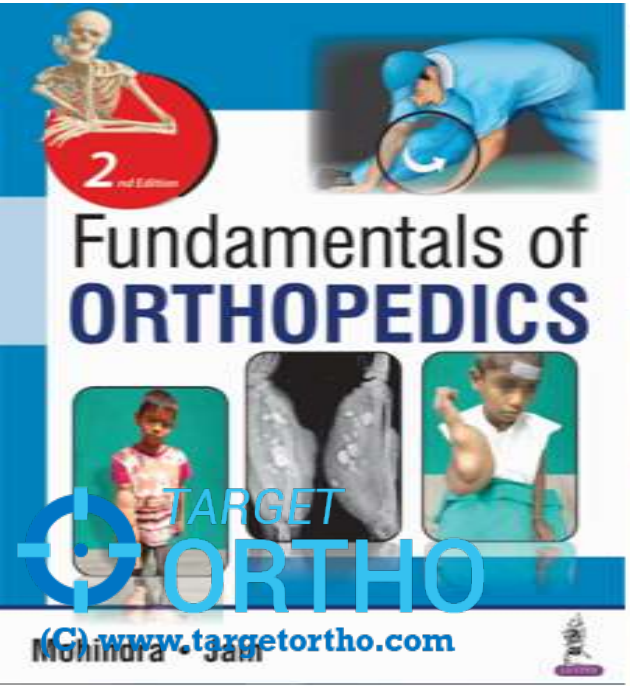
ROTATOR CUFF TEARS

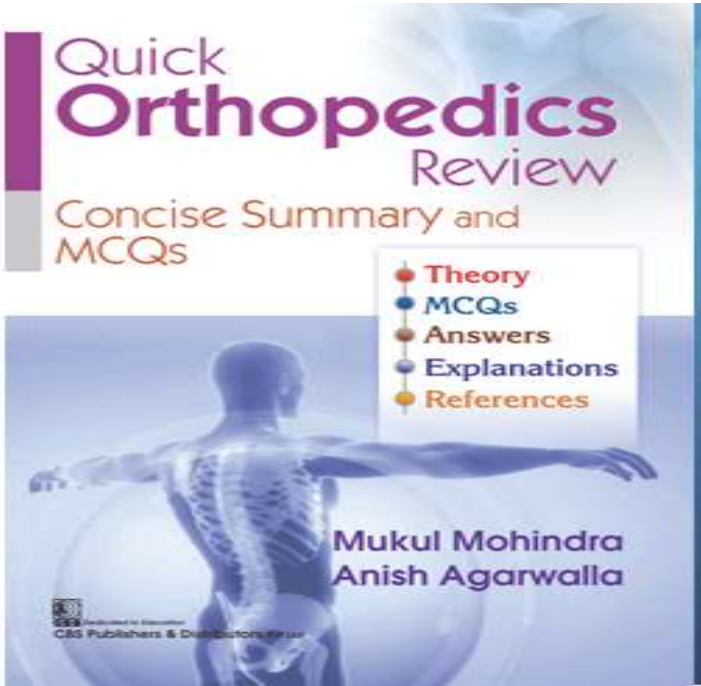
DR.MUKUL MOHINDRA

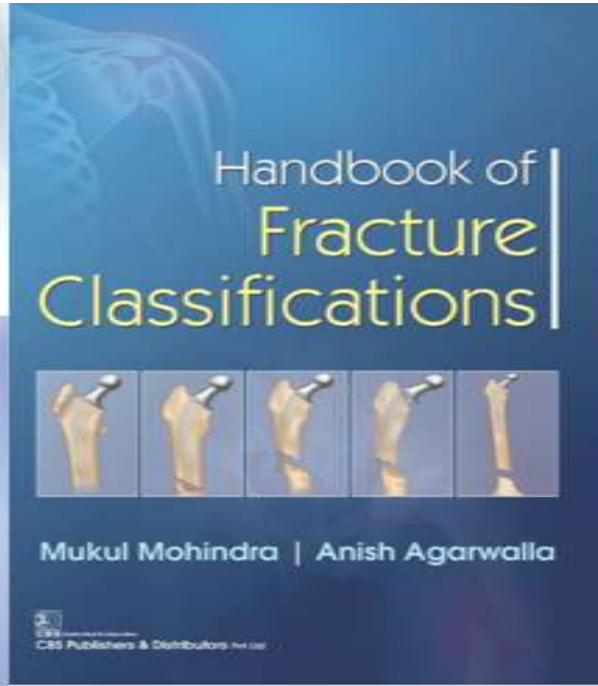
M.S (Ortho), DNB, MNAMS,
Dip. SICOT (Belgium)
FNB (Arthroscopy and Sports Medicine)
Fellowship in Minimally Invasive Arthroplasty (SICOT, Athens)

SPECIALIST
SAFDARJUNG HOSPITAL
NEW DELHI

No financial interests!



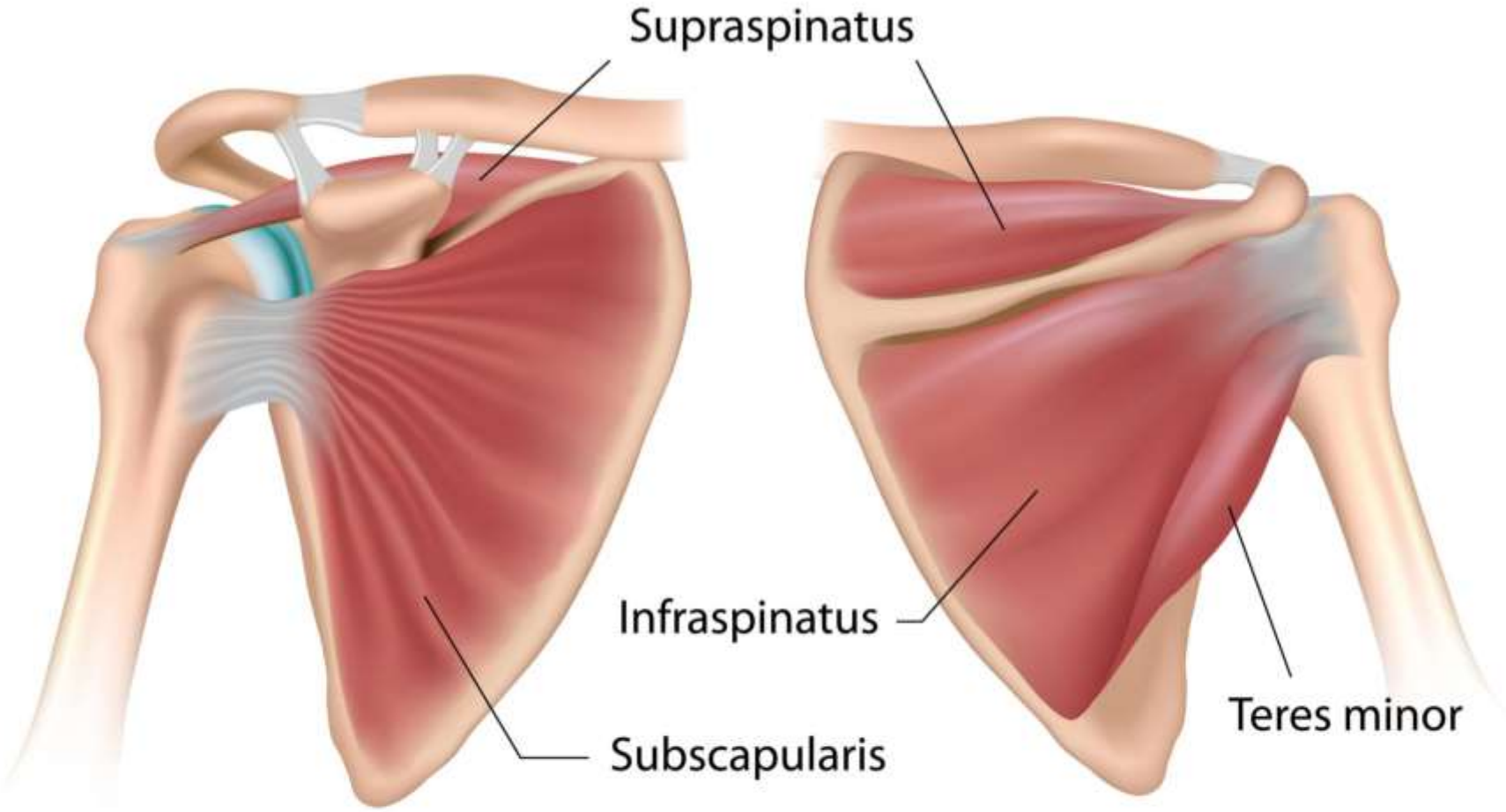




GETTING STARTED!

Commonest tendon in the body to rupture?

