

Simulated CBDs for SpRs Project



St. George's

Shoulder Unit

Prof. Duncan Tennent

9th March 2021



Hosted on www.school-of-Andry.com



CASE #1

45 yr old woman

RH dominant

Acute left shoulder pain



CASE #1

Hx?

Exam?

Investigations?



CASE #1



CASE #1

Mx?



Simulated CBDs for SpRs Project



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CASE #2

23 yr old man

Right handed

3x dislocation left shoulder



CASE #2

Hx?

Exam?

Investigations?



CASE #2

Hx?

Exam?

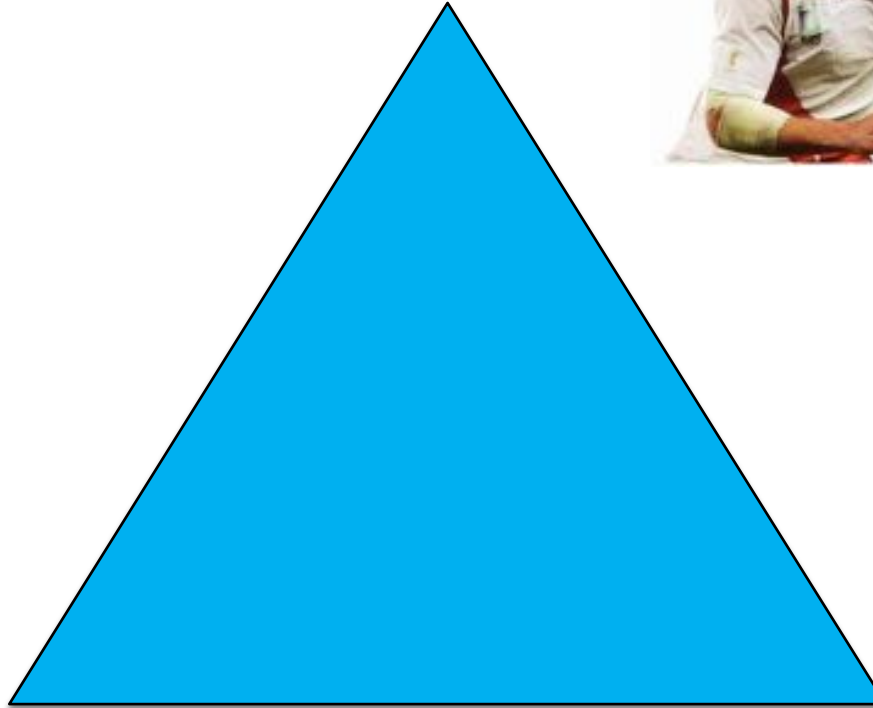


CASE #2

Polar Type I
traumatic structural



Polar Type III
Muscle patterning
Non-structural



Polar Type II
Atraumatic Structural

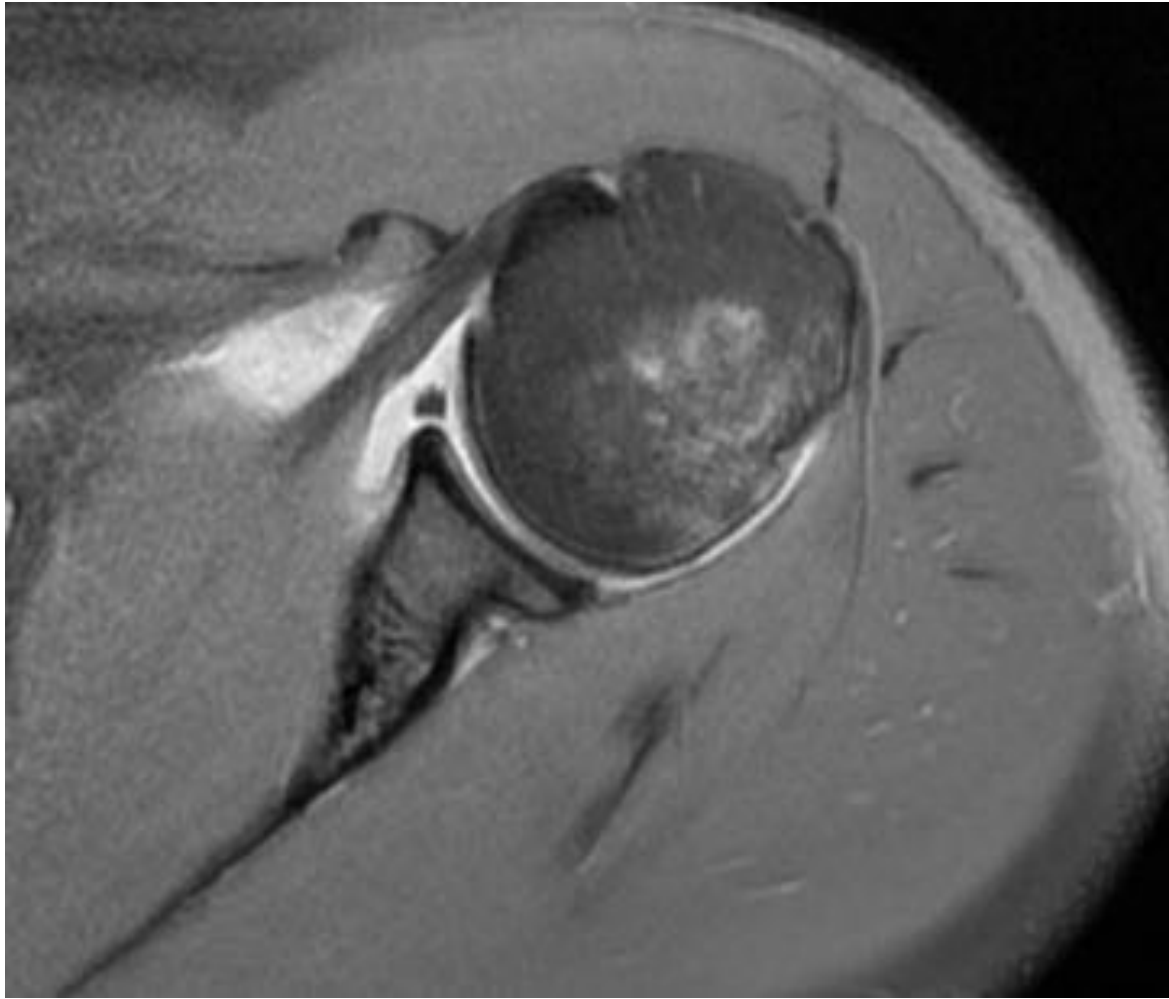


CASE #2

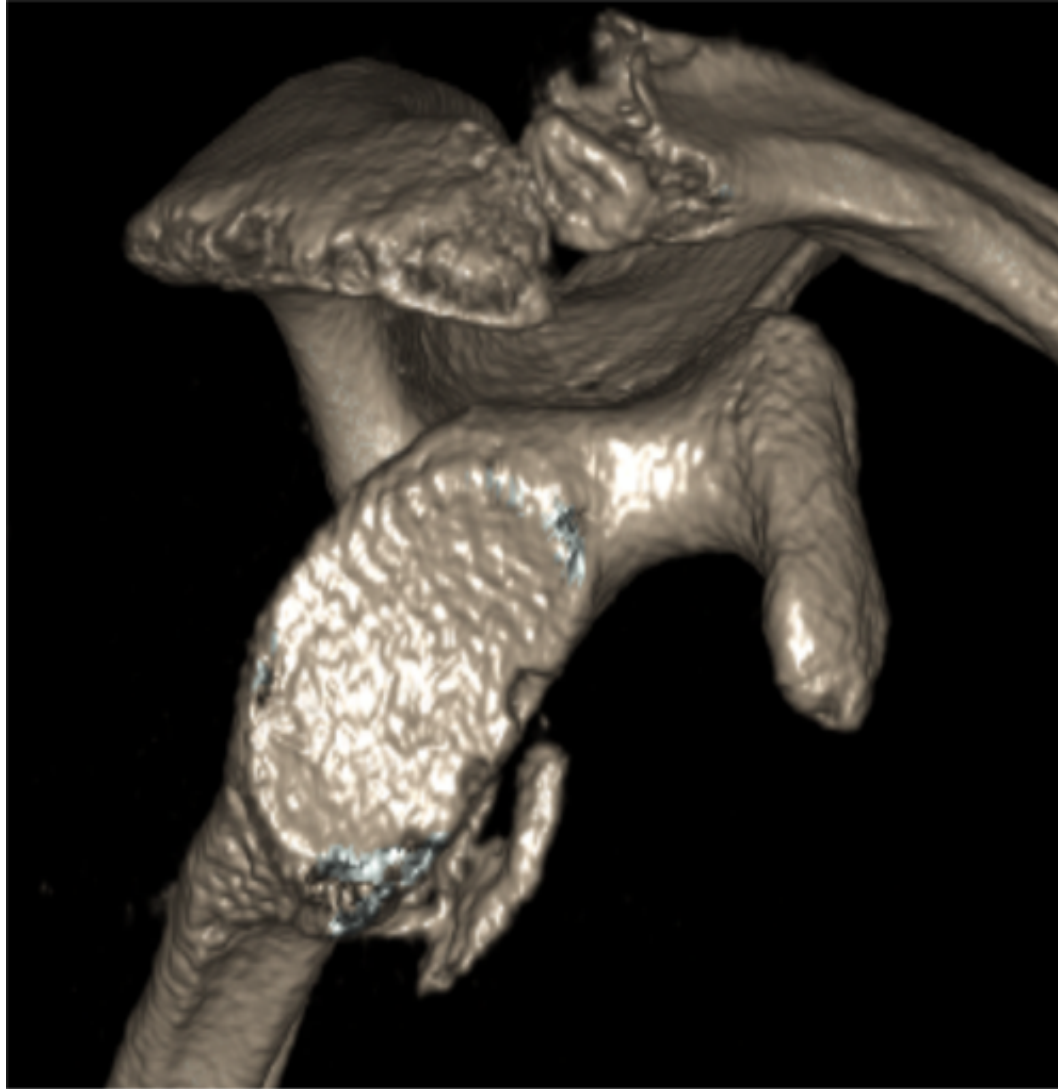
Ix?



