in Shoulder surgery



Shoulder assessment

- **History**
- *Look , Feel*
- *Movement*
- *Clinical test*
- *Radiography*
- *Sonography*
- *Arthrography*
- *CT Scan*
- *MRI*
- *CT / MRI*
Arthrogram
- *Arthroscopy*

- **Common shoulder problems:**
 - **Pain**
 - **Stiffness**
 - **Instability**
- 1. Rotator Cuff**
- 2. Glenohumeral joint**
- 3. Acromioclavicular joint**
- 4. Clavicle**
- 5. Neck**

Shouder assessment

- **History**
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- **Common shoulder problems:**
 - **Pain**
 - **Stiffness**
 - **Instability**

When ?

How ?

Degree ?

Accompanying symptoms ?

Shoulder assessment

- *History*
- ***Look , Feel***
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- Asymmetry, scars, deltoid wasting, SCJ or ACJ deformity, swelling of the joint
- Look and feel for rotator cuff wasting, scapula shape and situation



Shouder assessment

- *History*
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- ***Movement***
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- **Always examine the Cervical spine first**
- **Move both arms at the same time**
- **Active then passive ROM**
(FF , IR , ER)



Shouder assessment

- *History*
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- *Arthroscopy*

- **Subacromial Impingement**
- **AC Joint**
- **Rotator cuff Integrity**
 - **Supraspinatus/anterosuperior cuff**
 - **Infraspinatus+teres minor/posterior cuff**
 - **Subscapularis/anteroinferior cuff**
- **Biceps**
- **Deltoid**
- **Serratus anterior**
- **Instability testing**
 - **Laxity tests**
 - **Stability test**

Shouder assessment

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Subacromial Impingement

- **Hawkin's test**
- **Neer's sign & test**
- **Copeland Impingement Test**



Shouder assessment

- *History*
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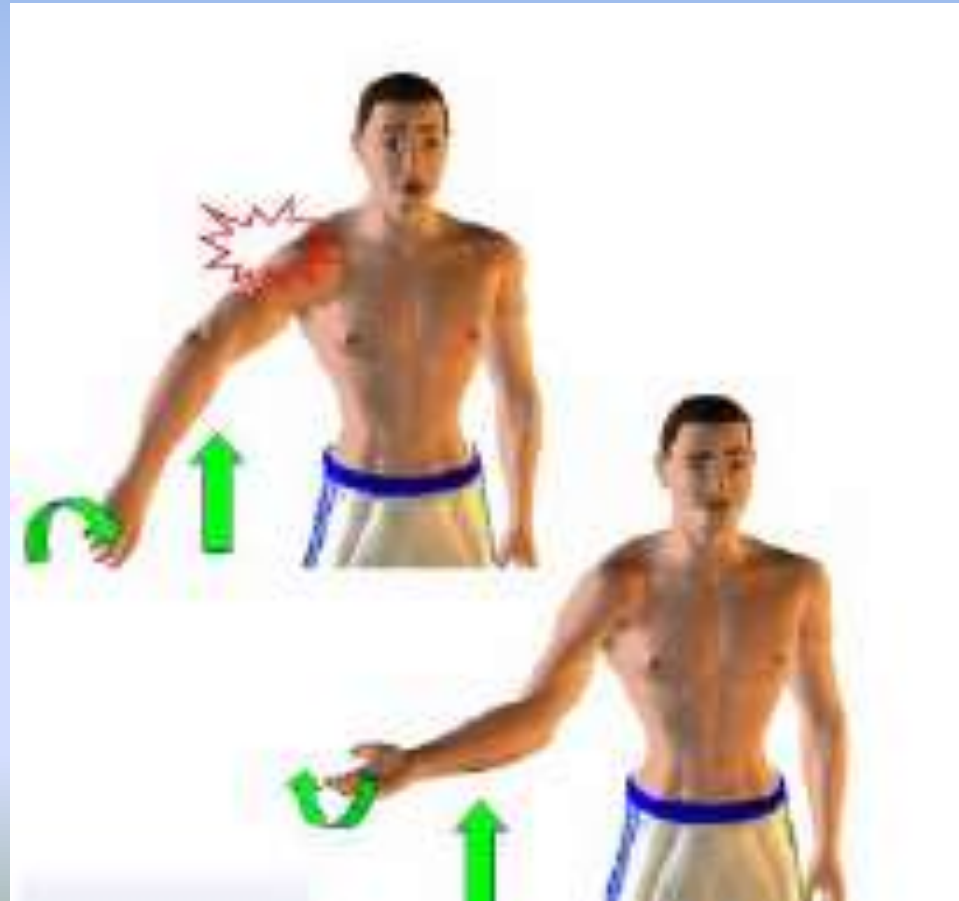


Shouder assessment

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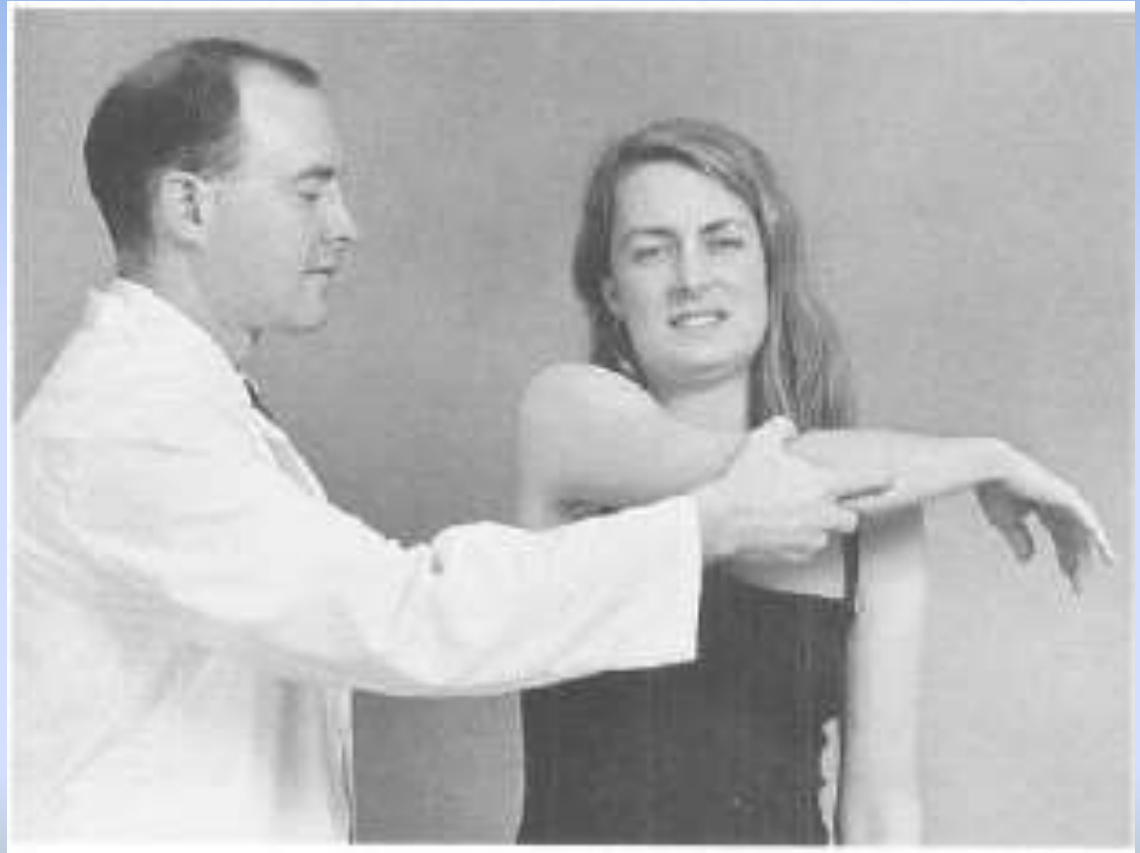