SUPRASPINATOUS



Anterior view

Posterior view

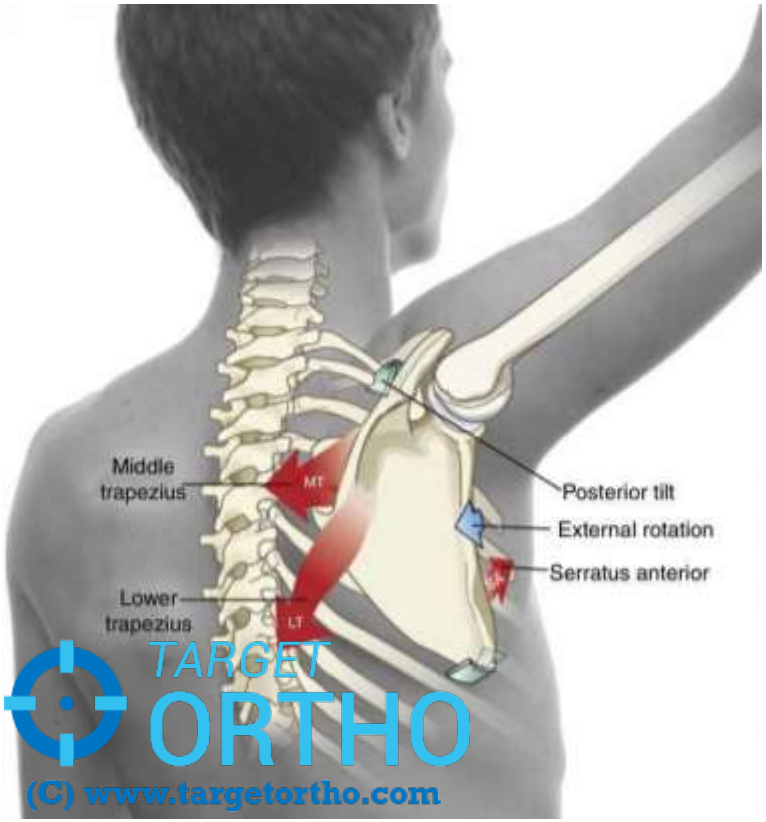
Function of Supraspinatous

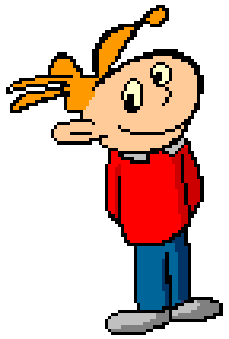
A) 0-15º abduction

B) 15-90º abduction

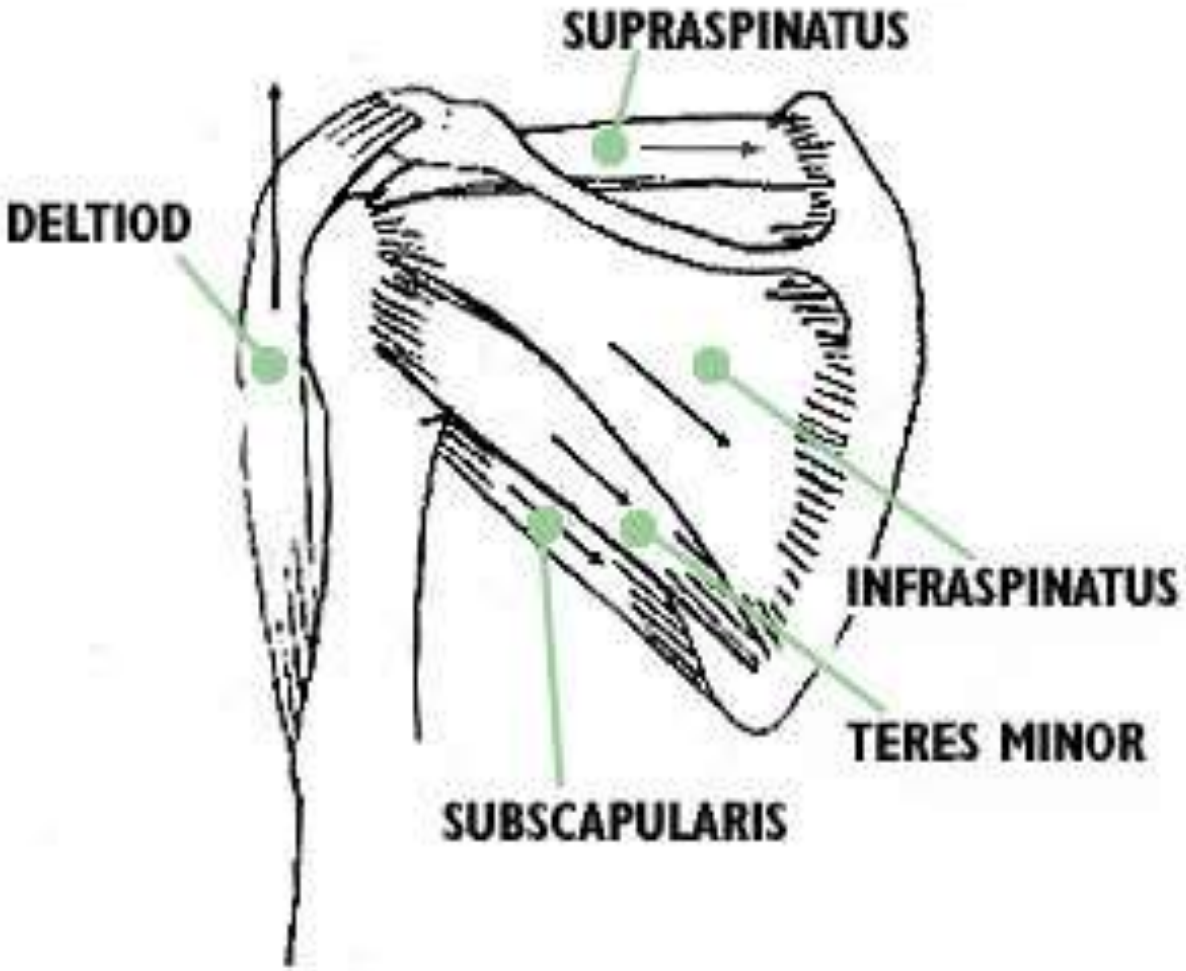
C) > 90º abduction

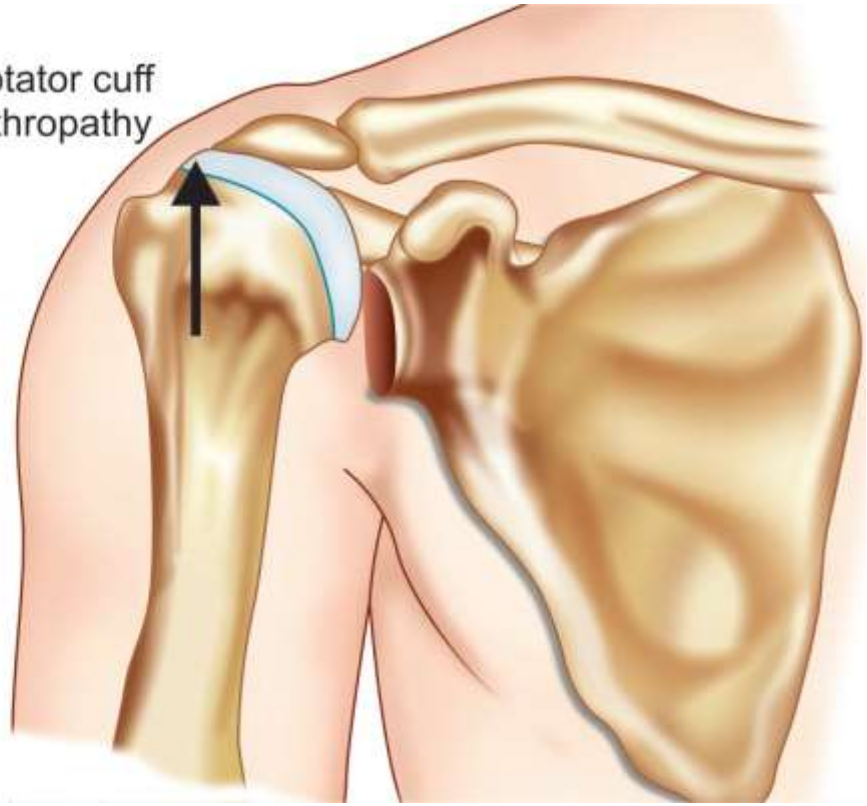
D) 0-90º abduction

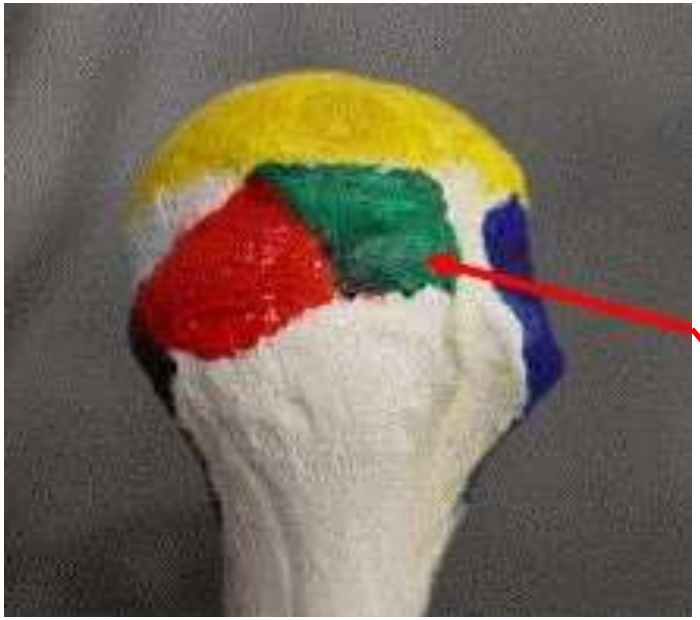


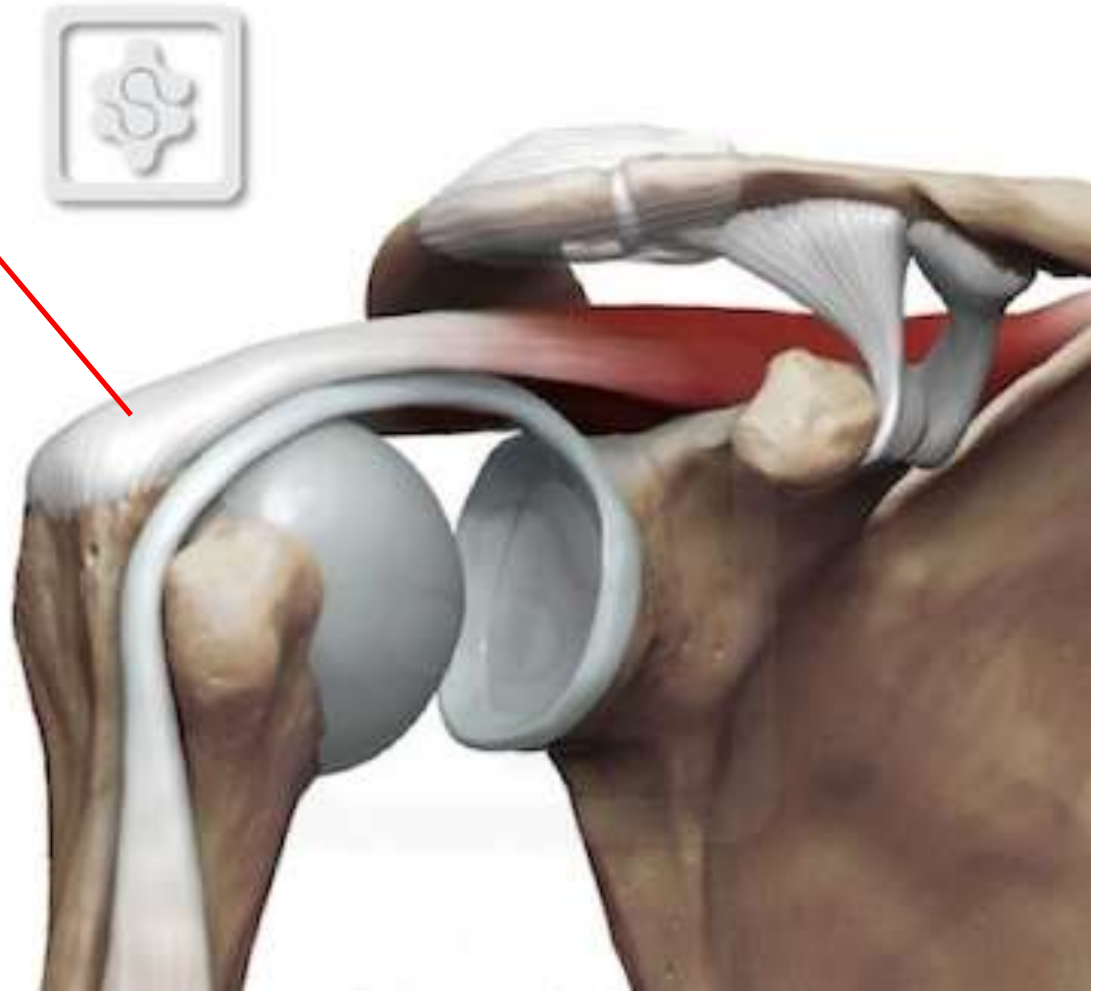


BIOMECHANICS









FOOT PRINT!

AP: 25 mm

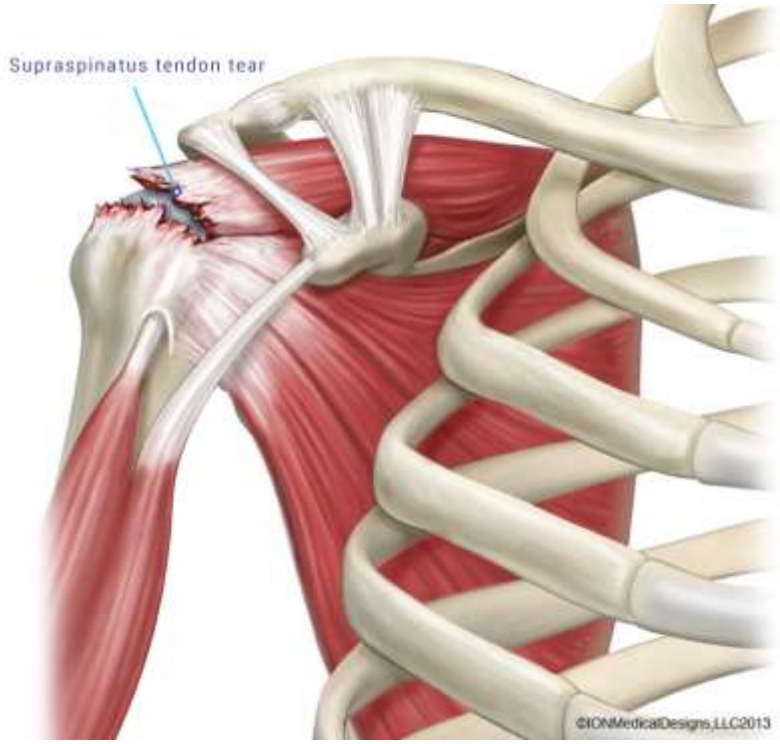
ML: 15 mm

Thickness: 12mm

CLASSIFICATION

Partial thickness tears

Full thickness tears

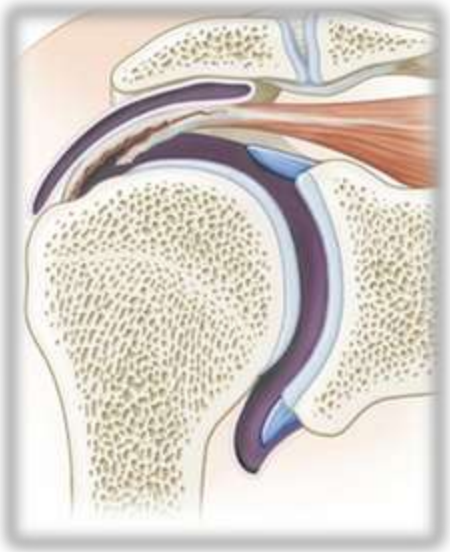


PARTIAL THICKNESS TEARS

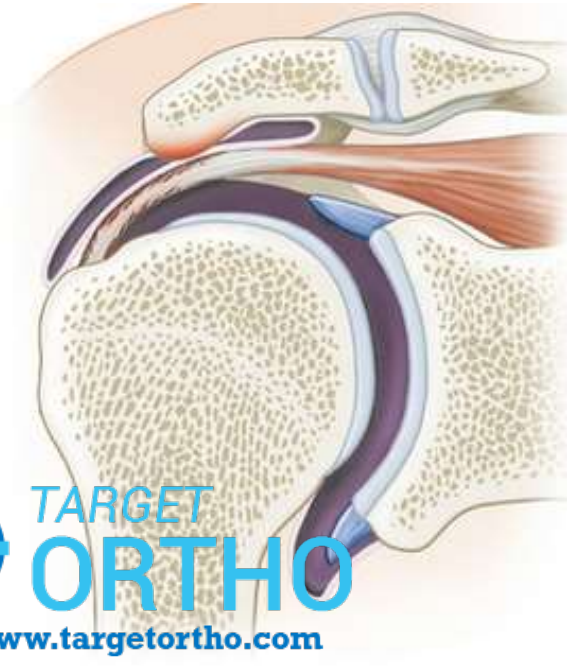
CLASSIFICATION OF PARTIAL TEARS

ELLMAN [1990]

PARTIAL TEARS



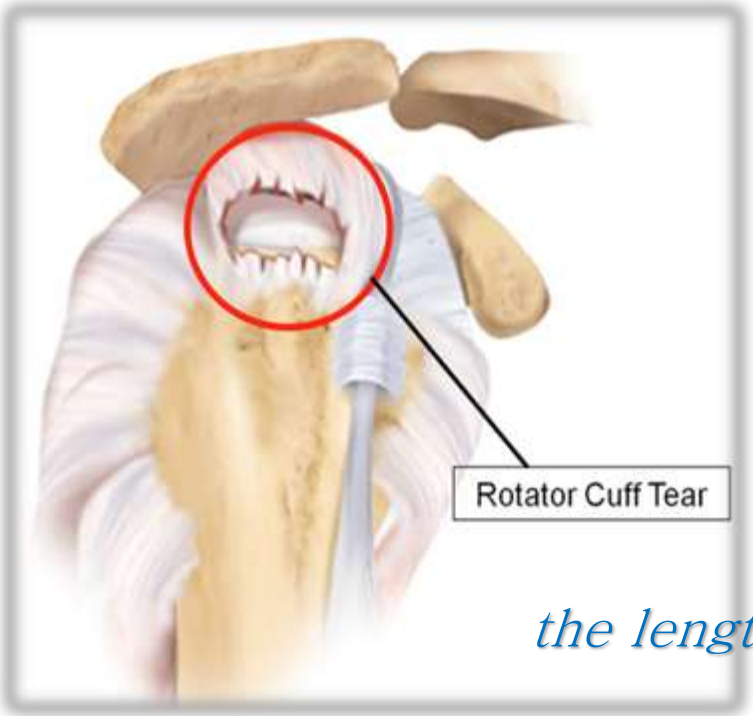
PASTA LESIONS *(Snyder)*



PAINT LESIONS *(Conway)*

FULL THICKNESS TEARS

FULL THICKNESS TEARS



COFIELD

the length of the greatest diameter of the tear

- small (less than 1 cm)
- medium (1–3 cm)
- large (3–5 cm)
- massive (greater than 5 cm)

FULL THICKNESS TEARS

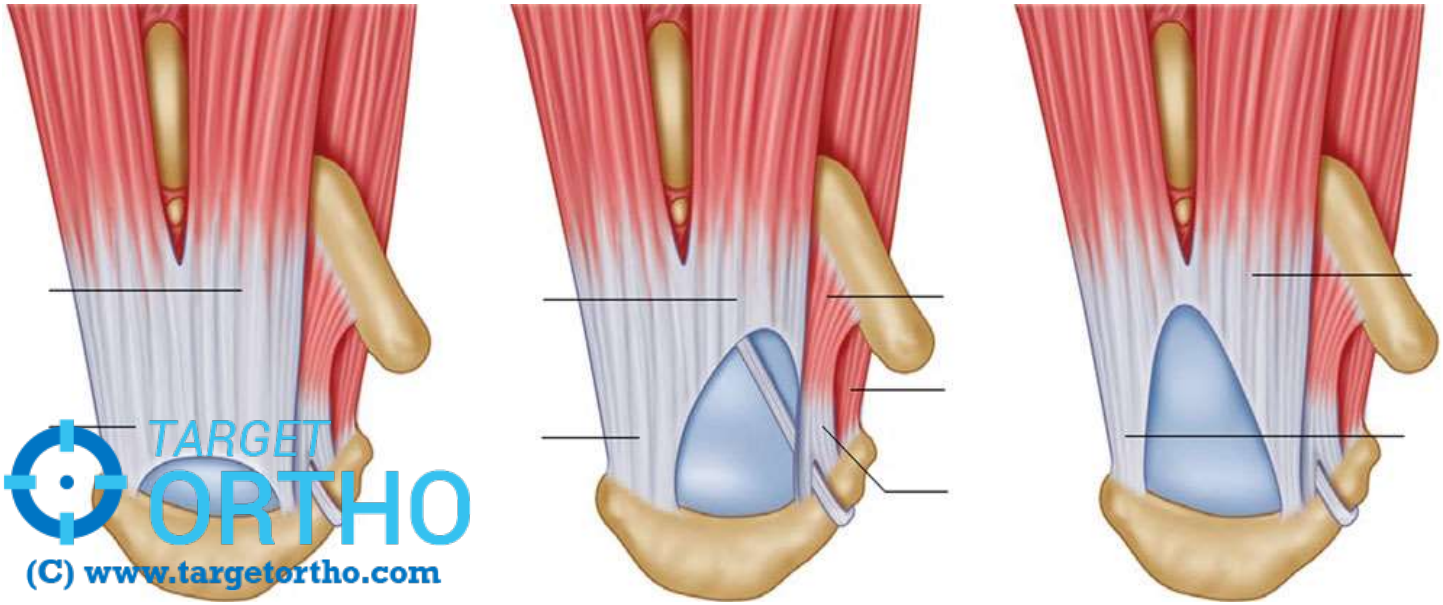
LESS COMMONLY USED CLASSIFICATION SYSTEMS

System	Method of Classification	Downside
McLaughlin	Transverse, vertical, retracted	Not widely recognized; created before MRI became available
Harryman et al.	No. of tendons torn	Does not differentiate tear pattern or method of repair
Gerber et al.	No. of tendons torn	Does not differentiate tear pattern or method of repair