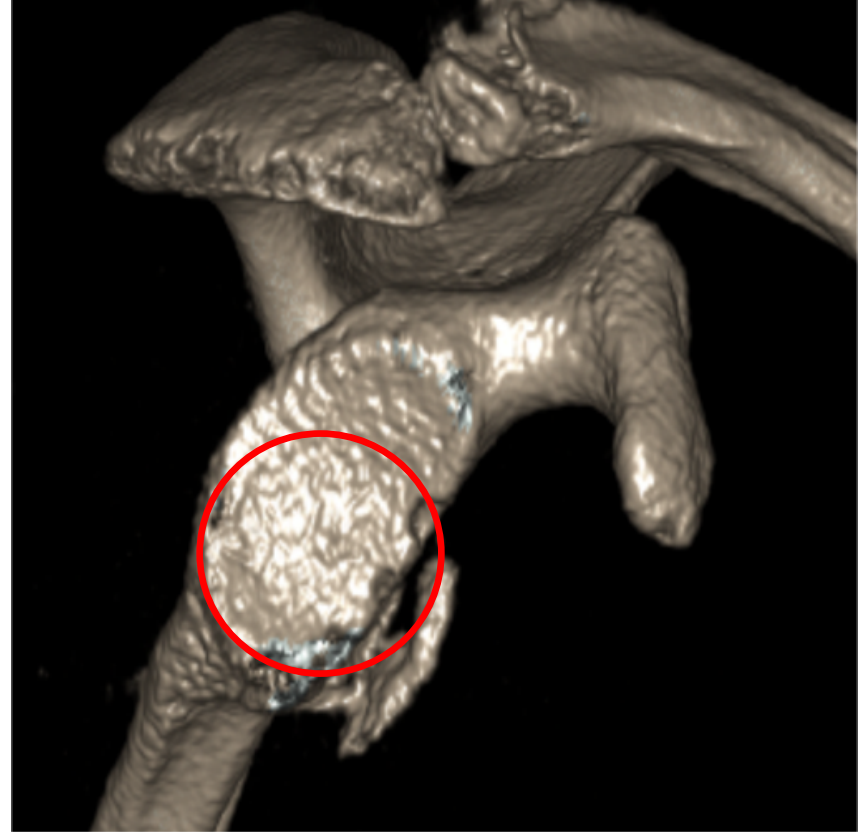
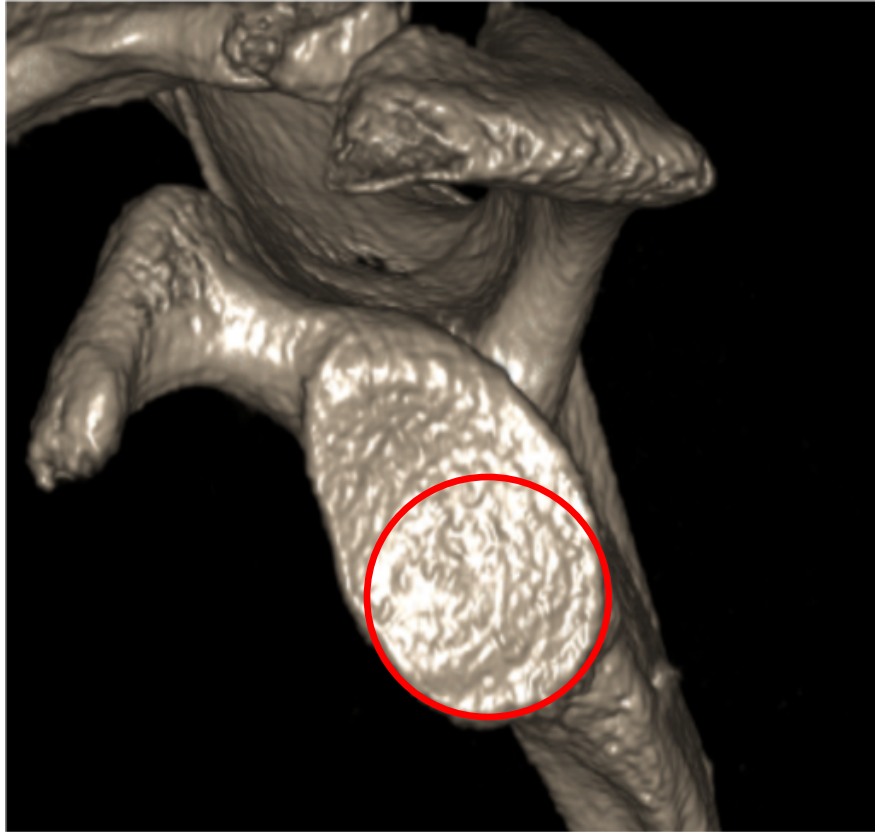
CASE #2



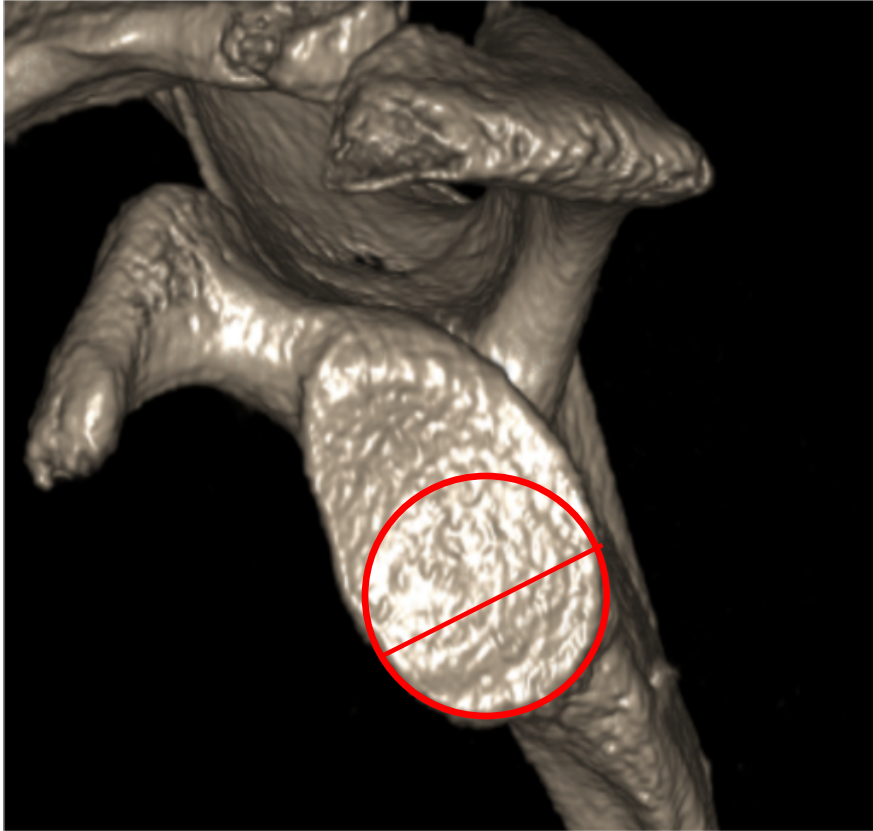
CASE #2



CASE #2



CASE #2



Bone Loss

- Burkhart & DeBeer(2000) - 25% bone loss concept
- "Engaging" Hill-Sachs documented
- Examines anterior glenoid bone loss
- Humeral defect usually ignored

Burkhart, S.S. and De Beer, J.F., 2000. Traumatic glenohumeral bone defects and their relationship to failure of arthroscopic Bankart repairs: significance of the inverted-pear glenoid and the humeral engaging Hill-Sachs lesion. *Arthroscopy: The Journal of Arthroscopy & Related Surgery*, 16(7), pp.677-694.