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AC Joint

- **Cross body adduction test (Scarf test)**



Shouder assessment

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Rotator cuff Integrity

- **Muscle resisting**
 - Jobe's empty can test
 - ER stress test (Resisted ER with the arms by side)
 - Lift-off test, Belly-Press test(Napoleon test)
- **Lag signs**
 - ER Lag sign
 - IR Lag sign
 - Drop sign



Shouder assessment

- *History*
- *Look , Feel*
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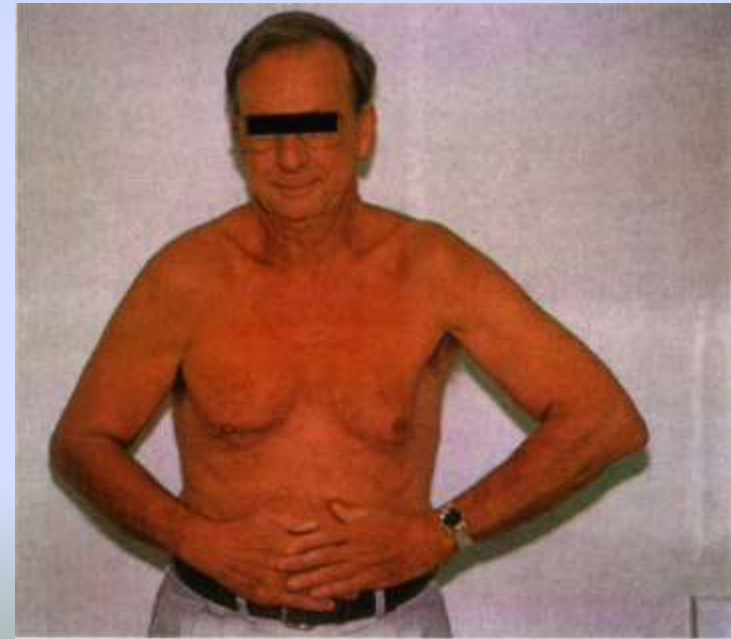


Shouder assessment

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Shouder assessment

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Biceps

- **Speed's test**
- **Yergason's test**



Shouder assessment

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- *Look , Feel*
- *Movement*
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- *Arthrogram*
- ***Arthroscopy***

SLAP lesion

- O'Brien test (active compression test)



(O'Brien SJ, Pagnani MJ, Fealy S, McGlynn SR, Wilson JB. The active compression test: a new and effective test for diagnosing labral tears and acromioclavicular joint abnormality. Am J Sports Med. 1998 Sep-Oct;26(5):610-3.)

Shoulder assessment

- History
- Look , Feel
- Movement
- **Clinical test**
- Radiography
- Sonography
- Arthrography
- CT Scan
- MRI
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Park HB, Yokota A, Gill HS, et al: Diagnostic accuracy of clinical tests for the different degrees of subacromial impingement syndrome, J Bone Joint Surg 87A:1446, 2005.

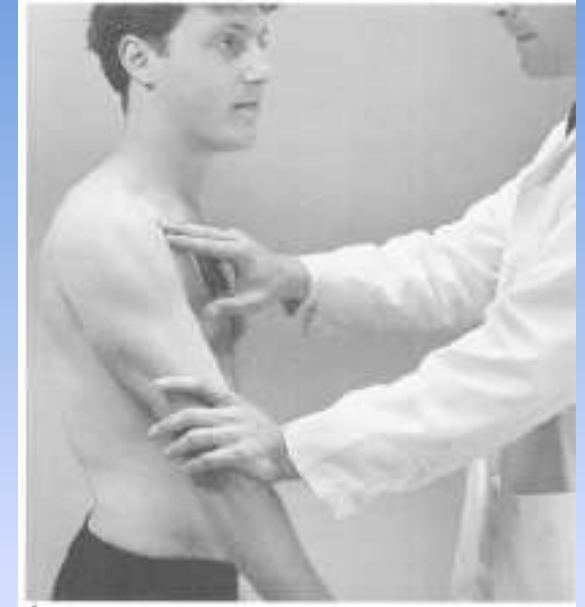
Clinical Tests for Subacromial Impingement (Regardless of Severity of Rotator Cuff Disease)

Test	Sensitivity (%)	Specificity (%)	Positive Predictive Value (%)	Negative Predictive Value (%)	Overall Accuracy (%)
Neer sign	68	68.7	80.4	53.2	68.3
Hawkins-Kennedy sign	71.5	66.3	79.7	55.7	69.7
Painful arc sign	73.5	81.1	88.2	61.5	76.1
<u>Supraspinatus (Jobe) muscle test</u>	44.1	89.5	88.4	46.8	60.2
Speed test	38.3	83.3	80.5	42.9	54.4
Cross-body adduction test	22.5	82	69.3	36.9	47.8
Drop-arm test	26.9	88.4	81	39.7	48.6
<u>Infraspinatus muscle test</u>	41.6	90.1	90.6	45.8	58.7

Shouder assessment

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Deltoid muscle



Shoulder assessment

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- *Look , Feel*
- *Movement*
- ***Clinical test***
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Serratus anterior

- **Winging test**



Shoulder assessment

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- **Instability testing**

- **Laxity tests**
- **Stability test**



Shouder assessment

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laxity Test

- **Sulcus sign**
- **Drawer Test**

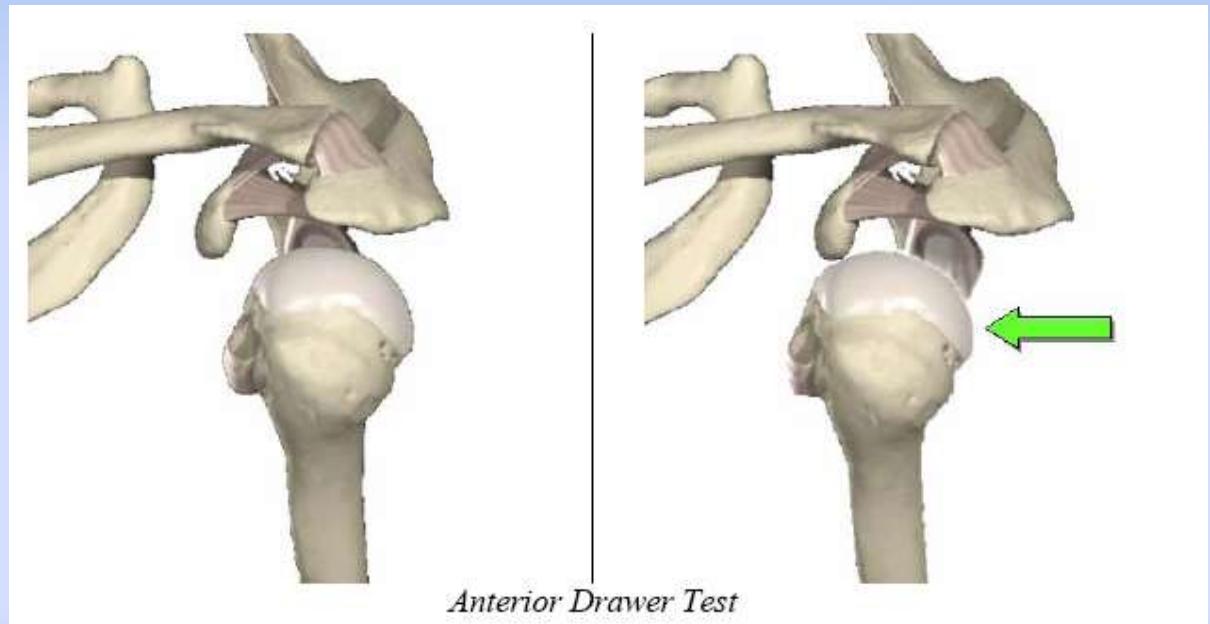


Shoulder assessment

- History
- Look , Feel
- Movement
- **Clinical test**
- Radiography
- Sonography
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Hawkins and Bokor :

<u>Laxity Grade</u>	<u>Description</u>
• Normal	Mild Translation (0-25%)
• Grade 1	Feeling of Head riding onto rim (25-50%)
• Grade 2	Head over rim, reduces spontaneously (>50%)
• Grade 3	Head over rim, remains dislocated



Hawkins RJ, Bokor DJ. Clinical evaluation of shoulder problems. In: Rockwood CA Jr, Matsen FA III, editors. The shoulder . 2nd ed, vol 1. Philadelphia: WB Saunders; 1998. p164 -97

Shoulder assessment

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Stability Test

- **Apprehension Test**
 - Ant.
 - Post. (Jerk test)



Rowe CR, Zarins B. Recurrent transient subluxation of the shoulder. J Bone Joint Surg Am.1981; 63:863 -72.