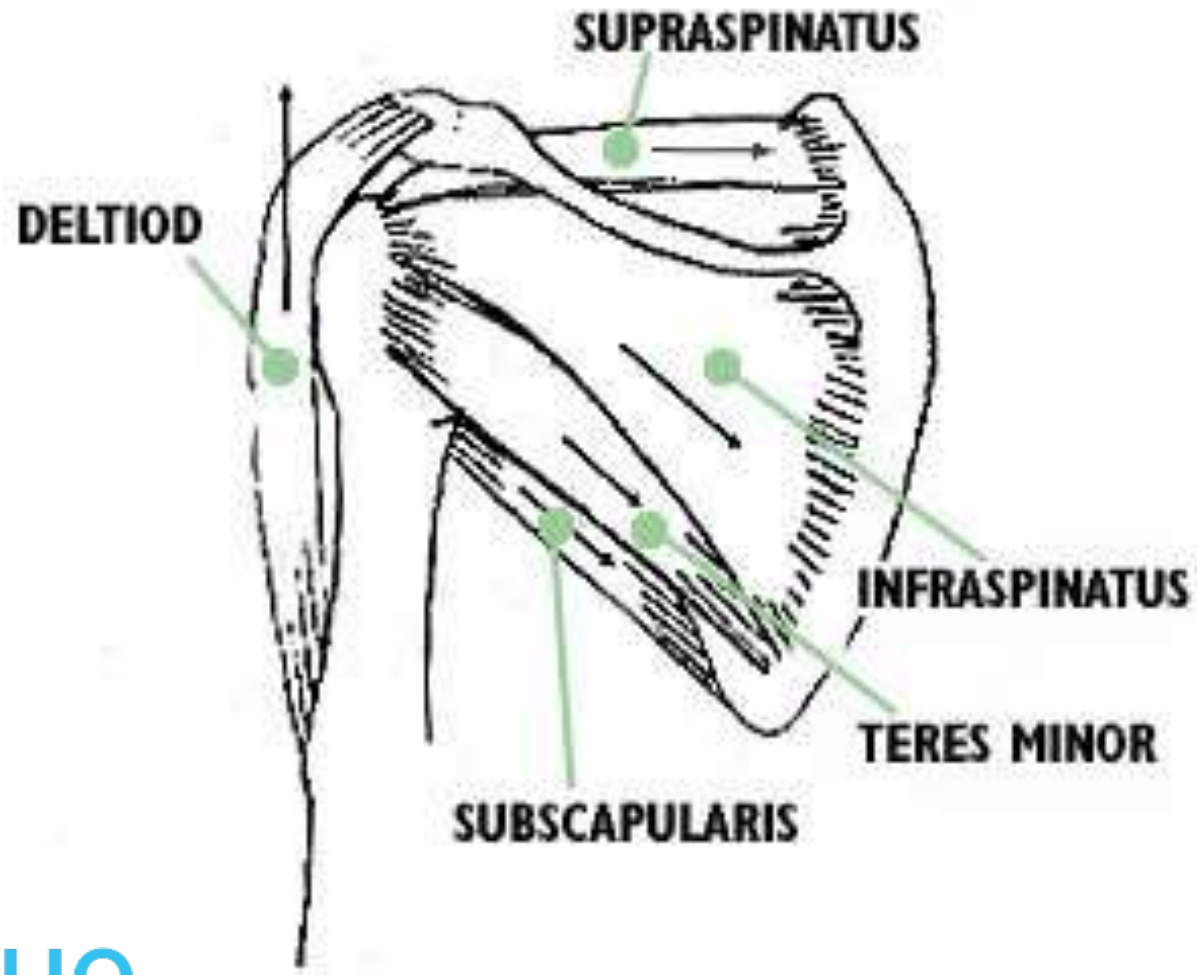
FULL THICKNESS TEARS

BURKHART's

based on arthroscopic identification of the shape of the lesion where each type corresponds to a certain type of repair



PATHOGENESIS

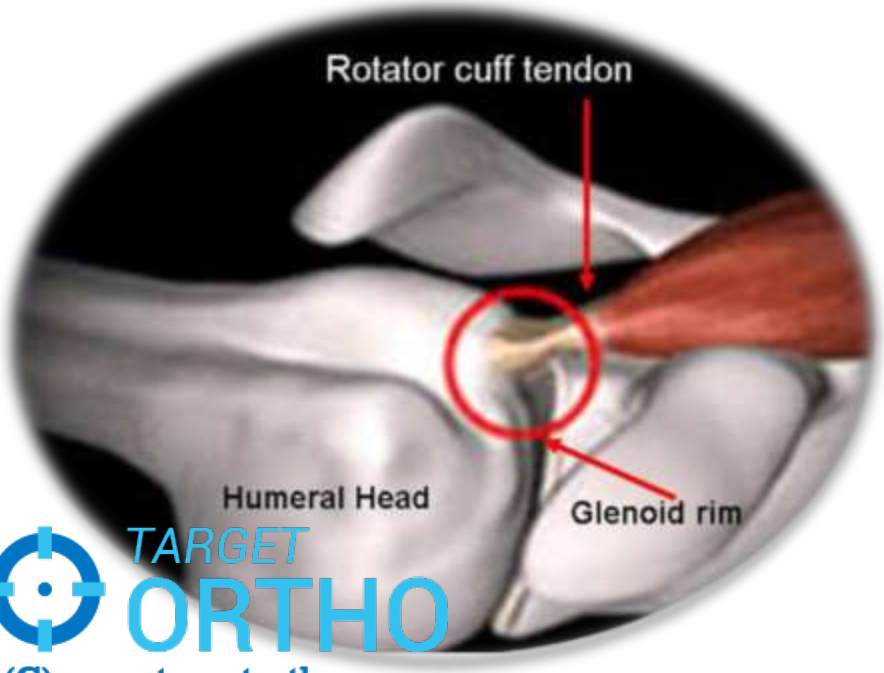


PRE DISPOSING FACTORS

Internal Impingement

Articular side has low vascularity

Thinner collagen on articular side



External impingement

Sub acromial Impingement

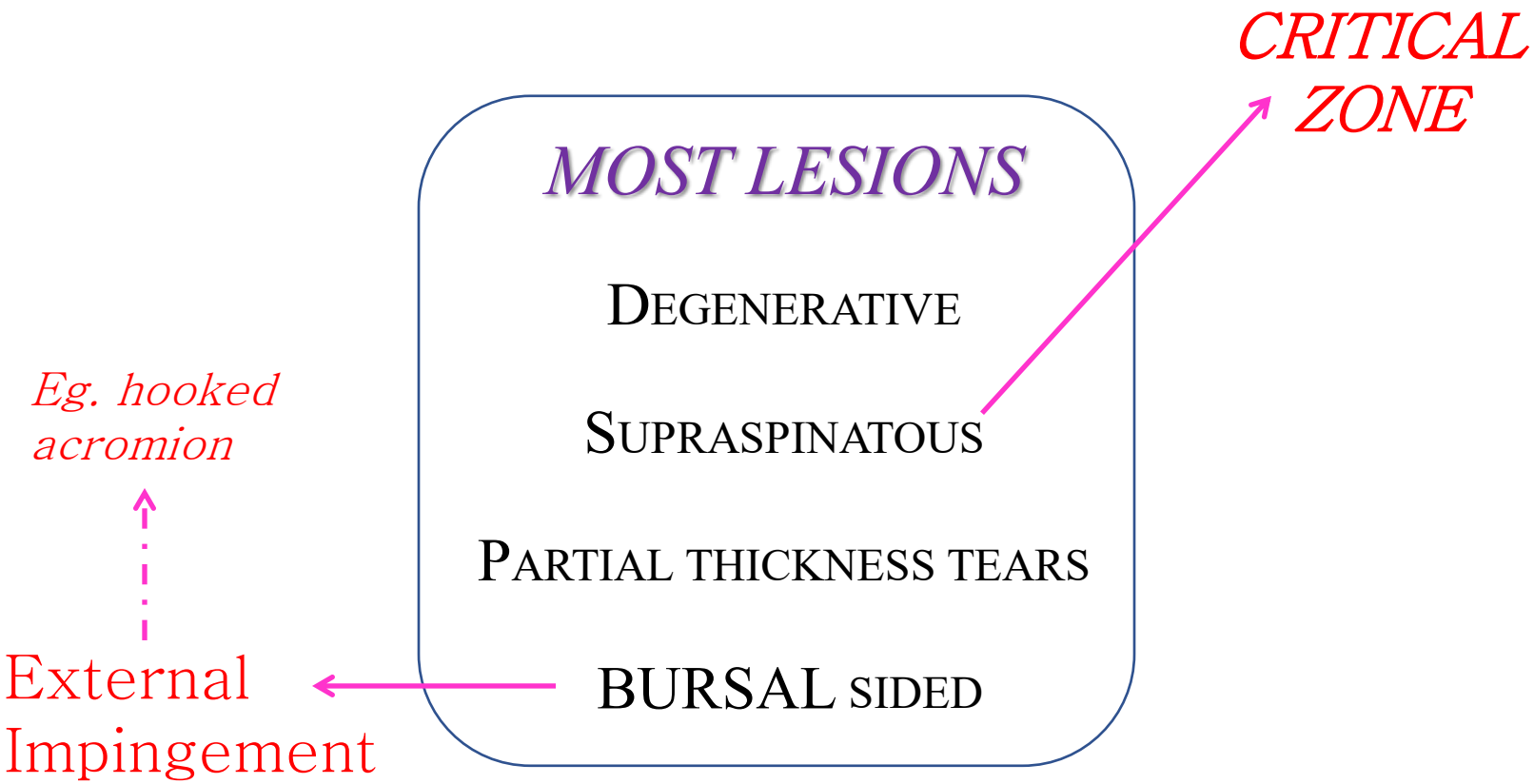
PATHOGENESIS

TRAUMATIC

DEGENERATIVE

FEATURES	FEATURES
Mean age- 35 years	Mean age- 65 years
Larger in size	Smaller in size
Less retraction	More retraction
Less fatty infiltration	More fatty infiltration
Good outcome	Worse outcome

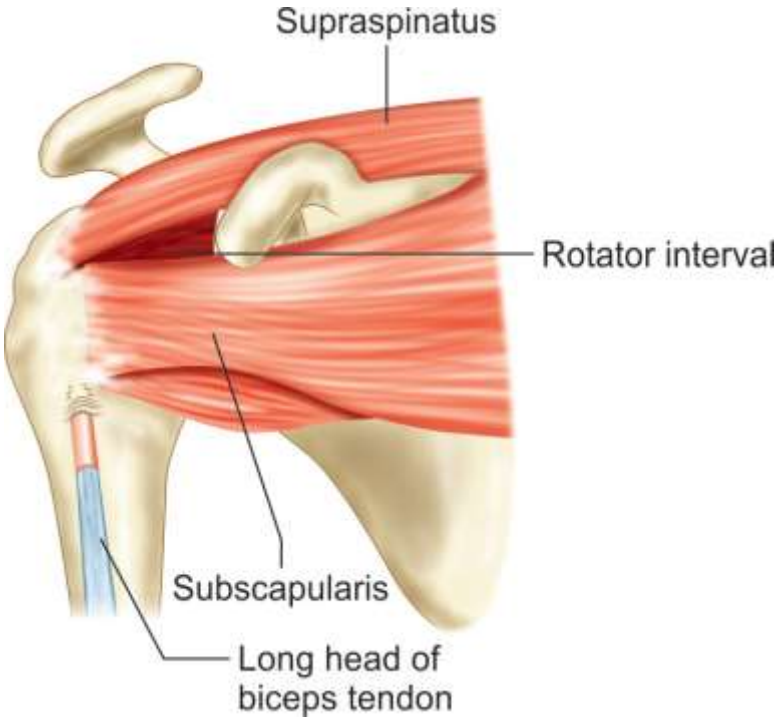
EPIDEMIOLOGY



EXAMINATION

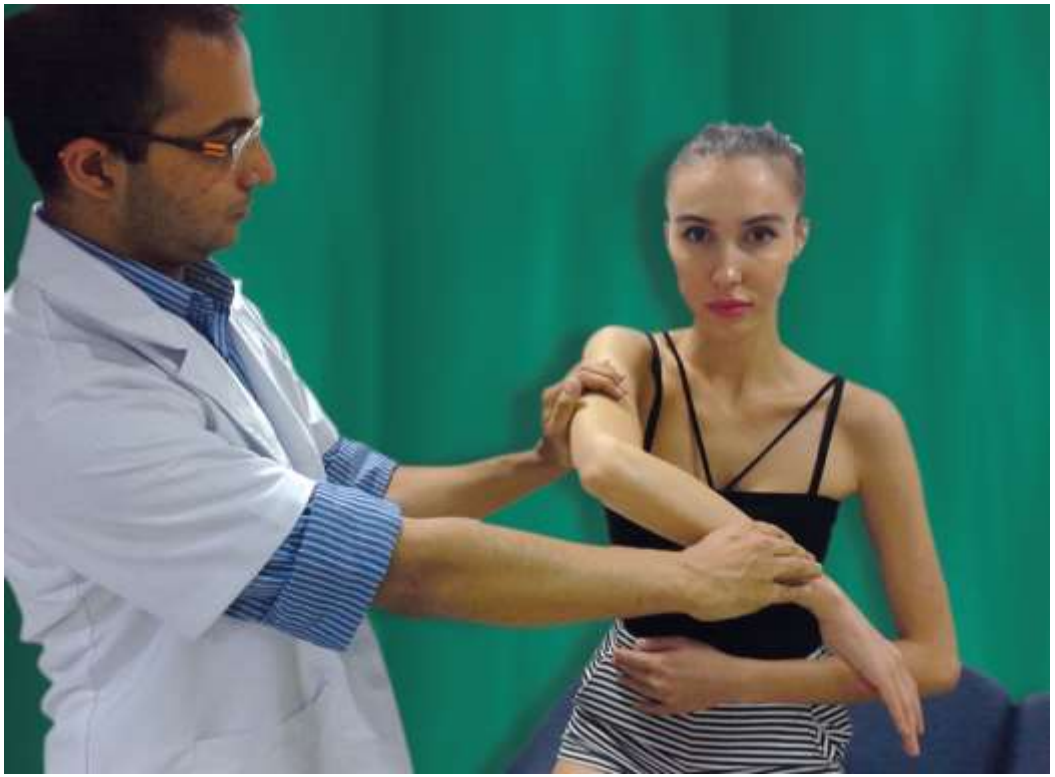
- External Impingement
- Internal Impingement/ SLAP tears
- Biceps lesions
- Periarthritis
- **Cuff muscles**