Bone Loss

- Greis(2002) - Labrum contributes 7-15% area
- 30% bone loss reduces contact area by 41%
- Increases contact pressure 3-400%
- Balg & Boileau (2007) - ISIS - points for humeral or glenoid loss - everyone gets a Latarjet

Greis, P.E., Scuderi, M.G., Mohr, A., Bachus, K.N. and Burks, R.T., 2002. Glenohumeral articular contact areas and pressures following labral and osseous injury to the anteroinferior quadrant of the glenoid. *Journal of Shoulder and Elbow Surgery*, 11(5), pp.442-451.

Balg, F. and Boileau, P., 2007. The instability severity index score. *Bone & Joint Journal*, 89(11), pp.1470-1477.



Bone Loss

- Engaging Hill-Sachs
- Kurokawa (2013) "off track" Hill-Sachs engaging after Bankart repair
- 7% revisions "engaging" v 30+% before repair

Kurokawa, D., Yamamoto, N., Nagamoto, H., Omori, Y., Tanaka, M., Sano, H. and Itoi, E., 2013. The prevalence of a large Hill-Sachs lesion that needs to be treated. *Journal of Shoulder and Elbow Surgery*, 22(9), pp.1285-1289.



Bone Loss

- Glenoid track - Itoi (2013)
- Contact area shifts from IM to PS of posterior surface of humeral head in ABER
- Distance from medial margin of humeral contact area to cuff insertion = track
- At 90 Abd - 85% (+/-12) of glenoid width

Itoi, E., Yamamoto, N., Kurokawa, D. and Sano, H., 2013. Bone loss in anterior instability. *Current reviews in musculoskeletal medicine*, 6(1), pp.88-94.



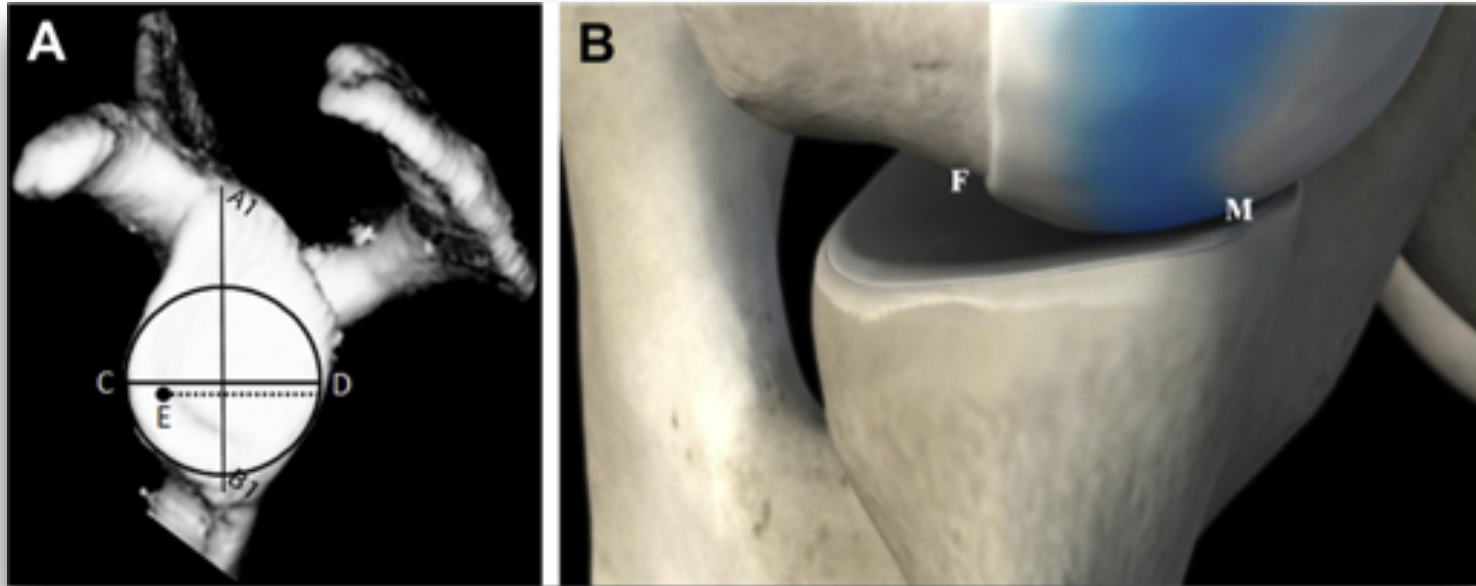
Bone Loss

- DiGiacomo (2014)
- Tracking
- Quantitative method to measure engagement
- If engages then is "off track"

Di Giacomo, G., Itoi, E. and Burkhart, S.S., 2014. Evolving concept of bipolar bone loss and the Hill-Sachs lesion: from "engaging/non-engaging" lesion to "on-track/off-track" lesion. *Arthroscopy: The Journal of Arthroscopic & Related Surgery*, 30(1), pp.90-98.



Glenoid Track



The width of the glenoid track without a glenoid defect is 83% of the glenoid width. Line A1-B1 is the long axis of the glenoid; line C-D, which is perpendicular to A1-B1, is the glenoid width

E-D, which is 83% of the glenoid width, is equal to the width of the glenoid track.