Shouder assessment

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Stability Test

- **Relocation test (Jobe)**

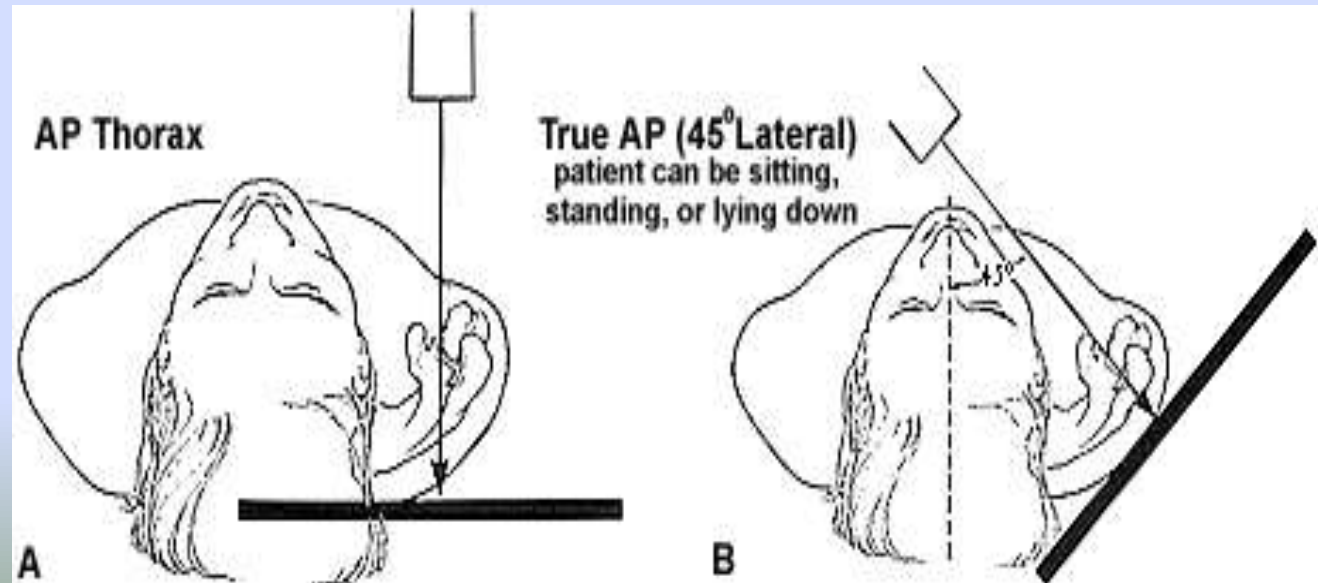


Jobe FW, Kvitne RS, Giangarra CE. Shoulder pain in the overhand or throwing athlete. The relationship of anterior instability and rotator cuff impingement. Orthop Rev.1989; 18: 963-75. Erratum in: Orthop Rev. 1989;18:1268.

Shoulder assessment

- *History*
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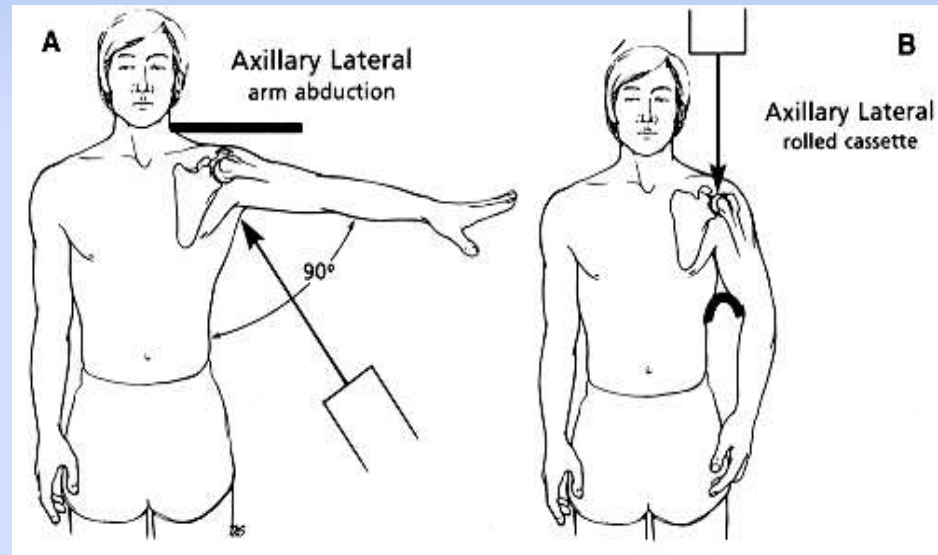
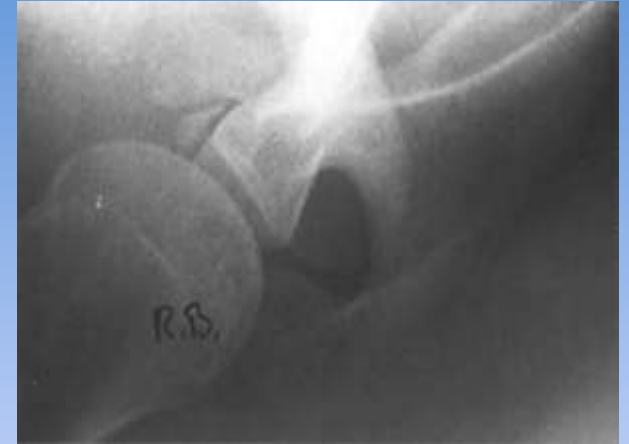
- **AP**
- **Axillary view**
- **Lat scapular view**



Shouder assessment

- *History*
- *Look , Feel*
- *Movement*
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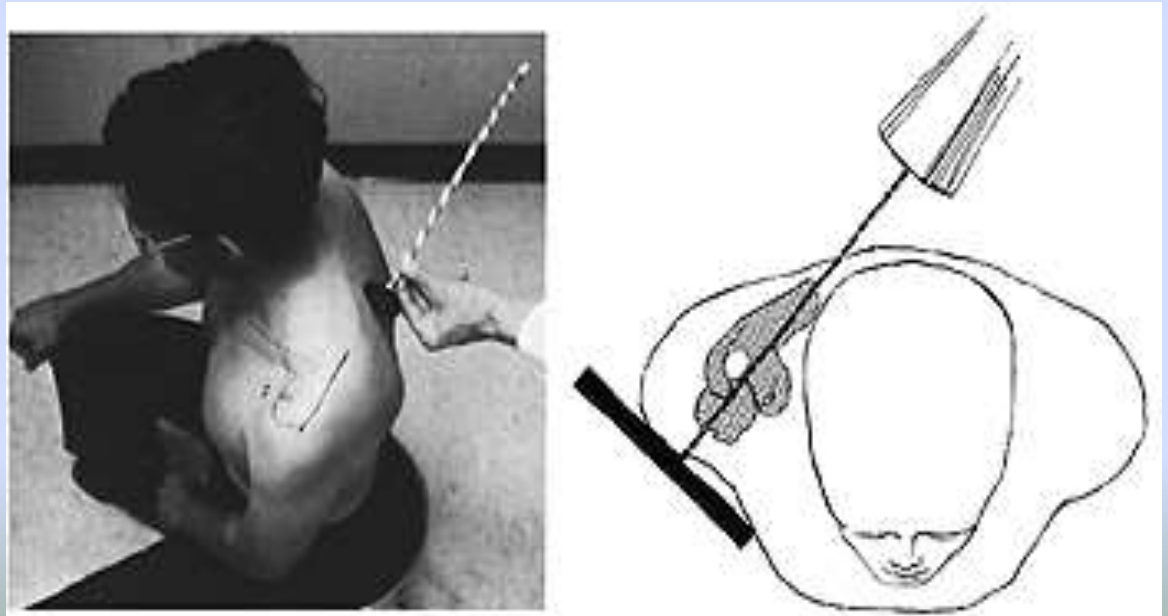
- **AP**
- **Axillary view**
- **Lat scapular view**