Painful Action and Strength



EXTERNAL IMPINGEMENT

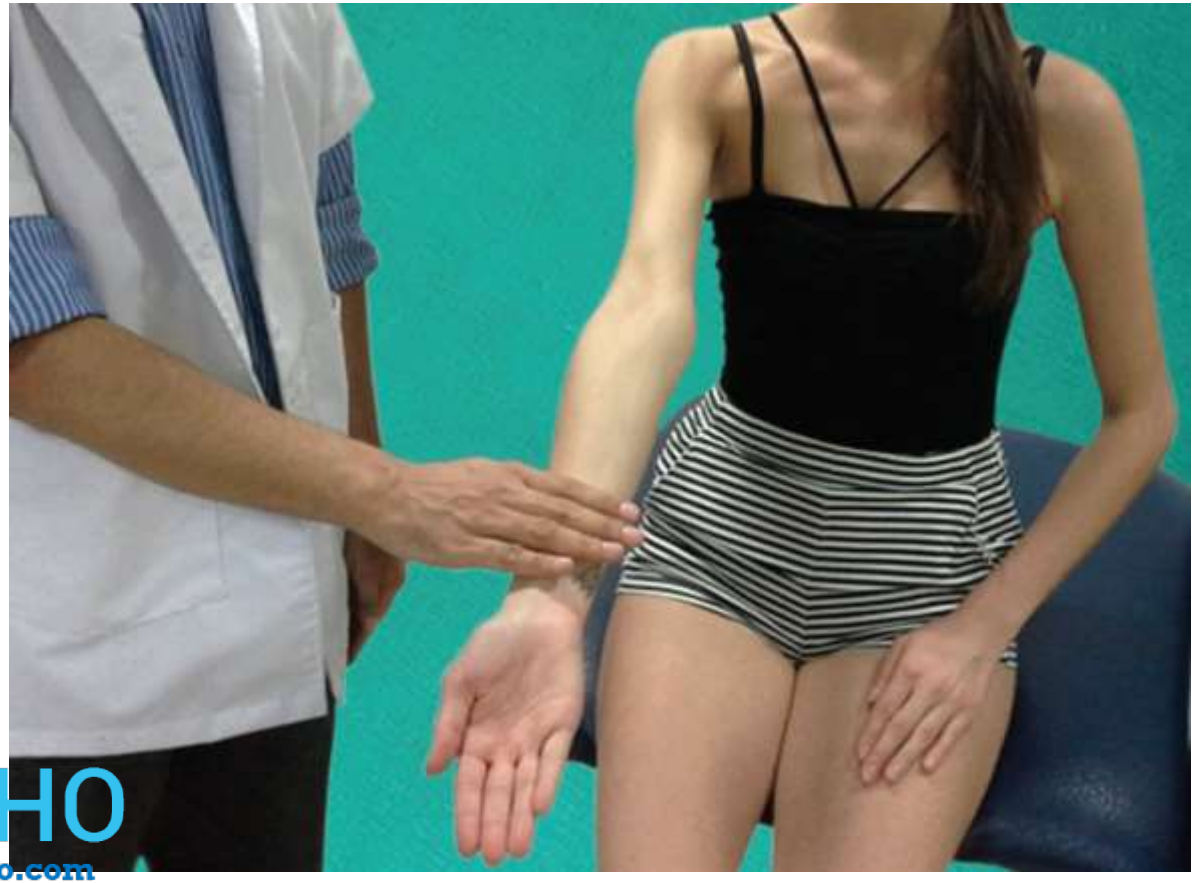
EXTERNAL IMPINGEMENT



INTERNAL IMPINGEMENT

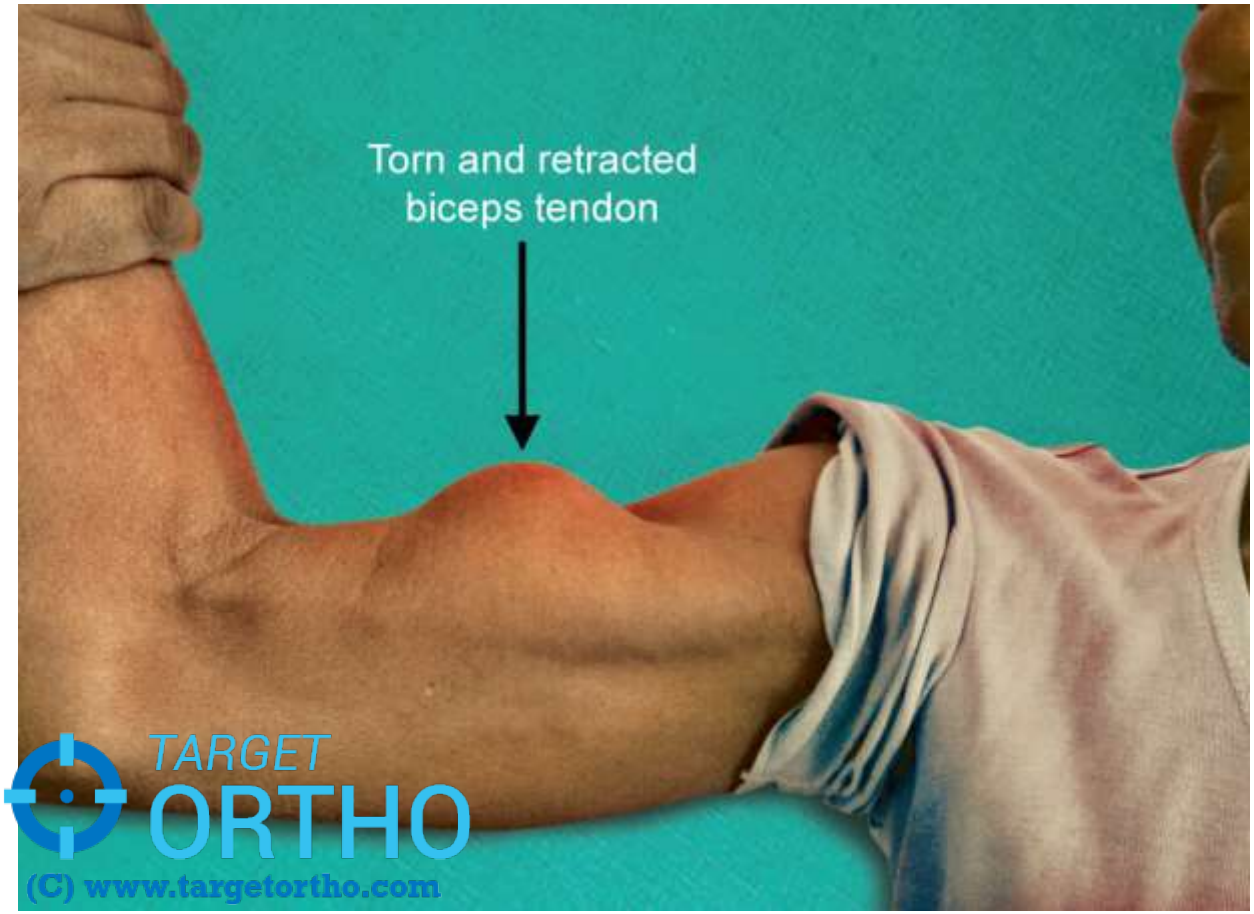
SLAP TEARS

BICEPS TENDINITIS



BICEPS TENDINITIS

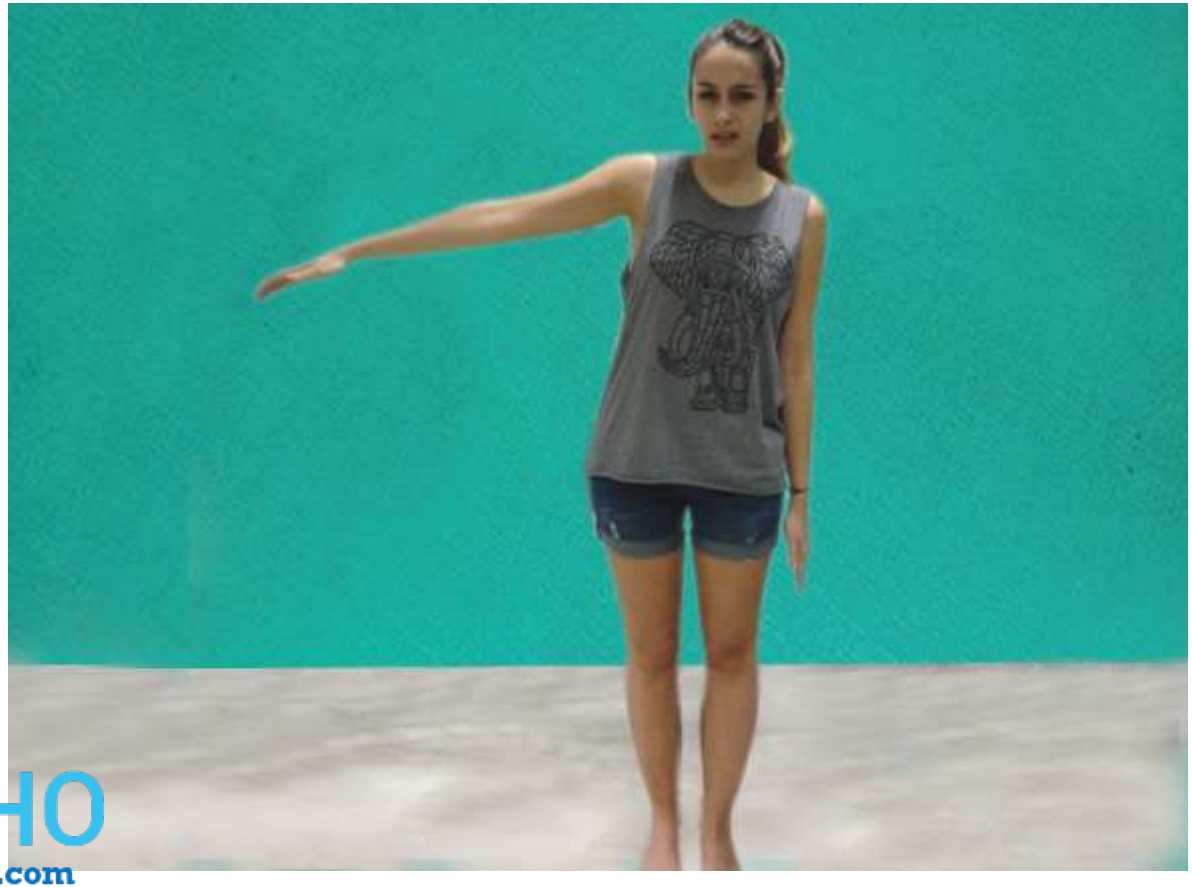
BICEPS RUPTURE



EVALUATION OF CUFF MUSCLES

SUPRASPINATOUS

SUPRASPINATOUS



SUBSCAPULARIS

SUBSCAPULARIS

SUBSCAPULARIS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EXAMINATION

- External Impingement
  - Neer's test
  - Hawkin's
  - Kennedy test
- Internal Impingement/ SLAP tears
  - Zaslav's test
  - O Brien's test
- Biceps lesions
  - Speed's test
  - Yergason's test
- Periarthritis
  - Painful ER
- Cuff muscles

SUPRASPINATOUS	Drop arm test Jobe’s Empty Can test
SUBSCAPULARIS	Belly Press test Beer Hug test
INFRASPINATOUS	Drop Sign
TERES MINOR	Horn Blower Sign

IMAGING

EXAMINATION

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IMAGING

EXAMINATION

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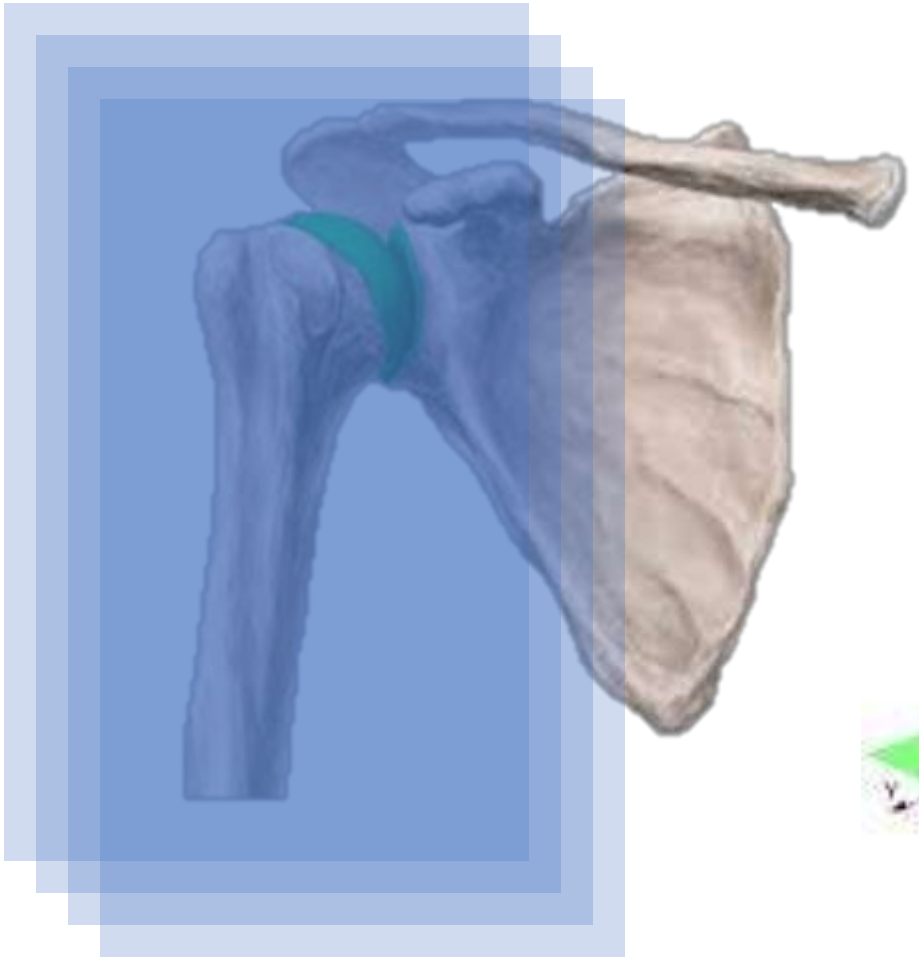
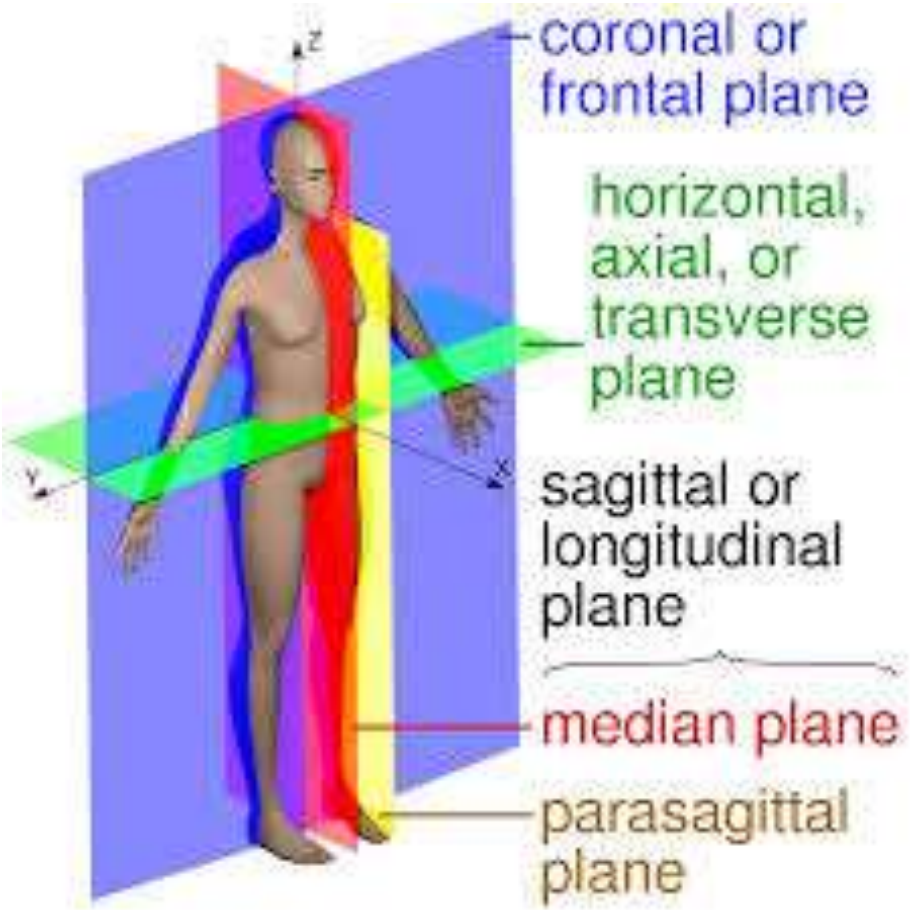
IMAGING