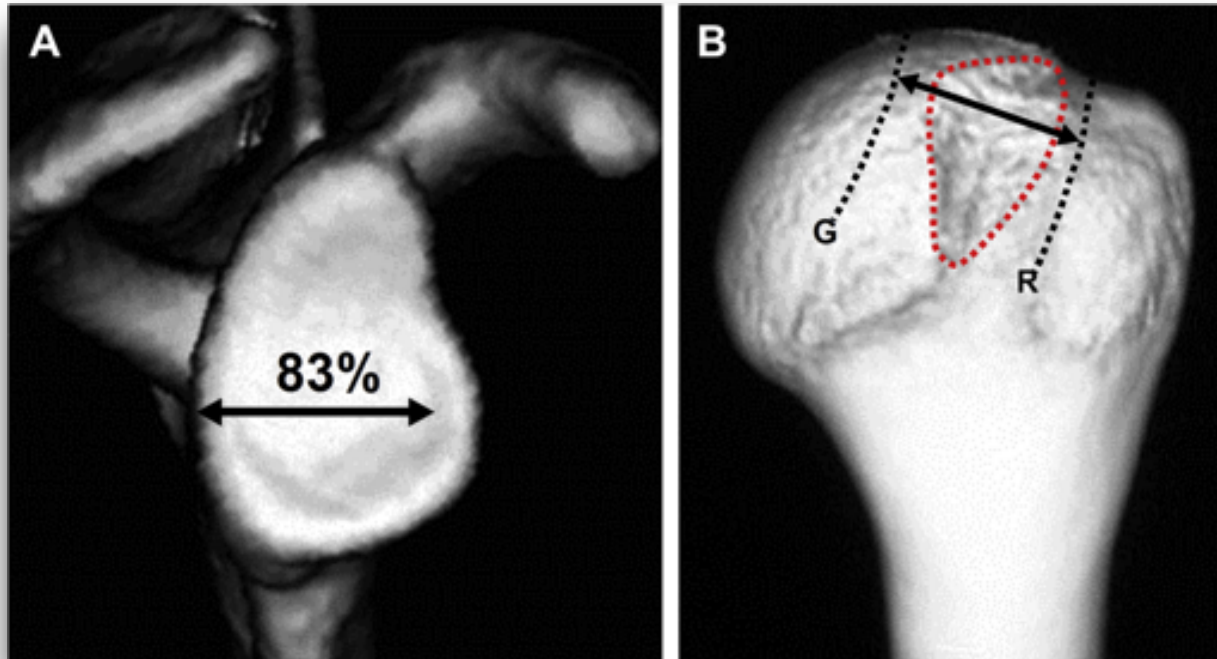
abduction and external rotation.

The distance from the medial margin of the contact area (M) to the medial margin of the cuff footprint (F) is $83\% \pm 14\%$ of the glenoid width:

$F - M = 83\% \text{ of glenoid width} = \text{glenoid track.}$



On track measurement



Case with no bony defect of glenoid (A) and medium-sized Hill-Sachs lesion

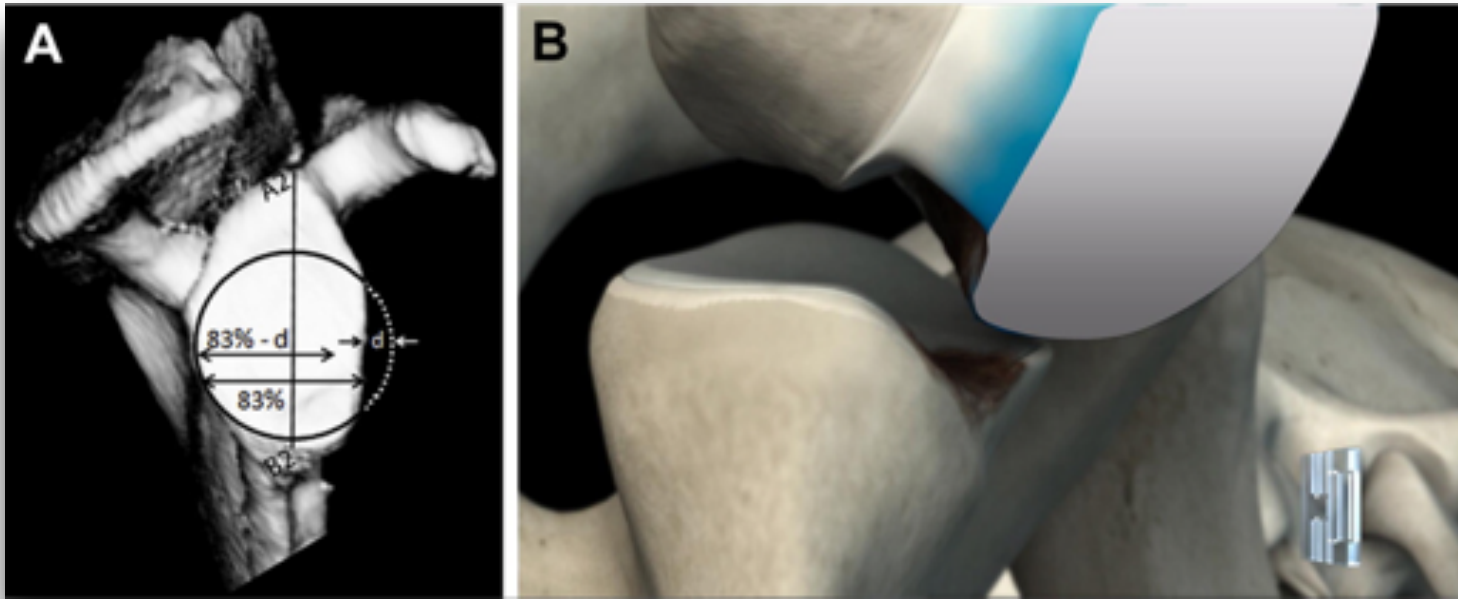
83% width is determined, which is the distance from the medial margin of the footprint of the rotator cuff to the medial margin of the glenoid track.