Shouder assessment

- *History*
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- **AP**
- **Axillary view**
- **Lat scapular view**

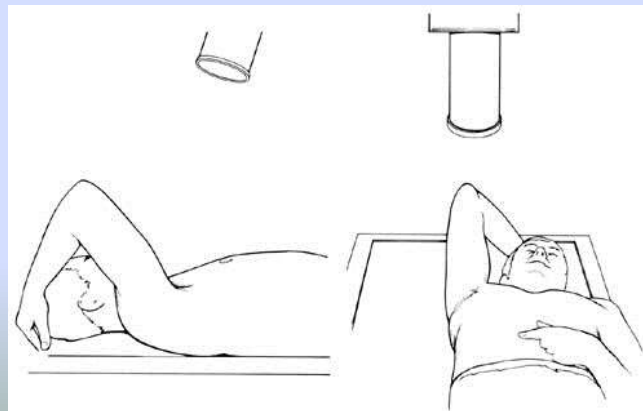
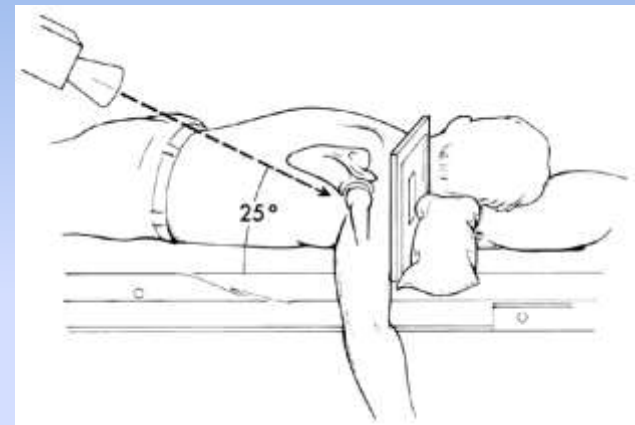
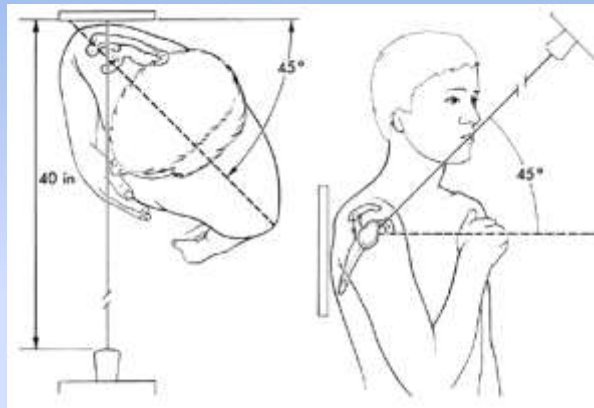


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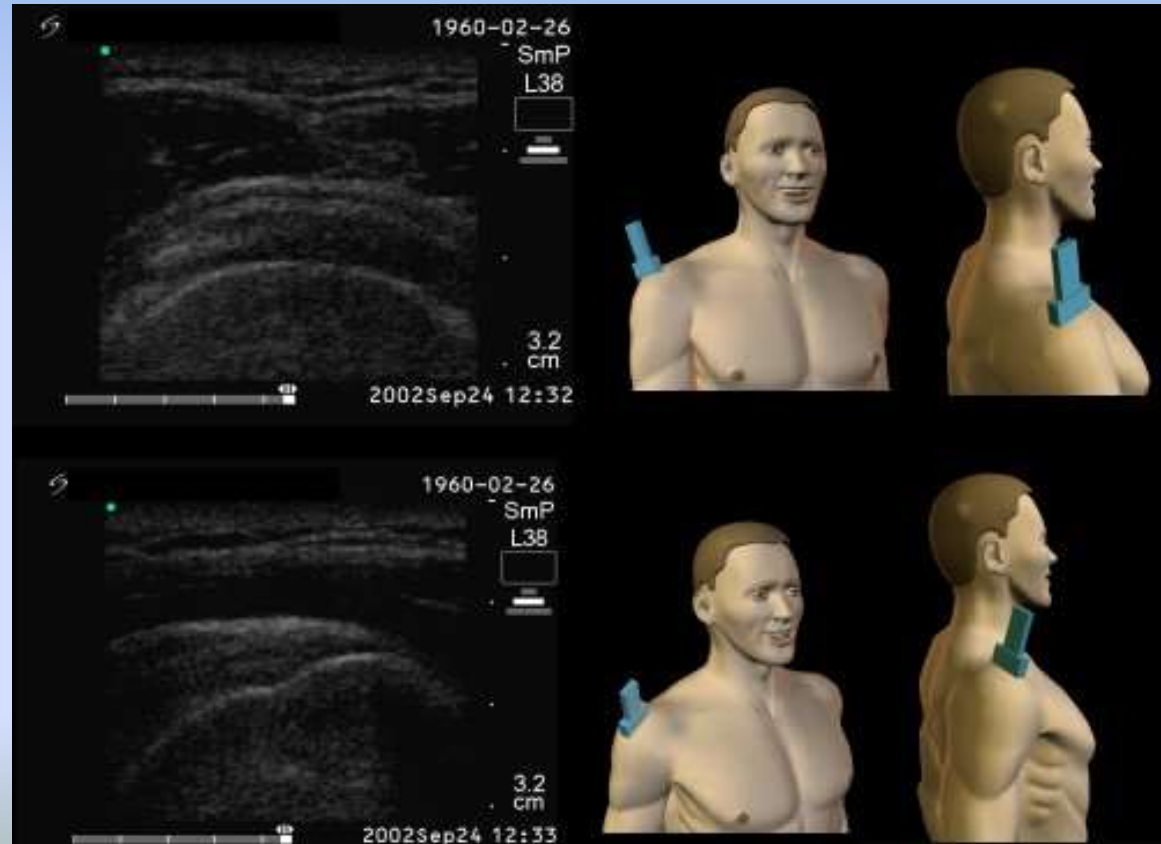
• **Specialized views**