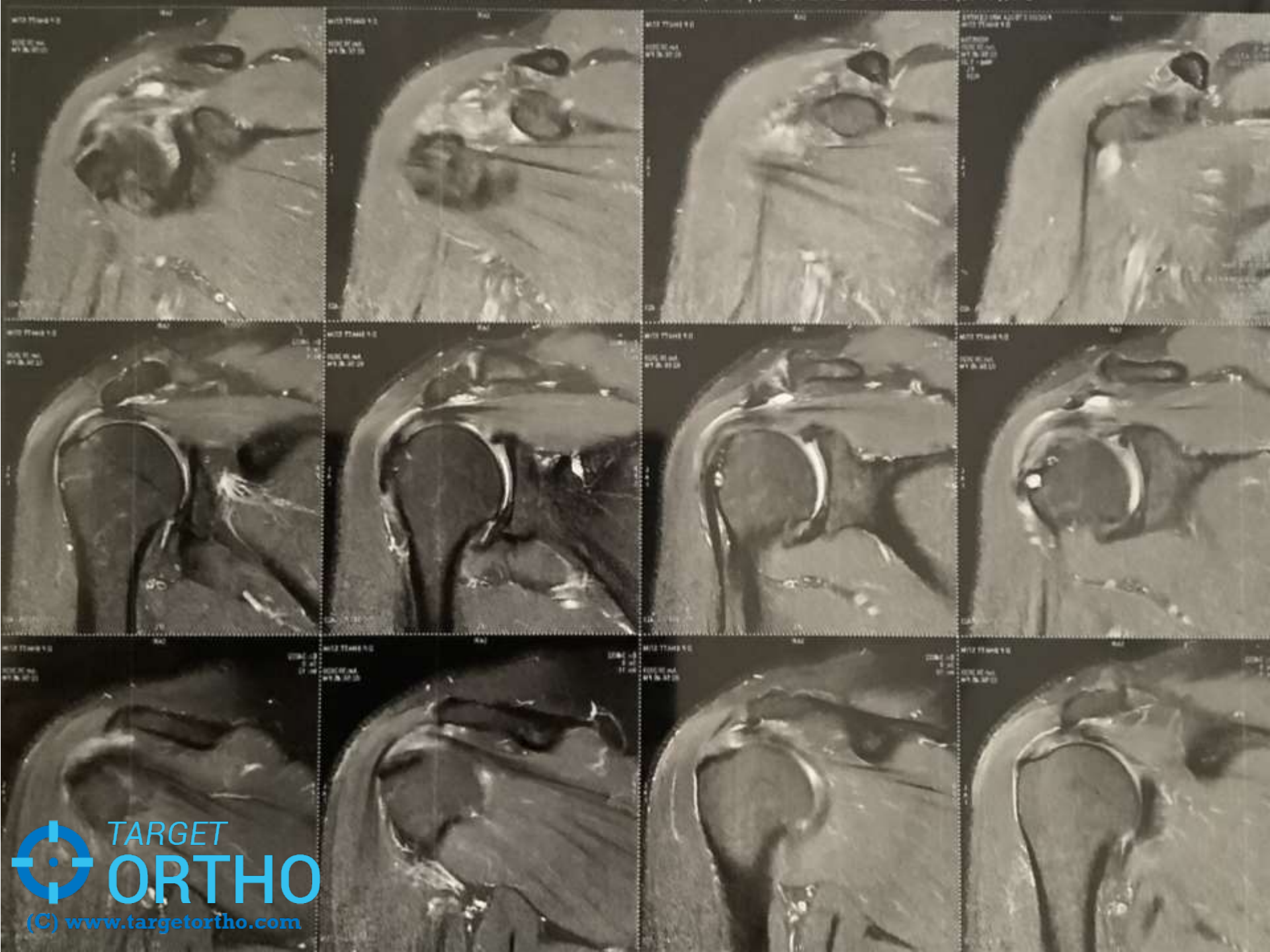
IMAGING

IOC

USG **MRI**



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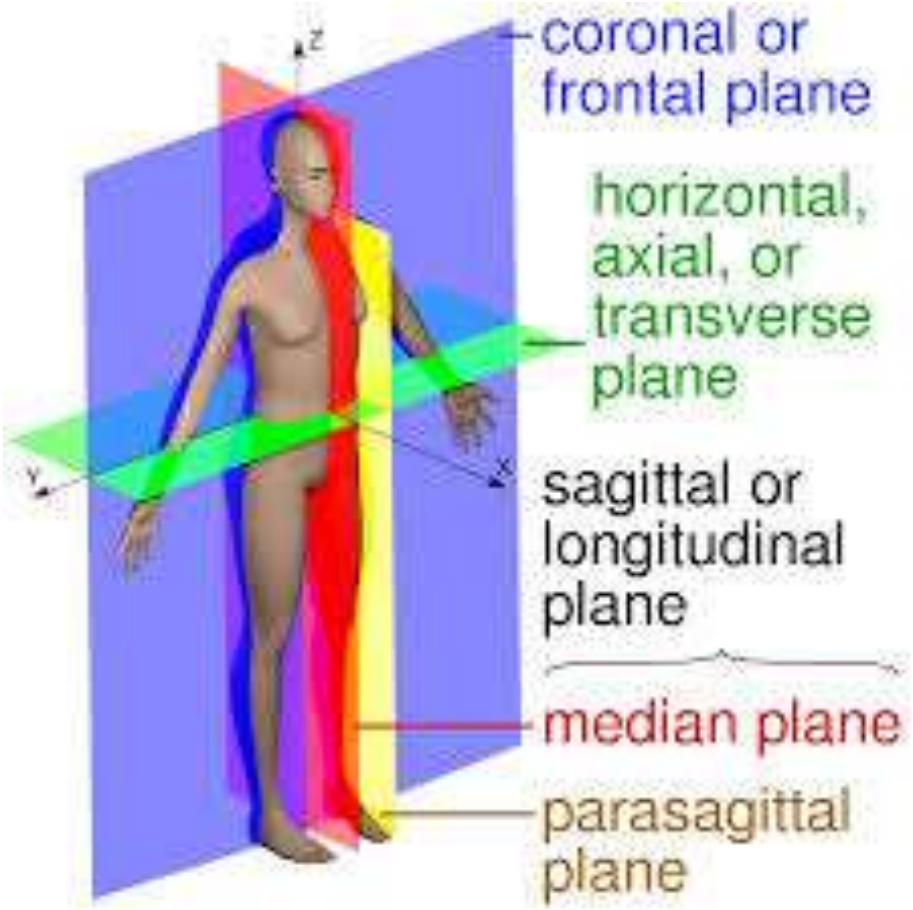

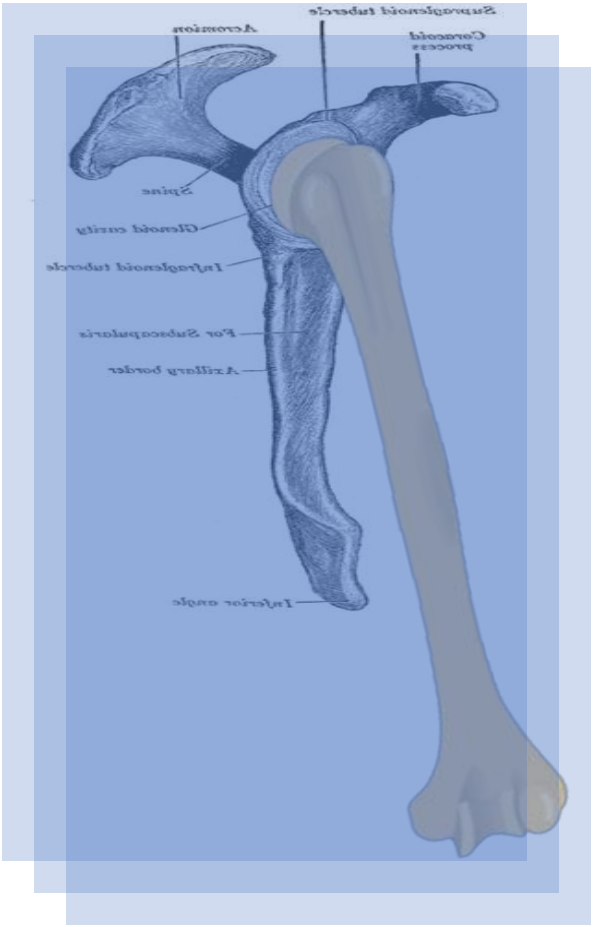

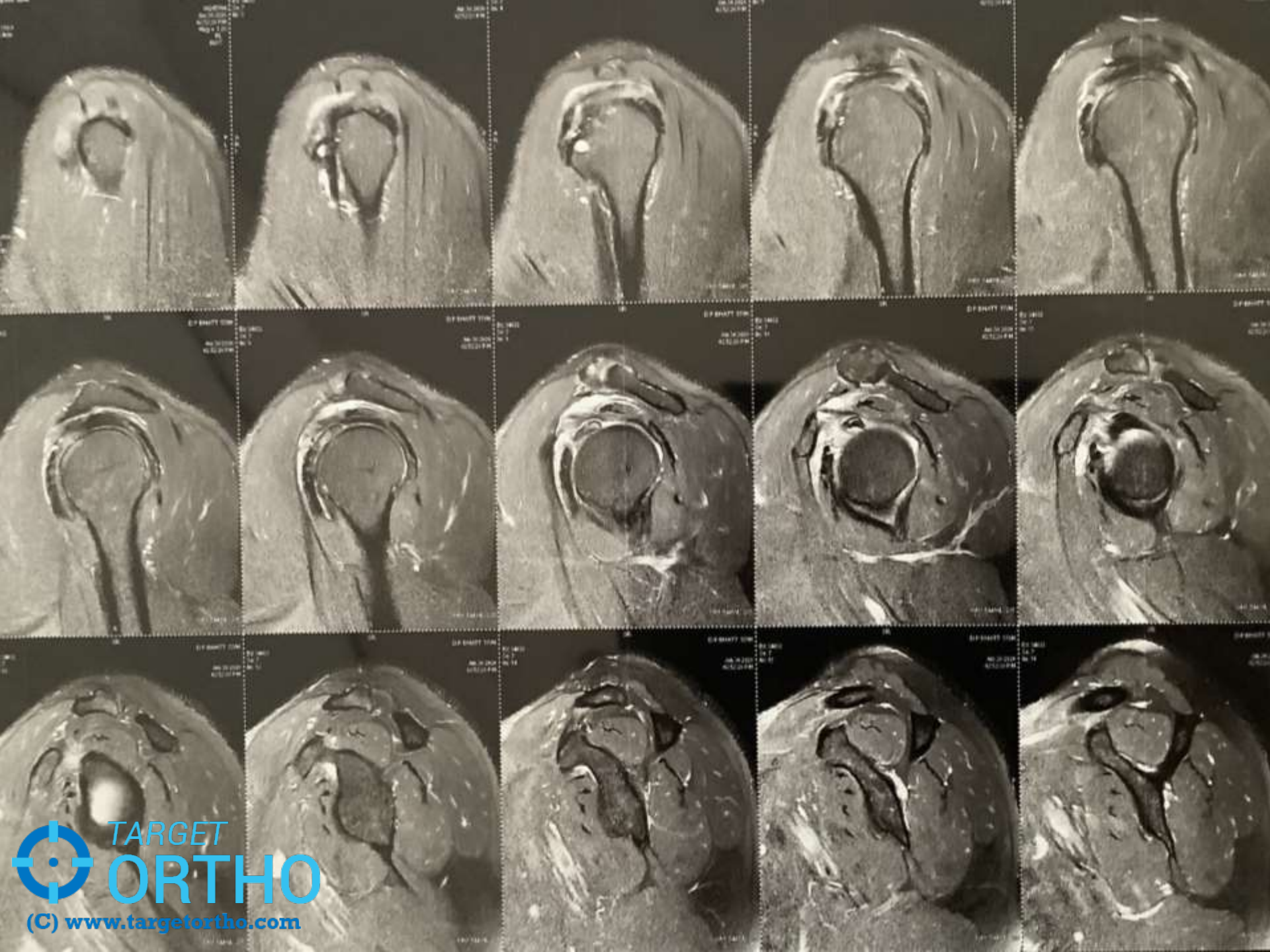
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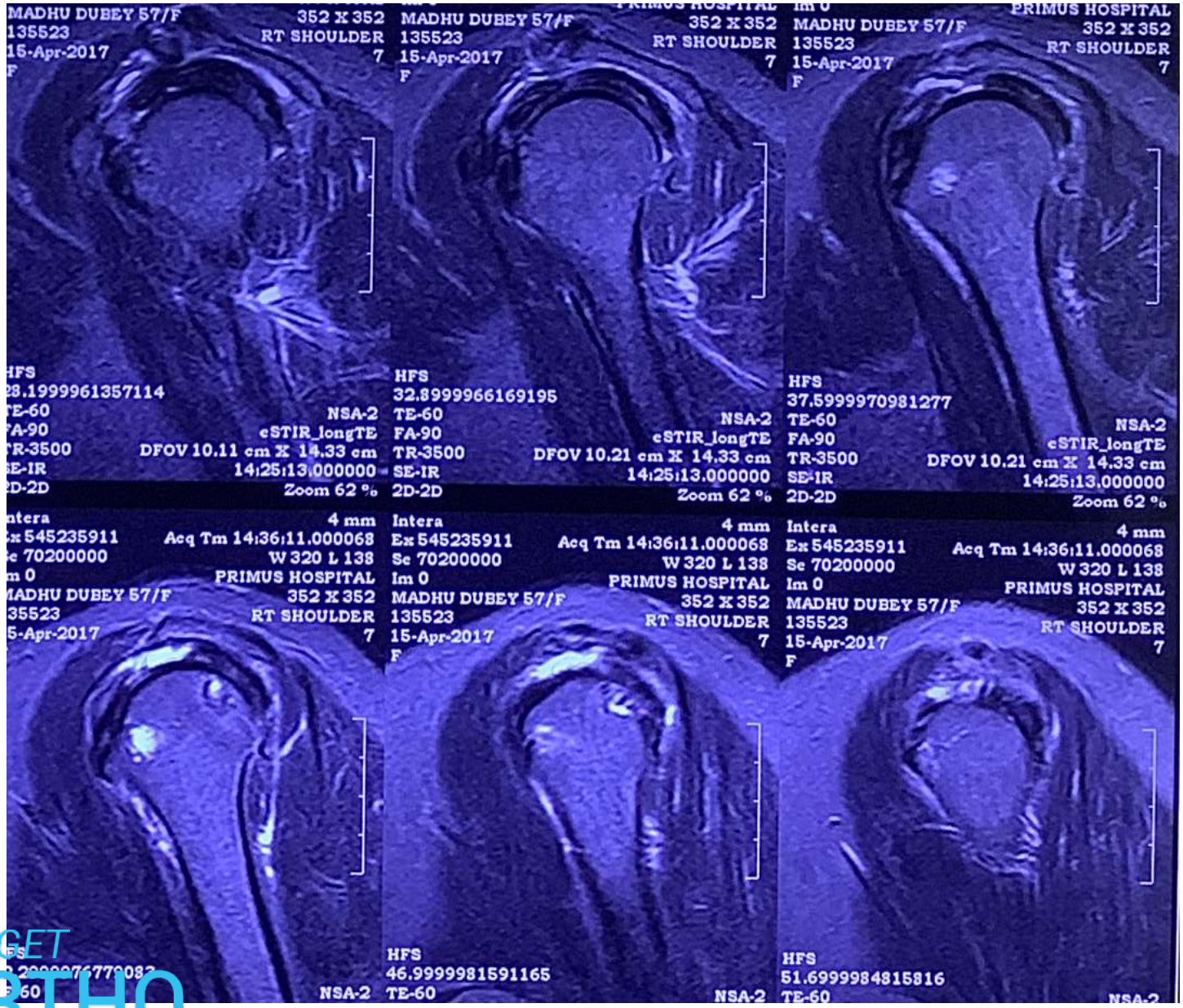

[CLASSIFICATIONS]

Patte's classification

Tendon retraction is evaluated on coronal images

- Grade 1, without retraction
- Grade 2, retracted to the humeral head
- Grade 3, retracted to the glenoid

Gouttallier's classification

I- Absent or minimal fatty infiltration
II- Moderate fatty infiltration
III- Fat more than muscle

Rx

Rx

NON OPERATIVE MANAGEMENT REMAINS THE STANDARD INITIAL CARE!