Dotted line G indicates the location of the medial margin of the glenoid track. Dotted line R indicates the medial margin of the rotator cuff attachments.

This Hill-Sachs lesion is on track because it lies totally within the glenoid track.



Combined bone loss

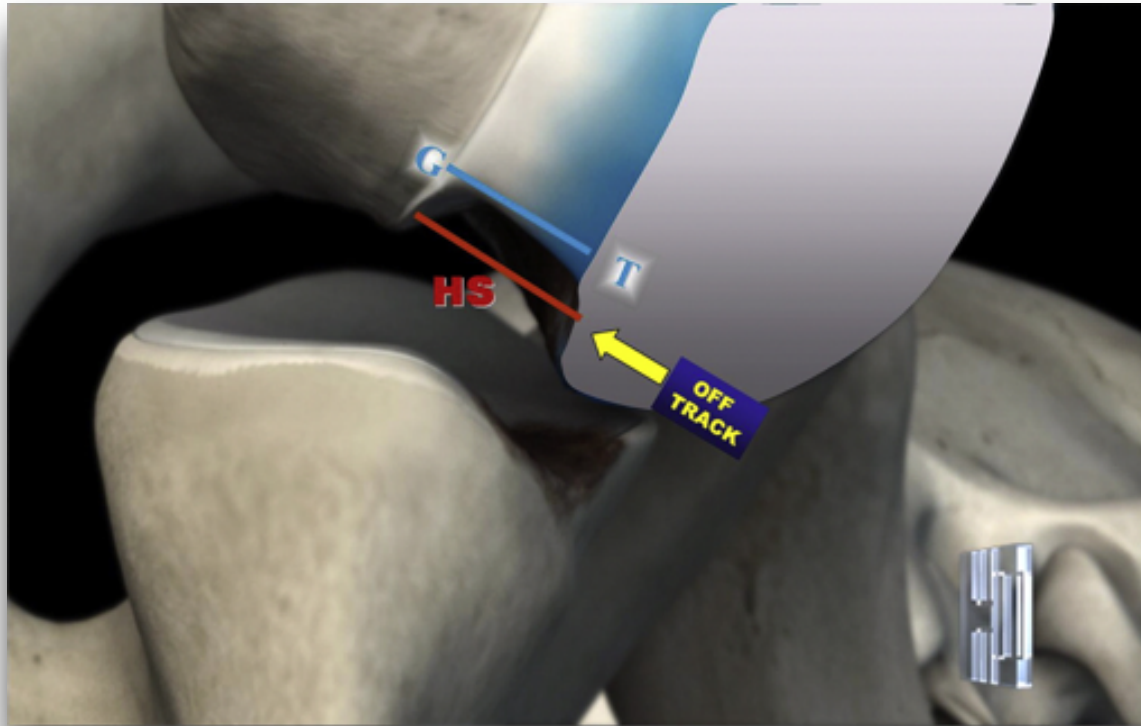


a glenoid with bone loss of width d .
the glenoid track will be 83% of the normal glenoid width minus d .

abduction and external rotation.
the large Hill-Sachs interval (i.e., distance from posterior rotator cuff attachments to medial margin of Hill-Sachs lesion) is wider than the glenoid track



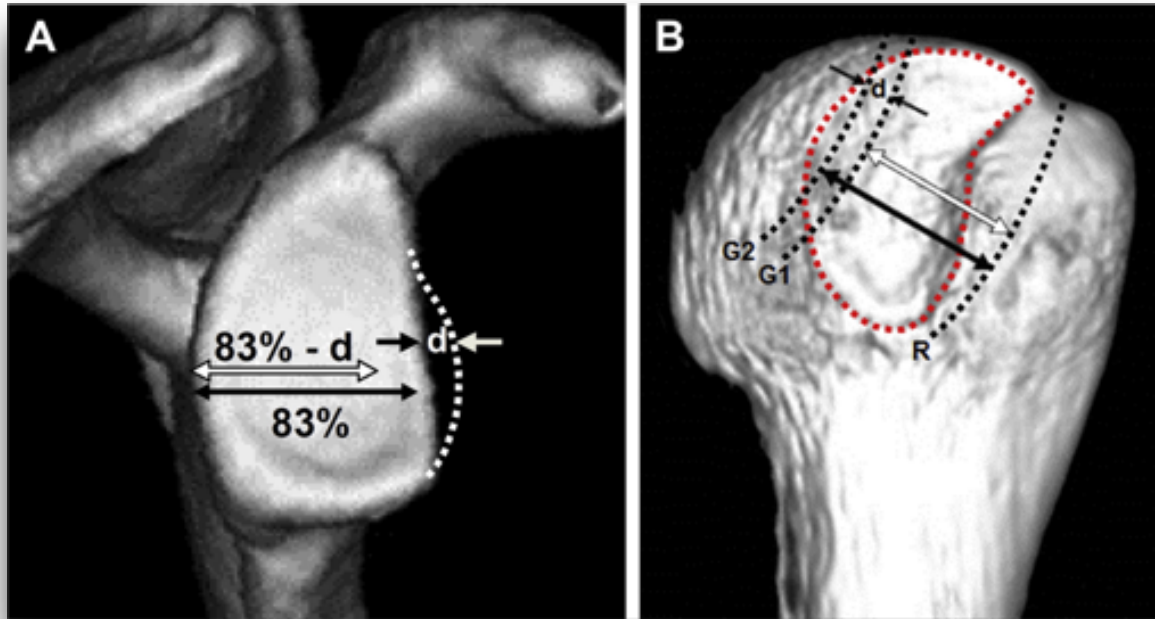
Off track



Glenohumeral joint in abduction and external rotation in shoulder with glenoid defect and Hill-Sachs lesion (HS) (bipolar bone loss). The Hill-Sachs lesion extends medial to medial margin of the glenoid track (G-T), with loss of bone support at the anterior glenoid rim (off-track Hill-Sachs lesion).