- apical oblique view
- West Point view
- Stryker notch view



Shouder assessment

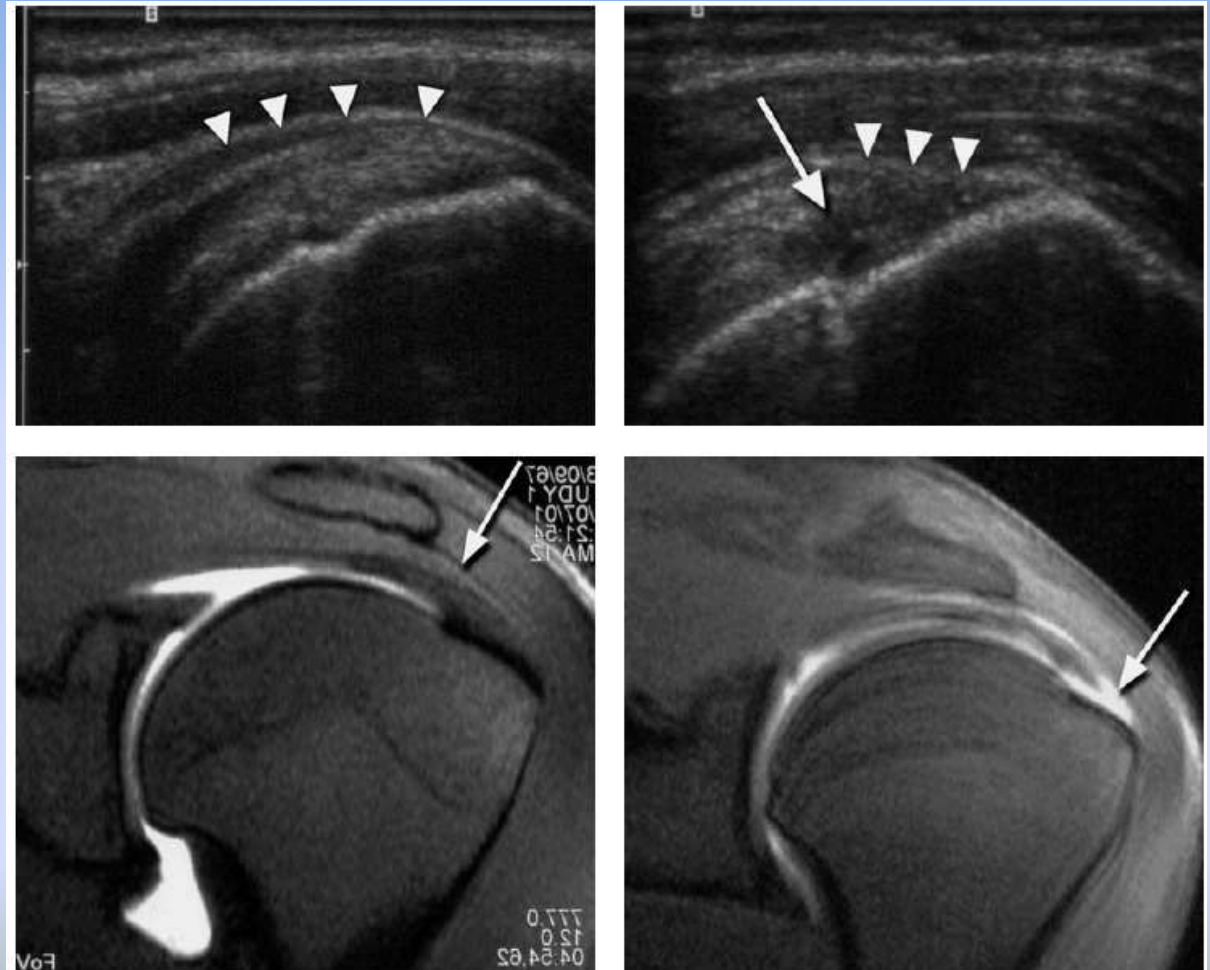
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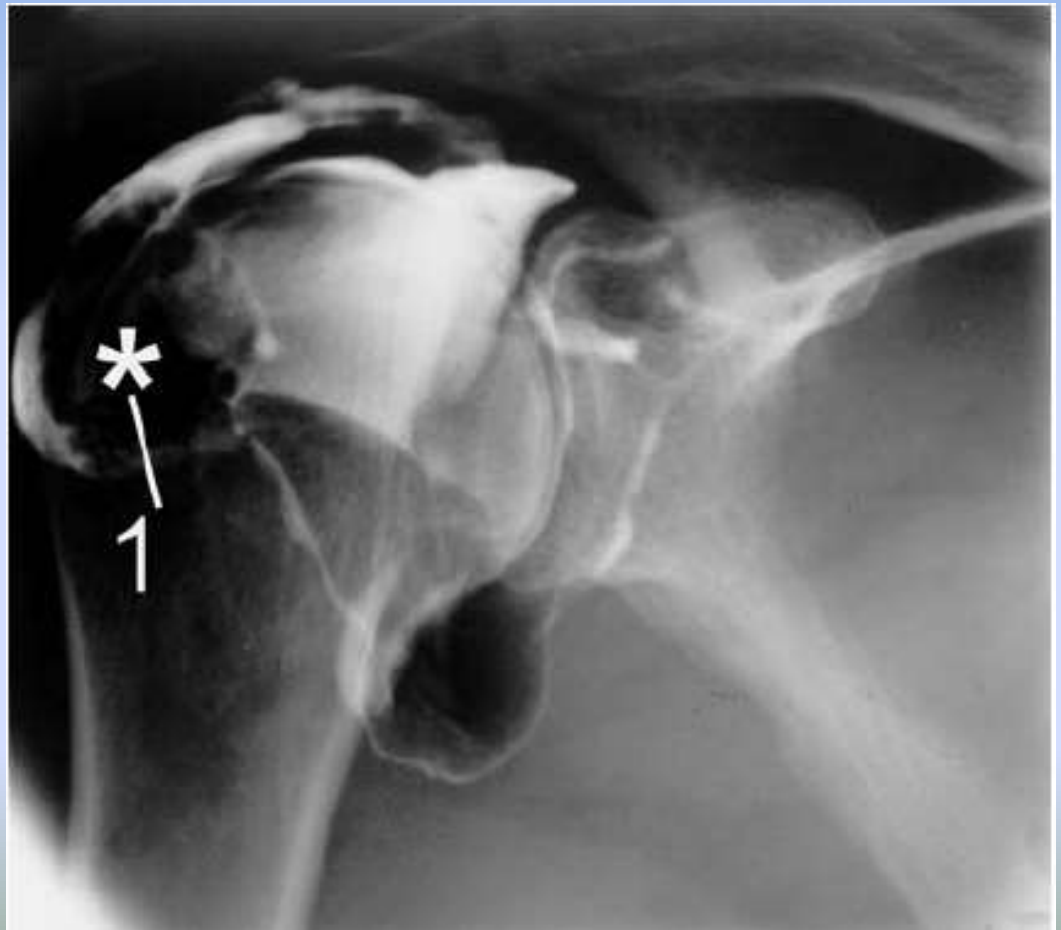
- **Reliable & fast method for evaluation of cuff**
- **Dependent to operator experience**