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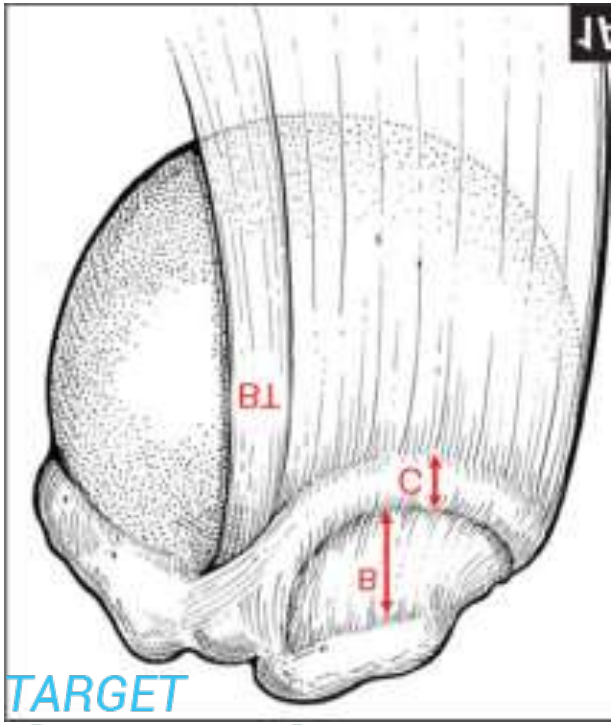
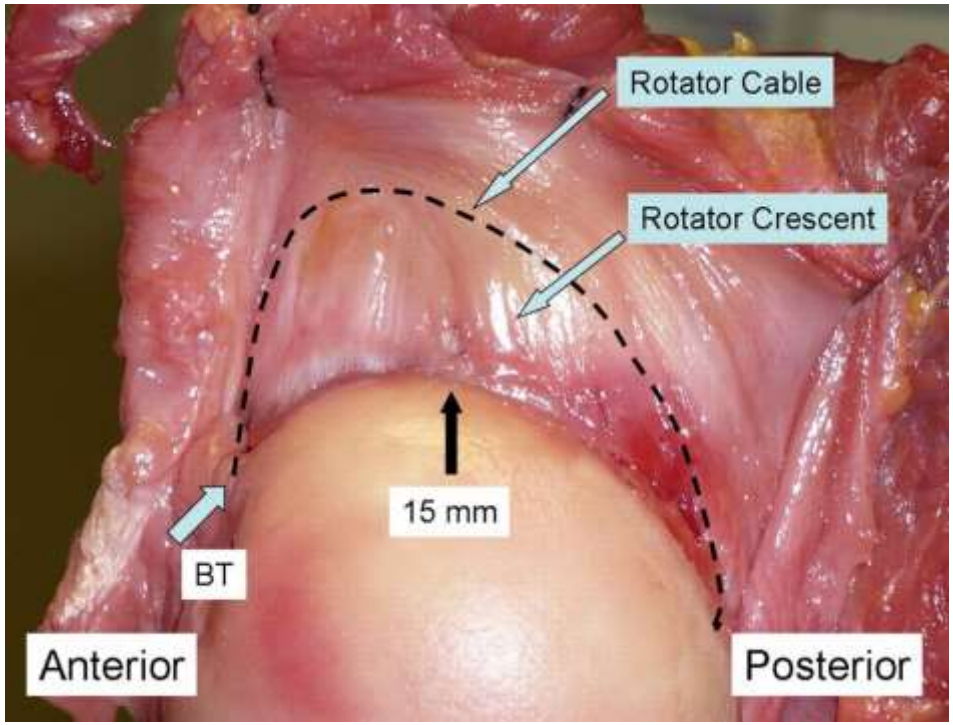
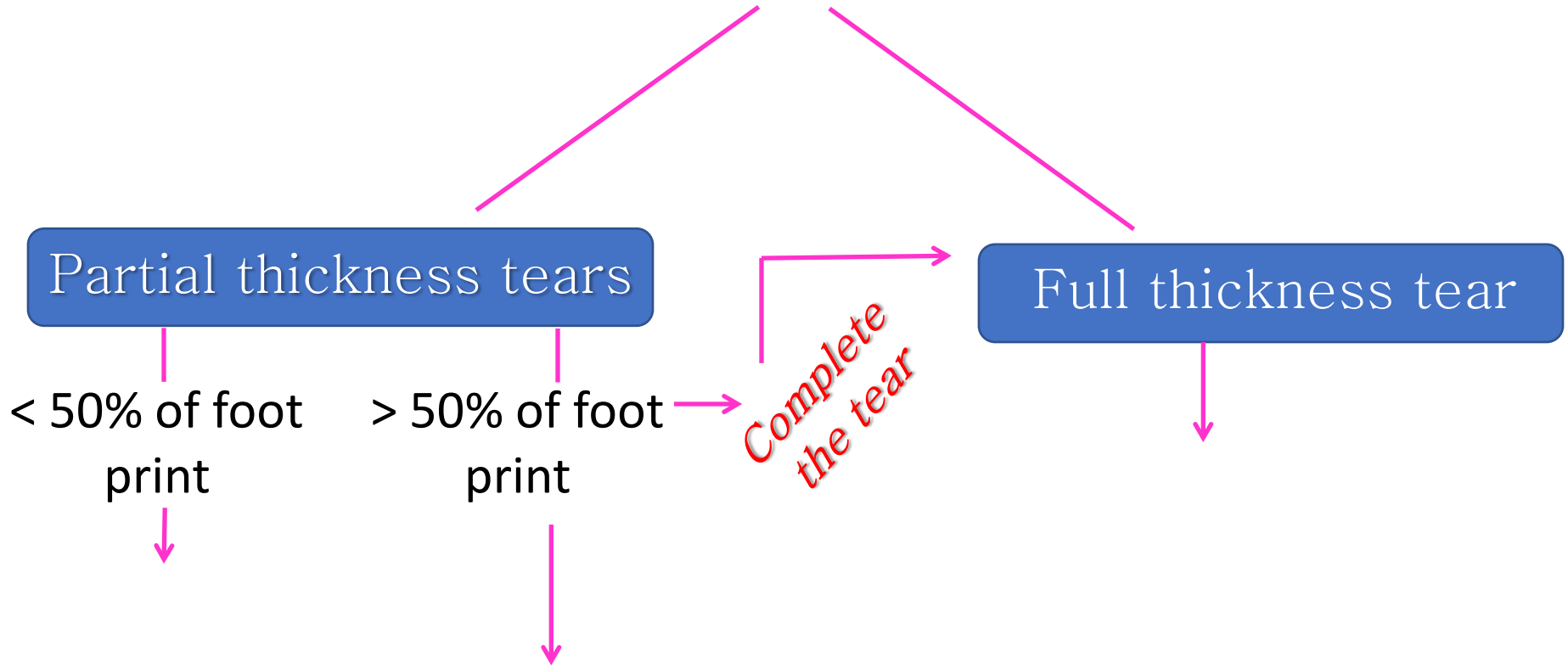
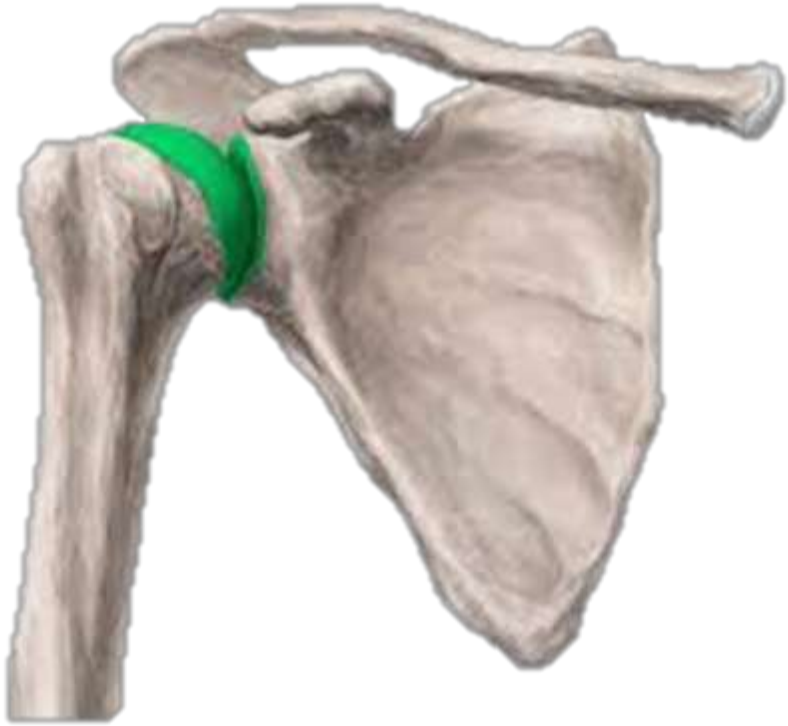




Burkhart SS, Esch JC, Jolson RS. The rotator crescent and rotator cable: an anatomic description of the shoulder's "suspension bridge". Arthroscopy. 1993;9:611.

SURGERY





SURGERY

Partial thickness tears

- < 50% of foot print → *Debridement*
- > 50% of foot print → *TRANS-TENDINOUS REPAIR*
- *Complete the tear* → Full thickness tear

Full thickness tear

TRANS-OSSEOUS REPAIR

OR

SUTURE ANCHOR REPAIR

- **Single Row**
- **Double Row**

Massive cuff tear

COFIELD

the length of the greatest diameter of the tear

- small (less than 1 cm)
- medium (1–3 cm)
- large (3–5 cm)
- massive (greater than 5 cm)

Massive cuff tears are tears with a width of >5 cm or a tear in which there is complete detachment of two or more tendons!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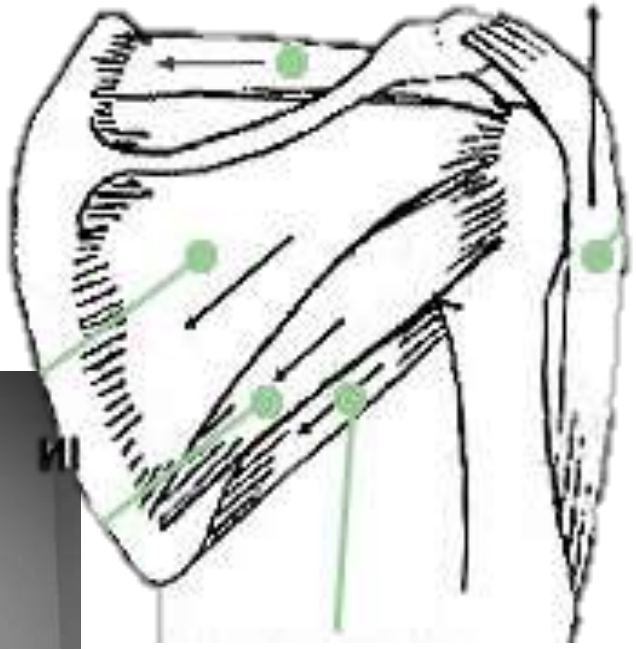
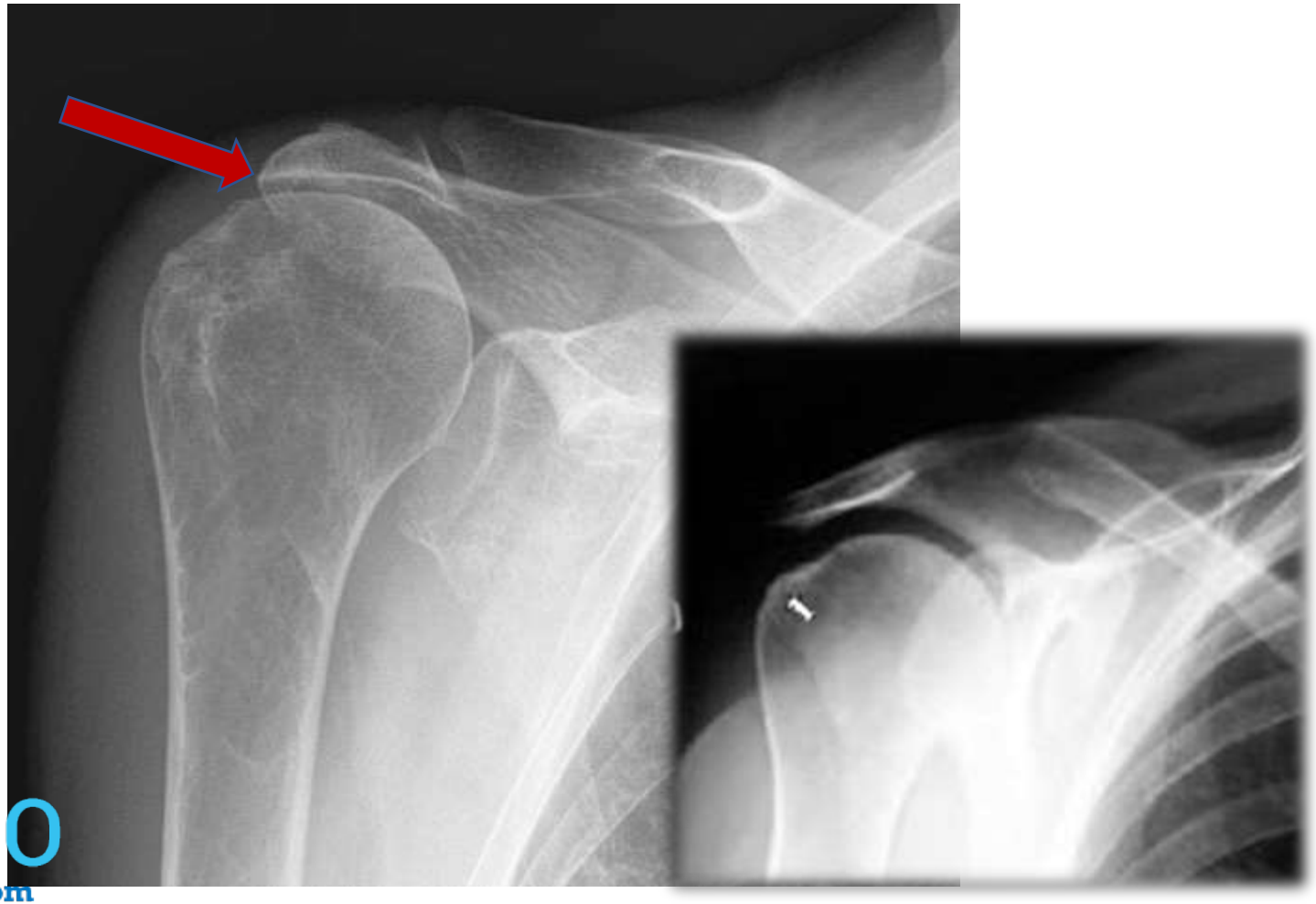




Signs of irreparability of cuff tears

Static superior migration of the humeral head with a narrowed (<5 mm) acromio-humeral interval, retraction to the level of glenoid and fatty infiltration more than 50 % of the rotator cuff musculature with an involvement of at least two or more tendons!

Young patient

TENDON TRANSFERS

OR

SUPERIOR CAPSULAR RECONSTRUCTION

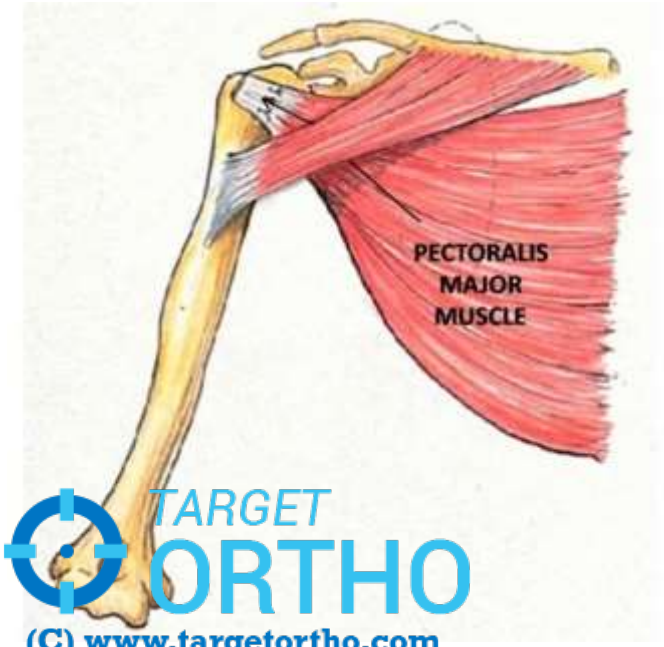
Old patient

REVERSE SHOULDER ARTHROPLASTY

TENDON TRANSFERS

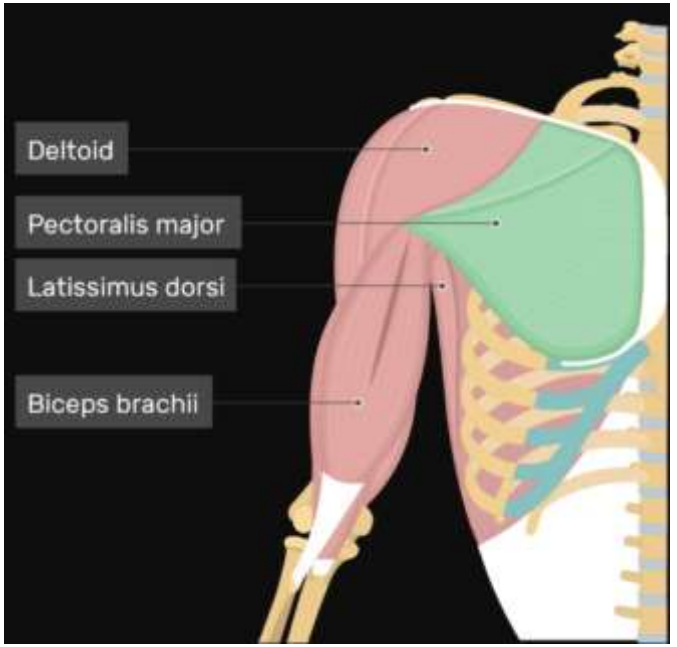
ANTERO SUPERIOR CUFF TEAR

Pectoralis Major transfer

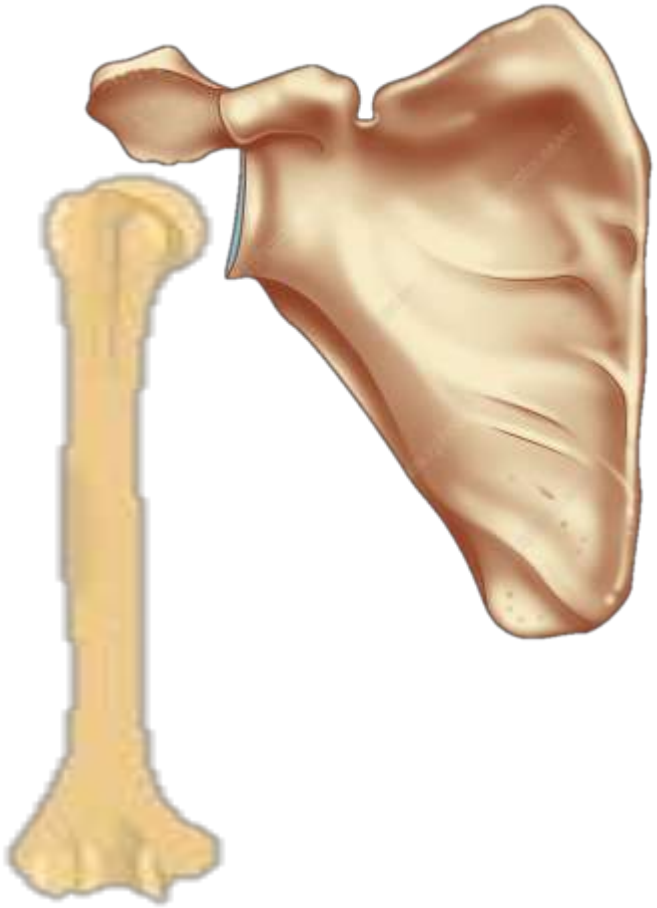


POSTERO SUPERIOR CUFF TEAR

Latissimus Dorsi transfer



REVERSE SHOULDER ARTHROPLASTY



DEVELOPMENTS IN ROTATOR CUFF SURGERY

In 1834 - Smith gave first description of Rotator cuff tendon rupture

In 1911- Codman mentioned first successful repair

In 2020 – Fully arthroscopic trans-osseous equivalent suture anchor repairs and managing irreparable tears