Off Track



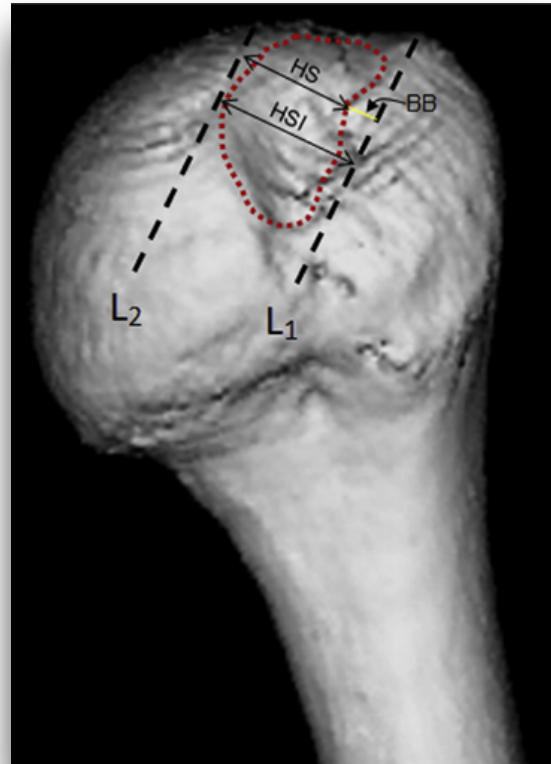
bony defect of glenoid (A) and large Hill-Sachs lesion
83% width is determined (black double-headed arrow).
defect width (d) is subtracted from this 83% length to obtain the glenoid track width(white
double-headed arrow).
Dotted line R represents the medial margin of the rotator cuff attachments.

Dotted line G1 indicates the location of the medial margin of the glenoid track.
If there had been no glenoid bony defect, the medial margin of the glenoid track would
be dotted line G2.

In this case the Hill-Sachs lesion extends medially beyond the medial margin of the g
track (dotted line G1), so this is an off-track lesion.



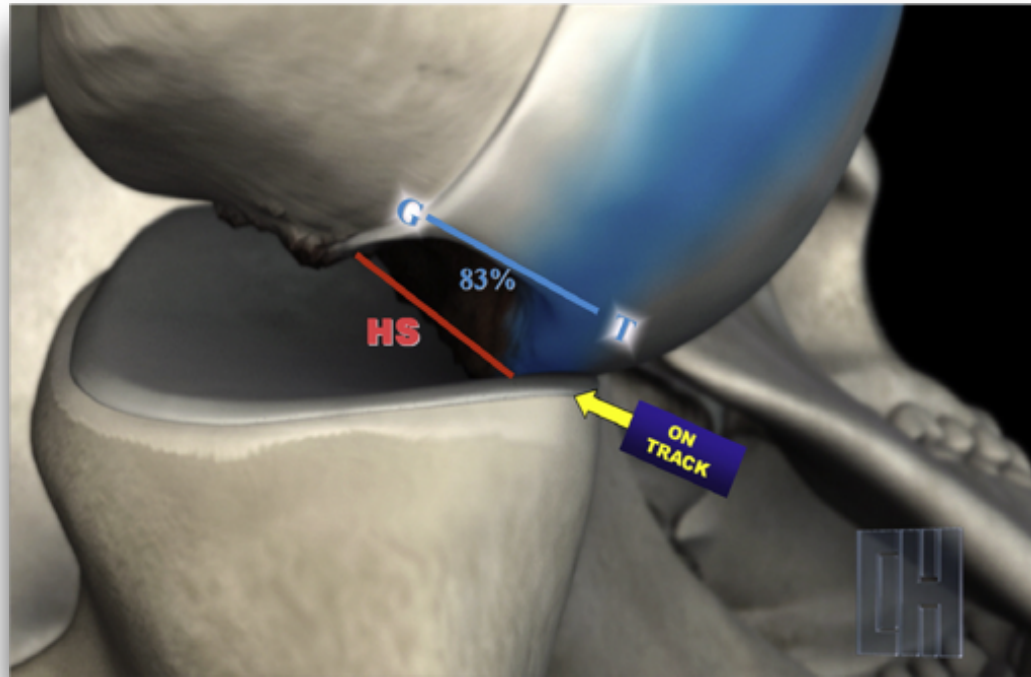
Off Track



The HSI in this right shoulder is defined as the width of the Hill-Sachs (HS) lesion plus the width of the intact bone bridge (BB) that lies between the Hill-Sachs lesion and the posterior rotator cuff attachments. Dotted line L1 represents the medial margin of the rotator cuff attachments, and dotted line L2 represents the medial margin of the glenoid track in this particular case.