Shoulder assessment

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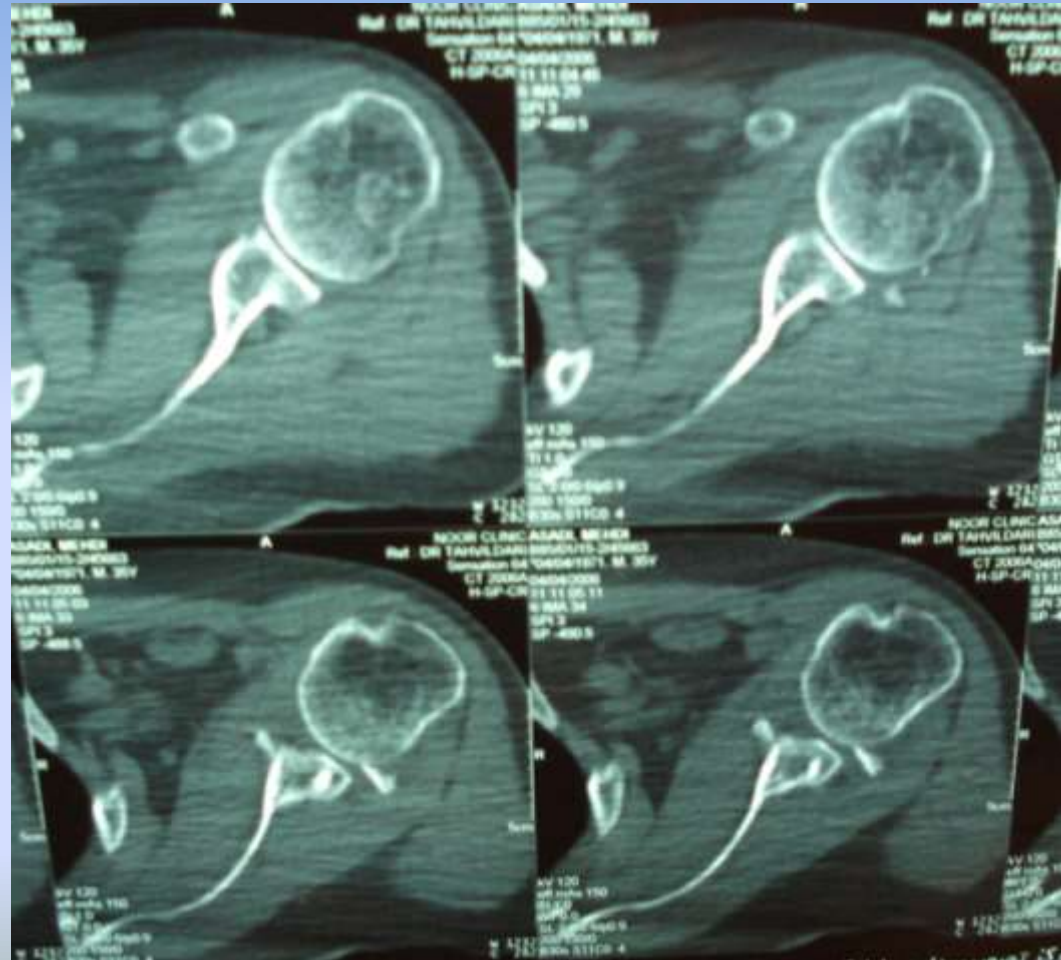
- High value in diagnosis of complete cuff tear
- limited in assess of size and morphology of tear



Shouder assessment

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- **Best Diagnostic imaging modality for assessment of bony lesion (glenoid ,,,)**



Shoulder assessment

- **Three dimensional CT (3D CT)**



- *History*
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Shoulder assessment

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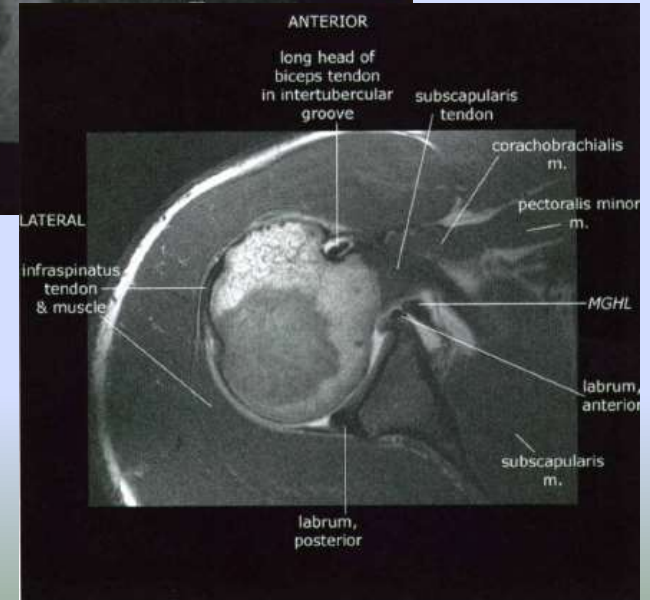
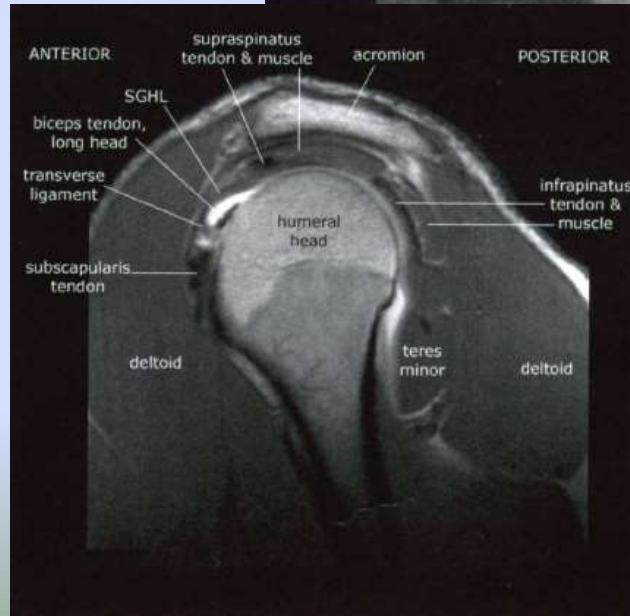
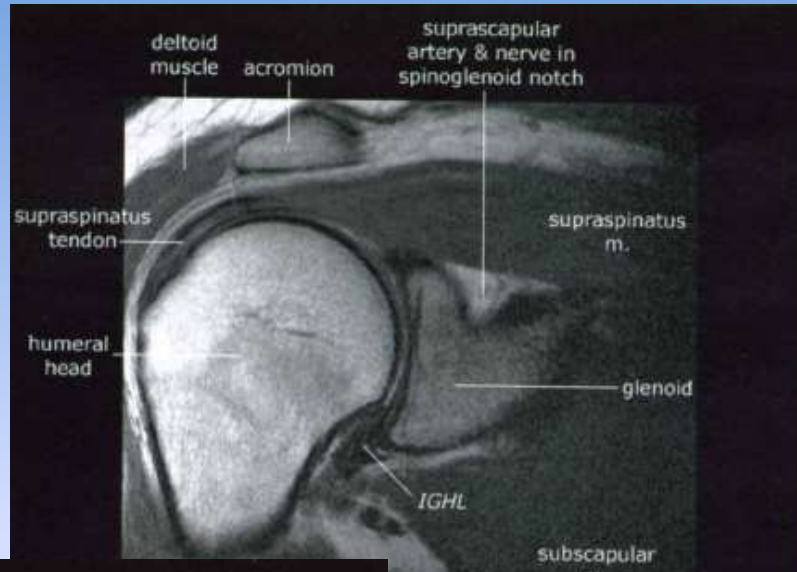
TABLE 1.1 APPEARANCES OF TISSUES ON MR IMAGES

Tissue	T1-weighted Image	T2-weighted Image
Fat ^a	Very bright	Intermediate to dark
Cysts		
Water	Very dark	Very bright
Proteinaceous	Intermediate to bright	Very bright
Bone marrow		
Yellow ^a	Very bright	Intermediate to dark
Red ^b	Intermediate	Dark
Cortical bone	Very dark	Very dark
Cartilage		
Fibrocartilage	Very dark	Very dark
Hyaline ^c	Intermediate	Intermediate
Osteophyte		
Marrow	Bright	Intermediate to dark
Calcified	Dark	Dark
Tendons	Dark	Dark
Ligaments	Dark	Dark
Muscle	Dark	Dark
Gadolinium enhancement		
Low concentration	Very bright	Bright
High concentration	Intermediate to dark	Very dark

Shoulder assessment

Assessment for the soft tissue lesions (labral lesion, rotator cuff, Slap lesion)