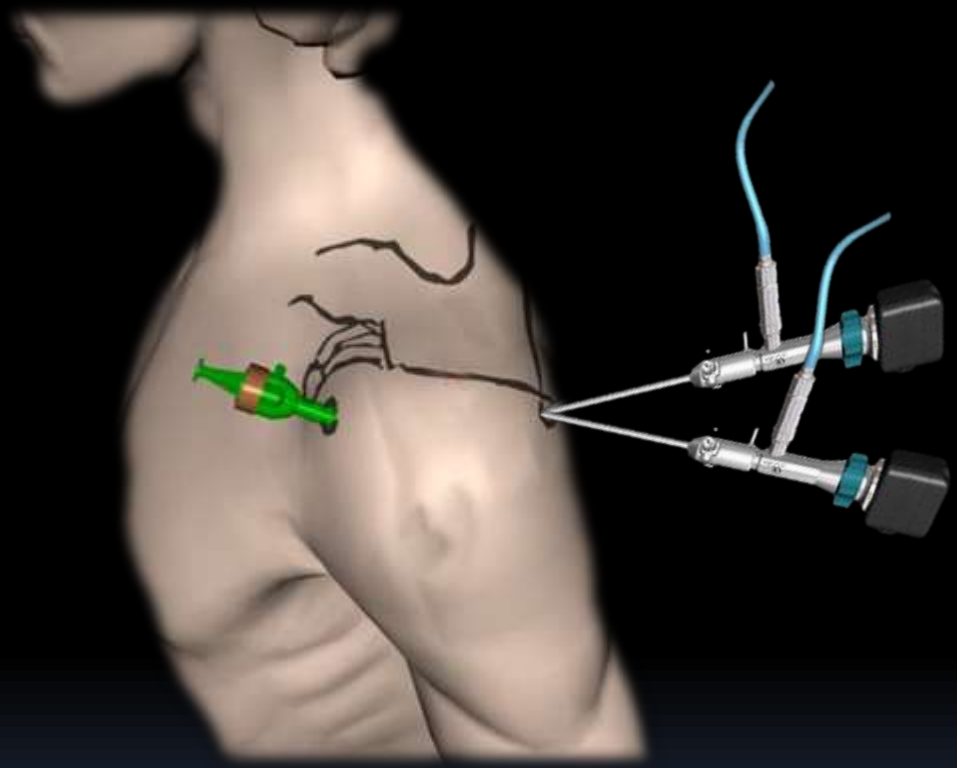
Codman EA. Complete rupture of the supraspinatus tendon. Operative treatment with report of two successful cases. Boston Med Surg J. 1911;164:708–10.