- History
- Look, Feel
- Movement
- Clinical test
- Radiography
- Sonography
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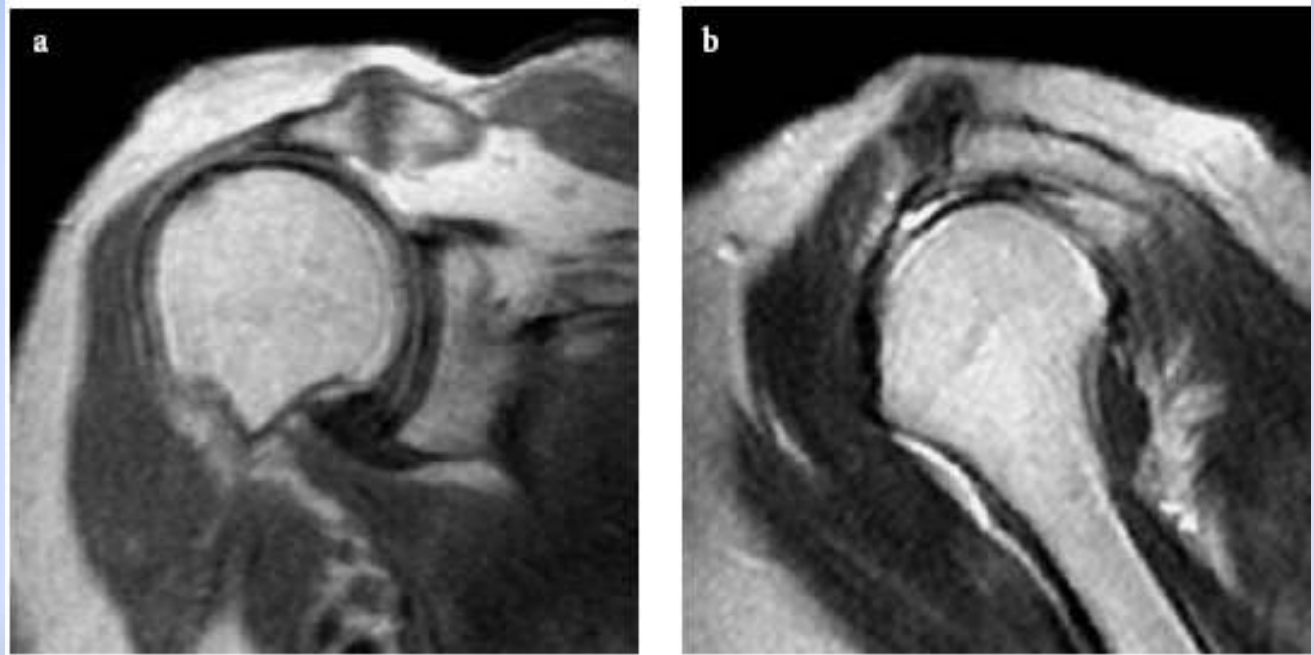


Shoulder assessment

- *History*
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Muscle Quality

- Stage 0 normal, Ø Fat
- Stage 1 minimal Fatty infiltration
- Stage 2 Muscle > Fat
- Stage 3 Muscle = Fat
- Stage 4 Muscle < Fat

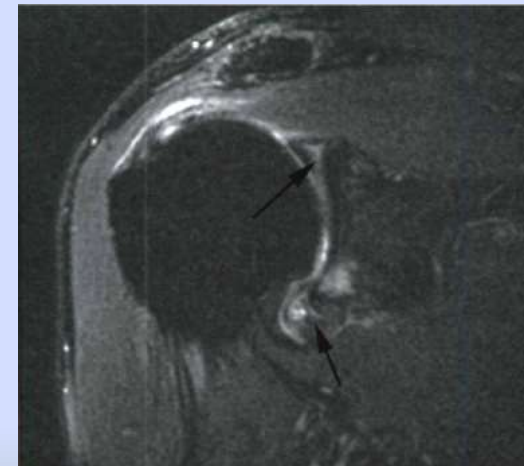
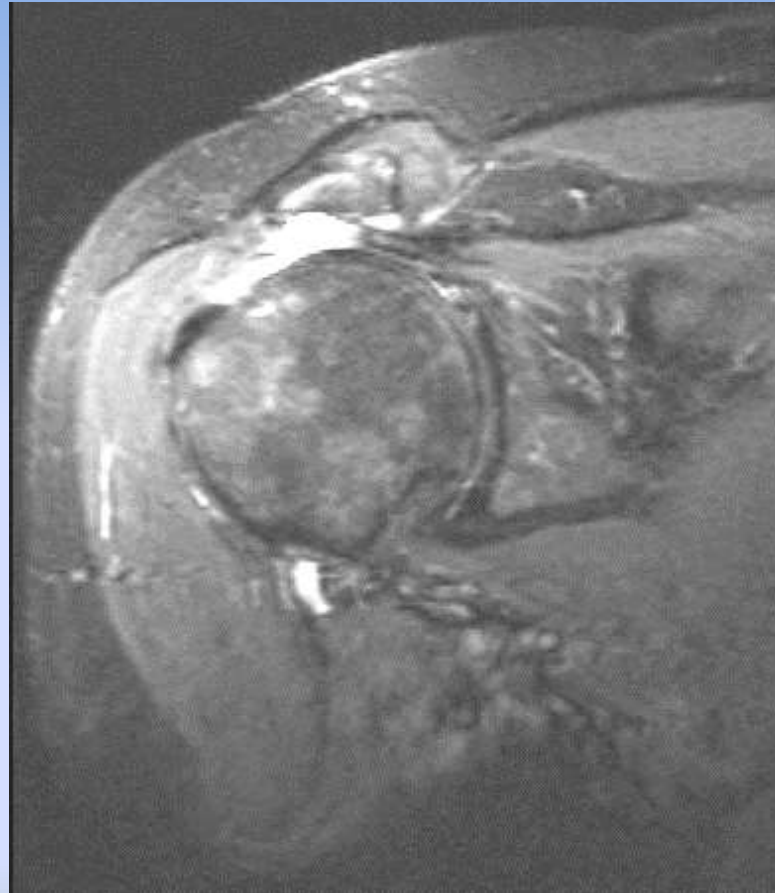


The presence and degree of fatty infiltration and atrophy of the muscle affect the success of the repair

Shoulder assessment

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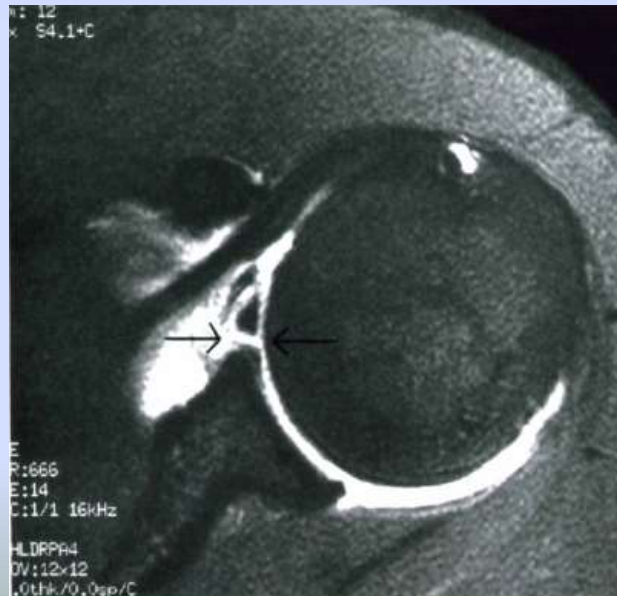
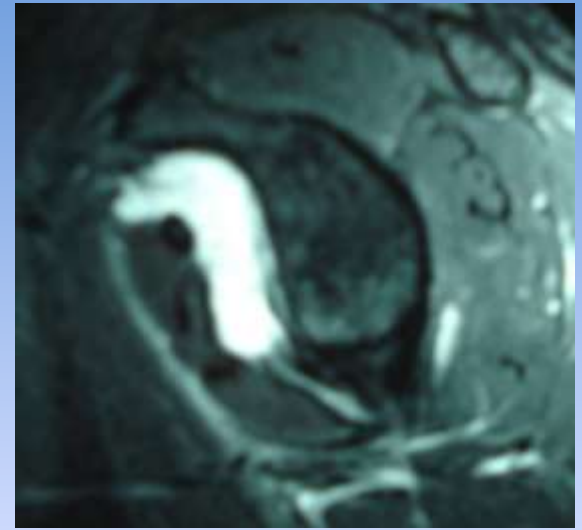
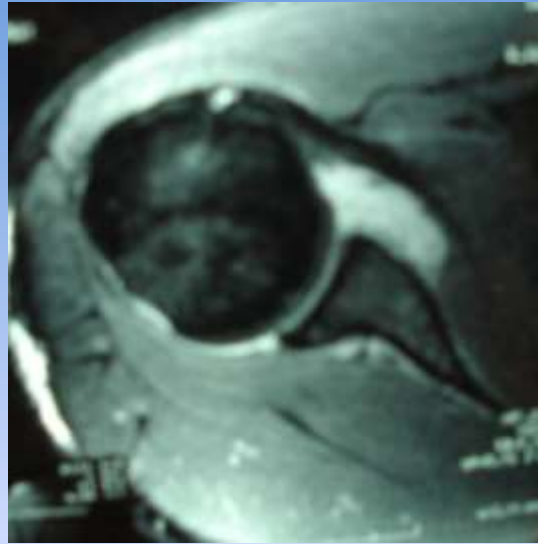
- most commonly used test for evaluation for RC pathology
- significant potential for false-positive findings
- overuse