Surface Anatomy

RIENTATION

Anterior Portal

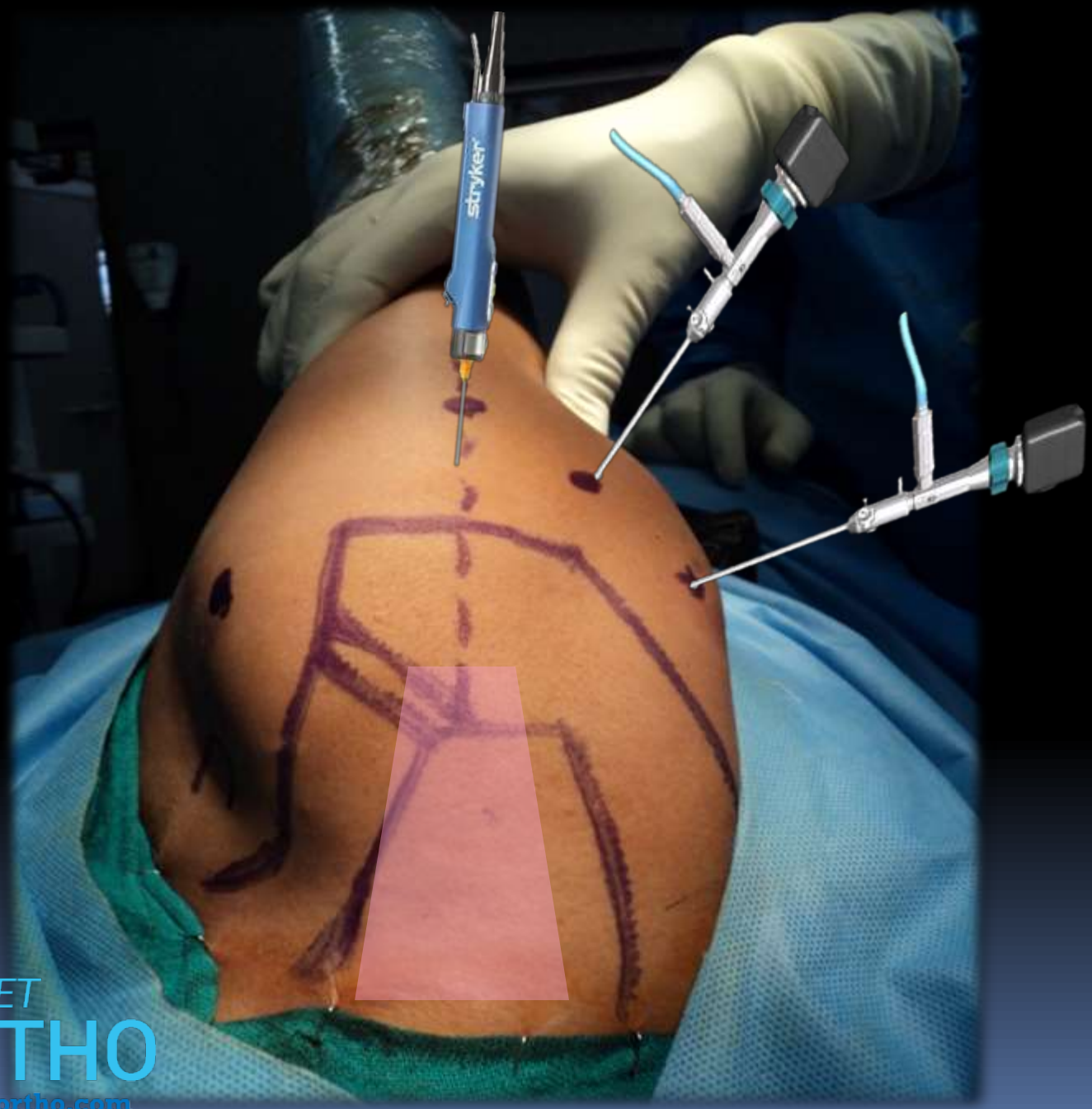
Outside In Method

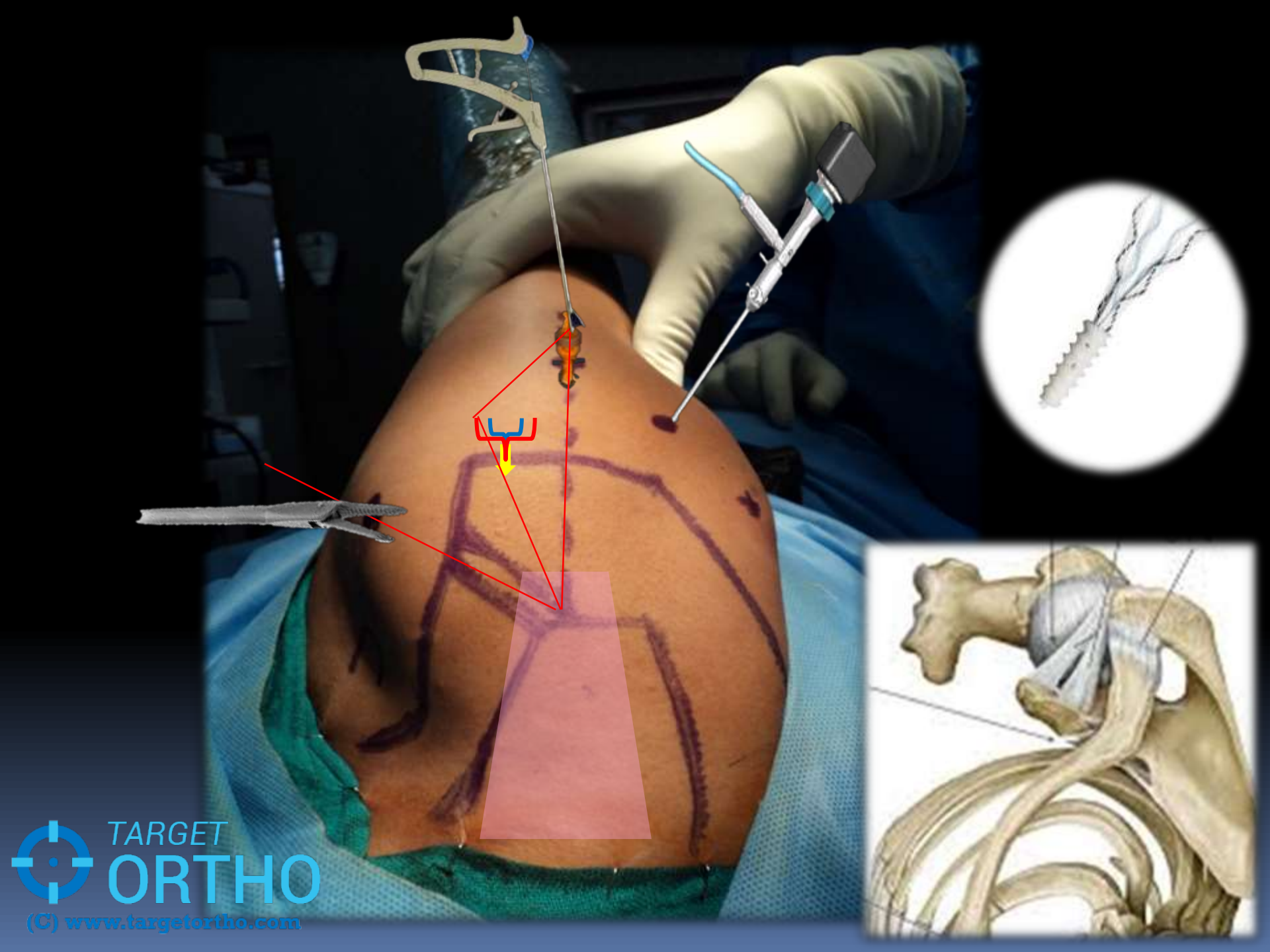


Same viewing portal, but try keeping it low

Angle superiorly while placing

Tend to be medial and anterior

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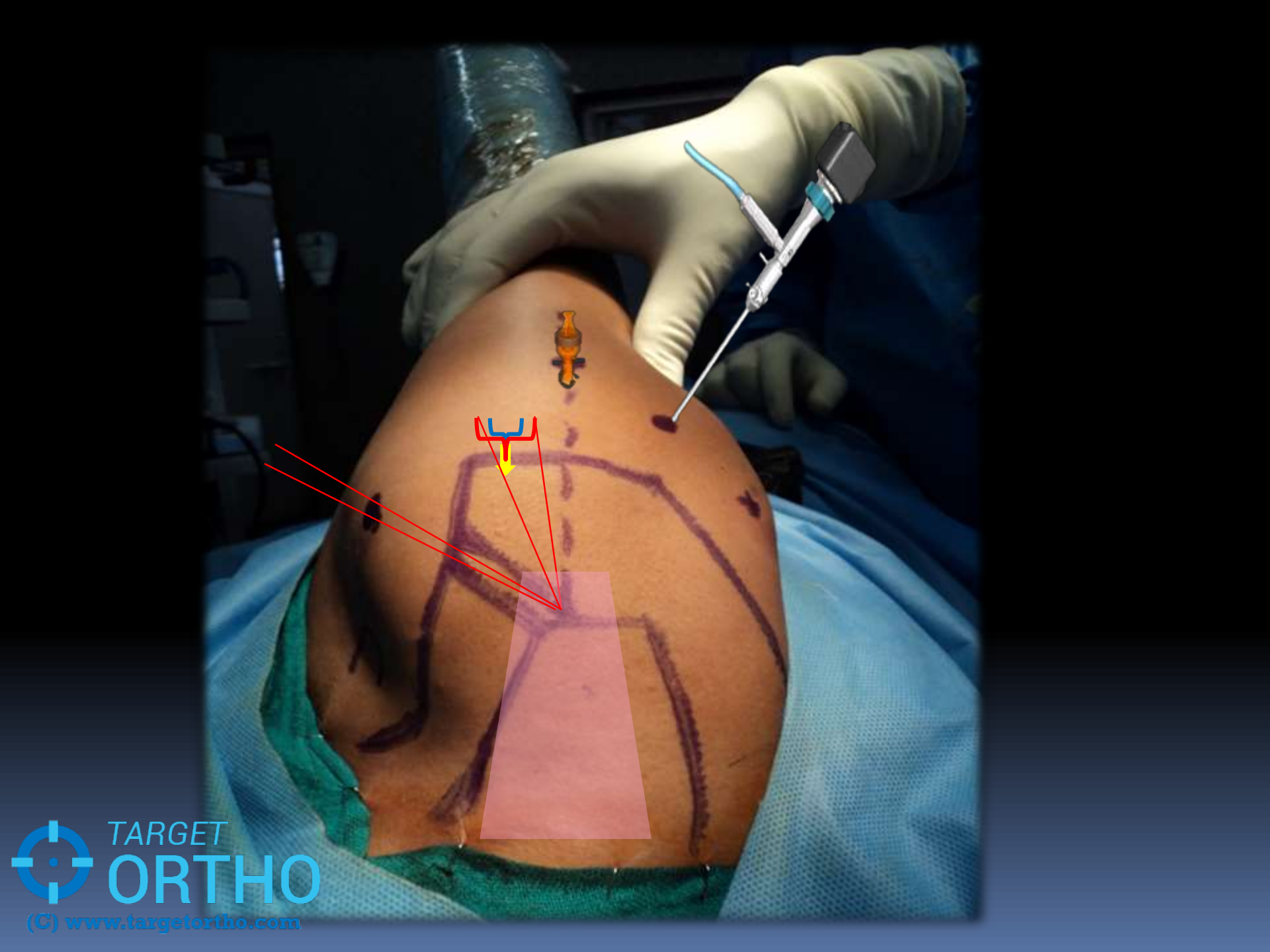
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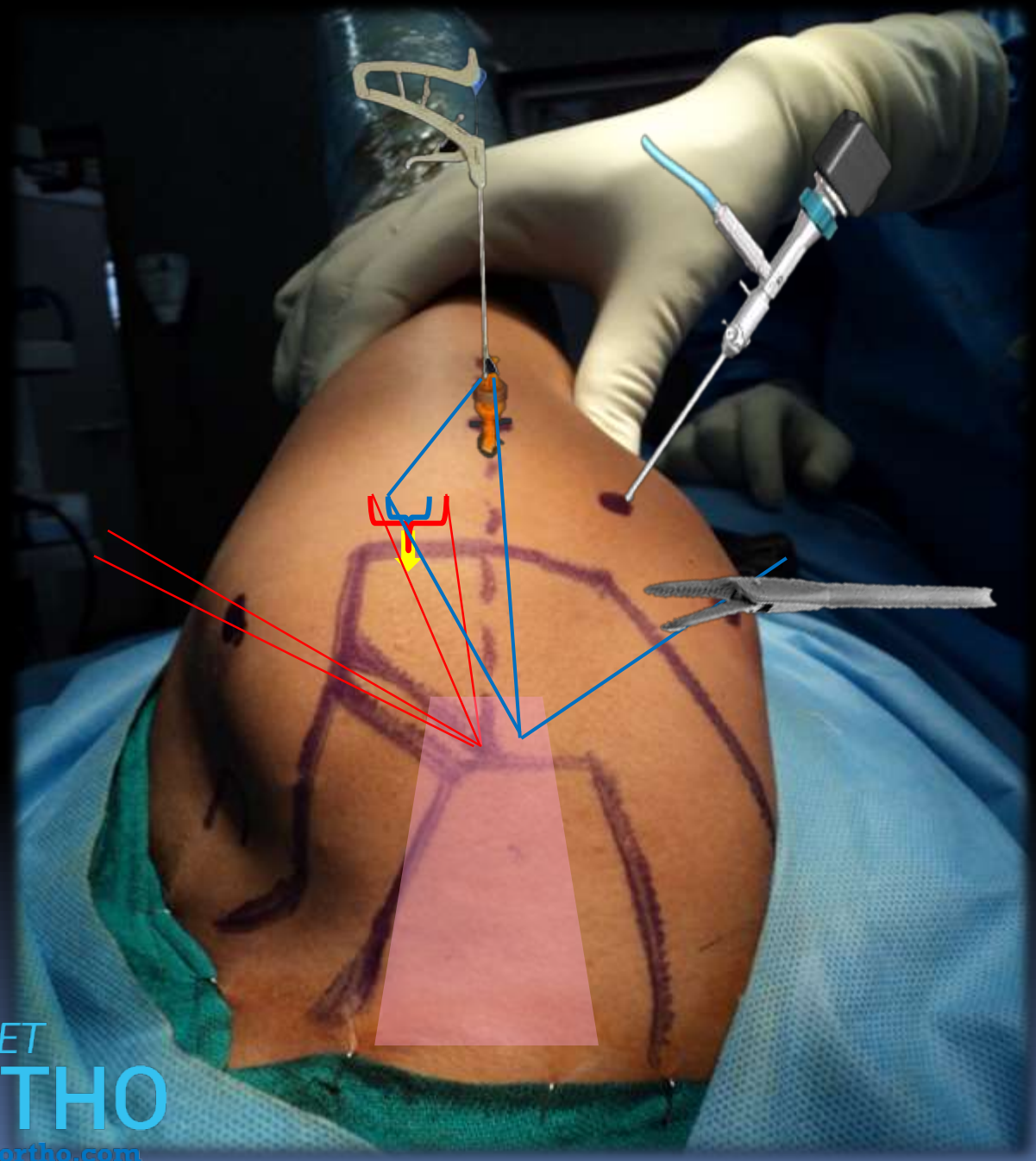

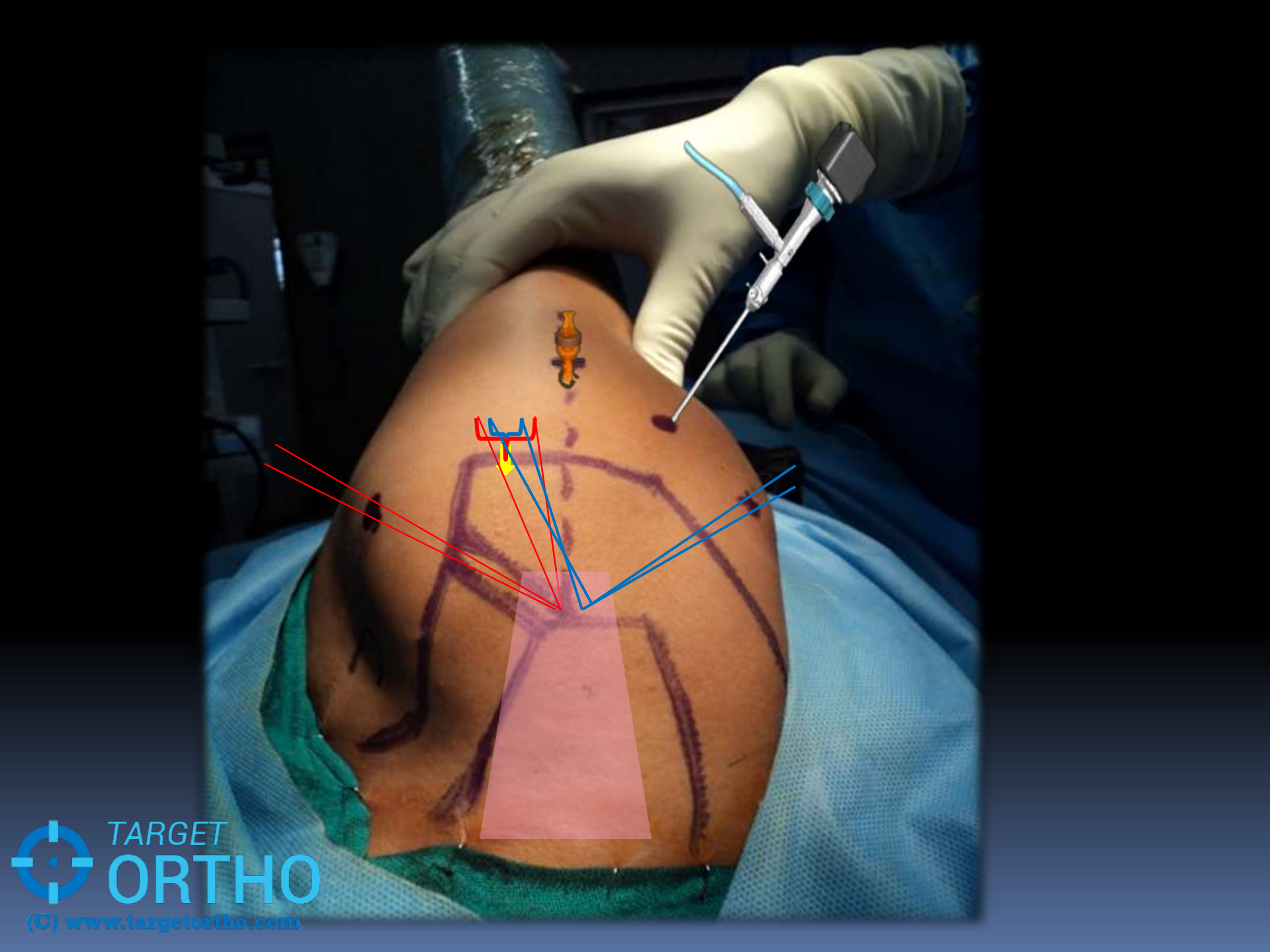
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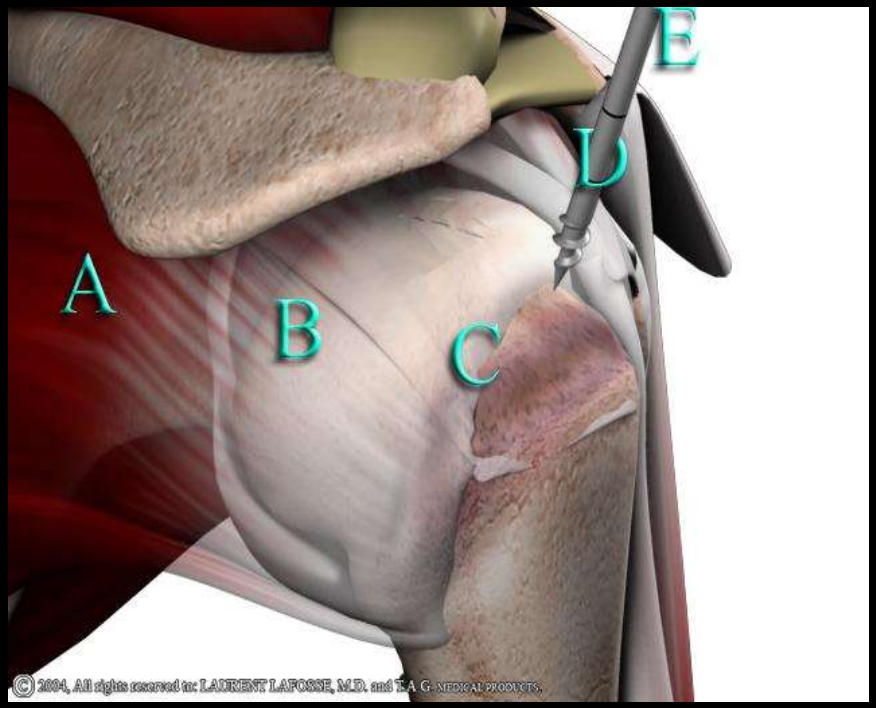
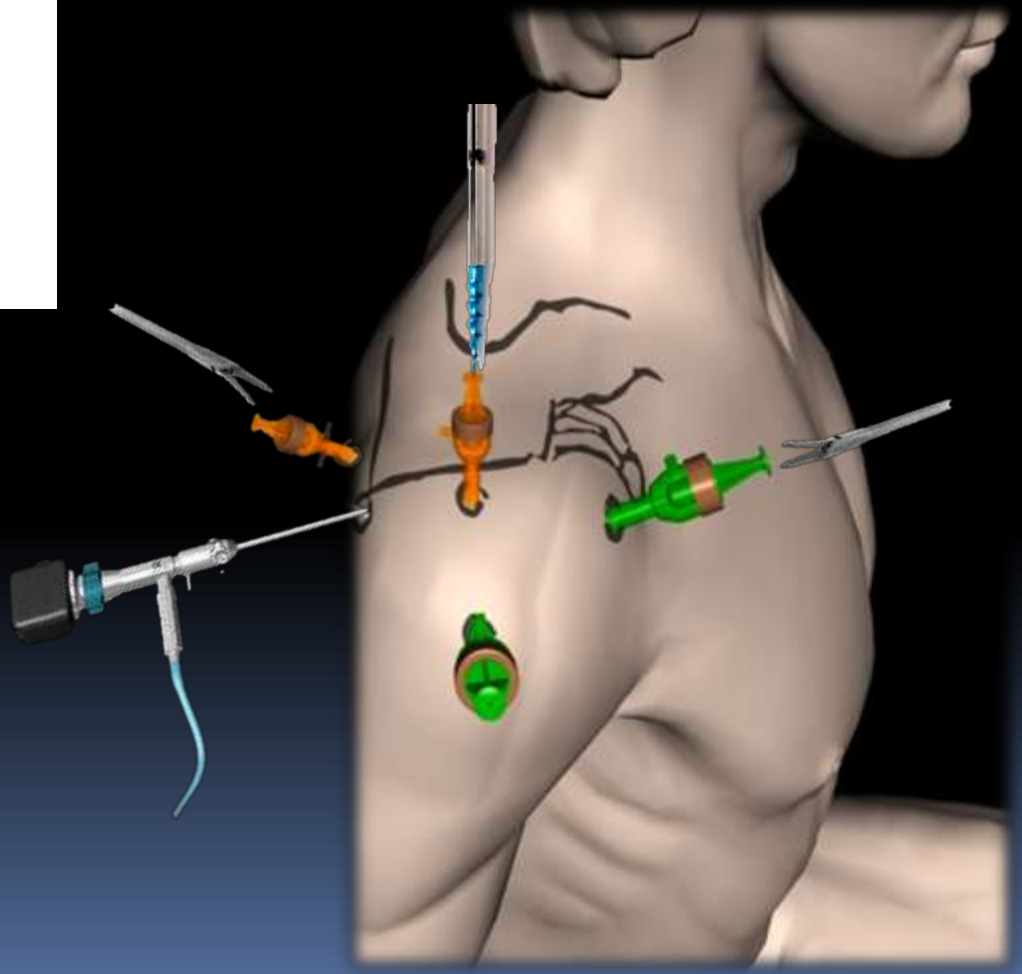
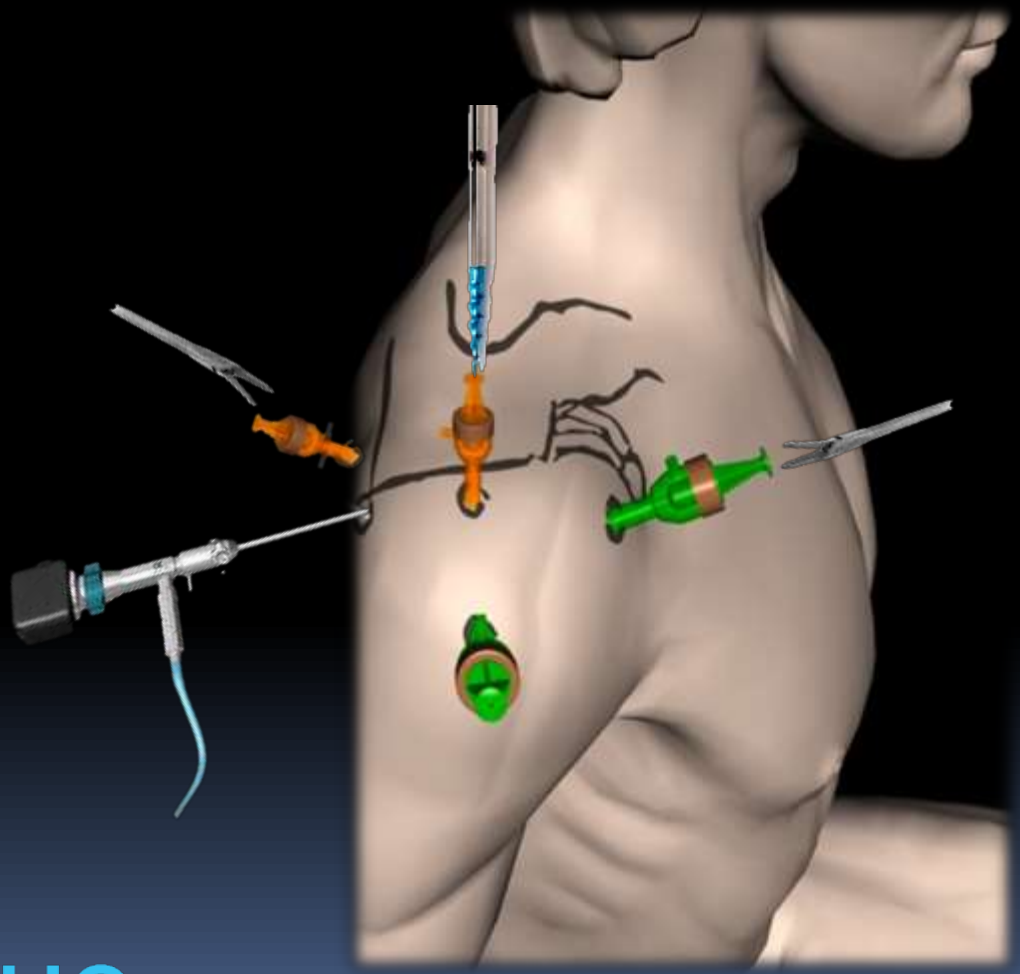
SUMMARY

ROTATOR CUFF REPAIR





ARTHROSCOPIC KNOT TYING



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