Shoulder assessment

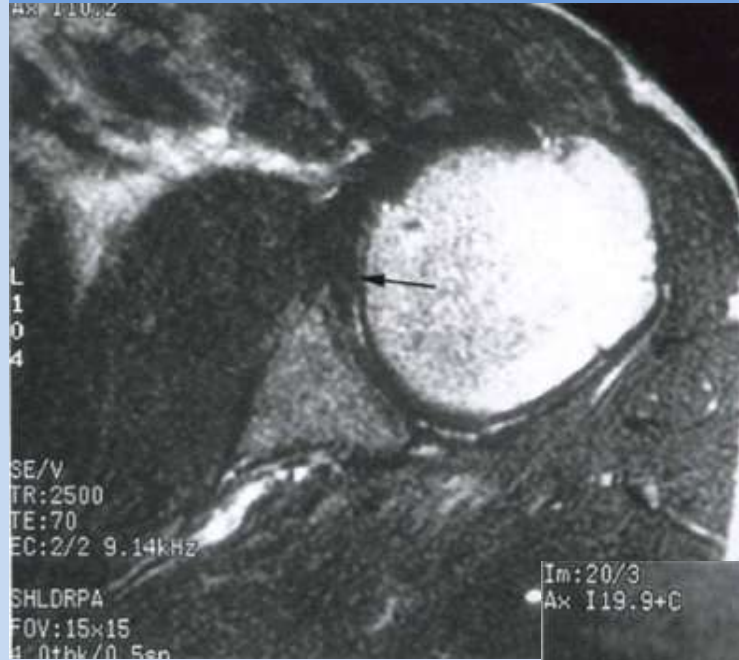
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- ***CT / MRI
Arthrogram***
- *Arthroscopy*

MRI Arthrogram: Improve the assessment of intraarticular structures, including the glenoid labrum GHL & capsule



Shouder assessment

MRI



MRI Arthrogram



- *History*
- *Look , Feel*
- *Movement*
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- ***CT / MRI***
- ***Arthrogram***
- *Arthroscopy*

Shouder assessment

- **History**
- **Look , Feel**
- **Movement**
- **Clinical test**
- **Radiography**
- **Sonography**
- **Arthrography**
- **CT Scan**
- **MRI**
- **CT / MRI**
- **Arthrogram**
- **Arthroscopy**

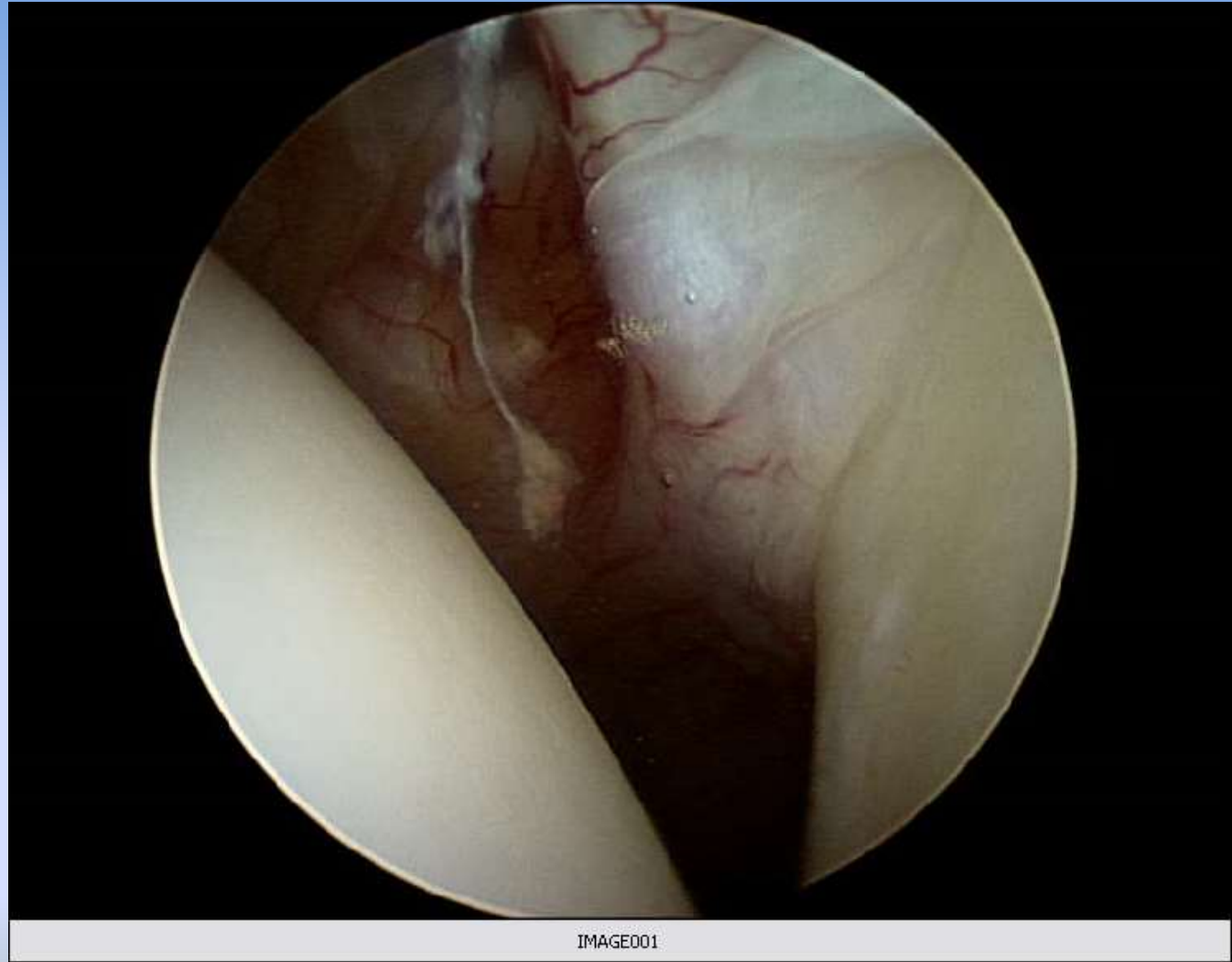


In a study on 30 patients: A labral tear was detected on MR images in 93%, on MR arthrograms in 96%, and on CT arthrograms in 73%.

Chandnani Vp, et al. Glenoid labral tears: prospective evaluation with MR imaging, MR arthrography and CT arthrography. *AJR* 1993;161:1229.

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Thank you for attention