Medial Hill-Sachs



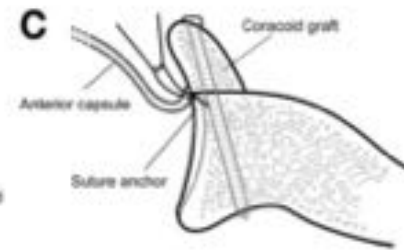
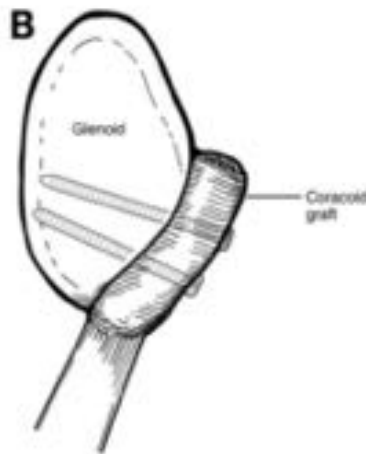
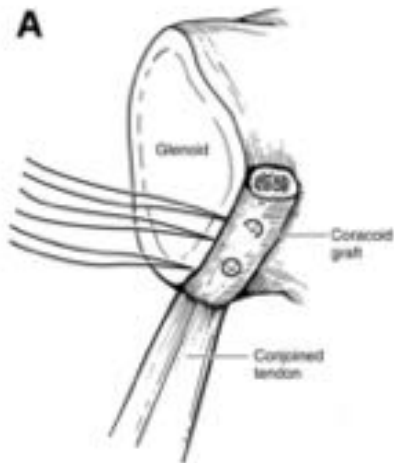
Glenohumeral joint in abduction and external rotation.

If the Hill-Sachs lesion (HS) is within the medial margin of the glenoid track (G-T), there is still glenoid track support for bone stability (on-track Hill-Sachs lesion).

This implies that intrinsic stability can be shared between the Bankart repair and bone support.



CASE #2



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CASE #3

78 year old man

RH dominant

2yr Hx increasing right
shoulder pain



CASE #3

Hx?

Exam?

Investigations?



CASE #3



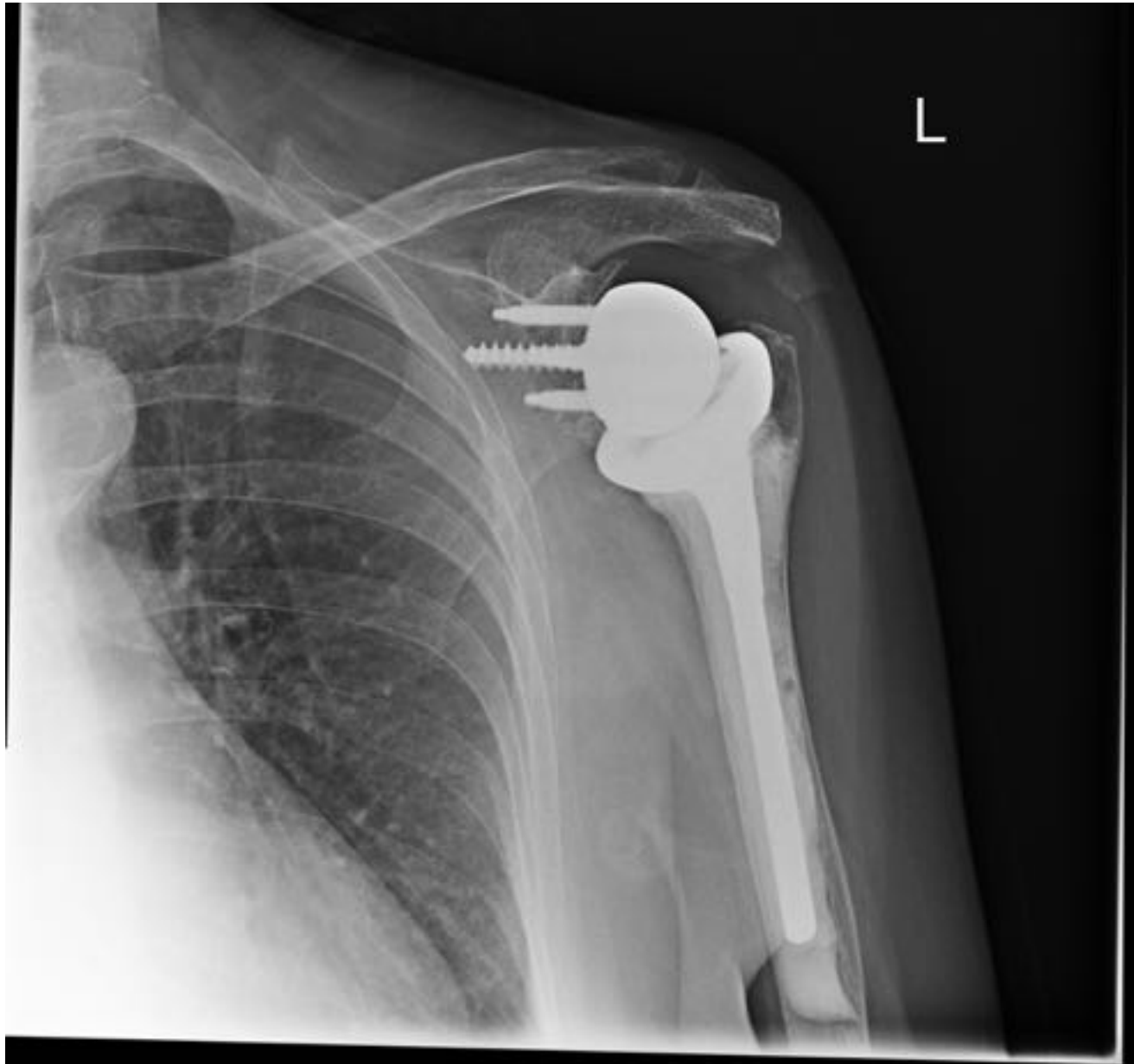
CASE #3



CASE #3



CASE #3



Simulated CBDs for SpRs Project



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CASE #4

60 year old woman

RH dominant

2yr Hx increasing right
shoulder pain



CASE #4

Hx?

Exam?



CASE #4

M MISCELLANEOUS

Subacromial shoulder pain BESS/BOA Patient Care Pathways



**Shoulder
& Elbow**

Shoulder & Elbow

0(0) 1-9

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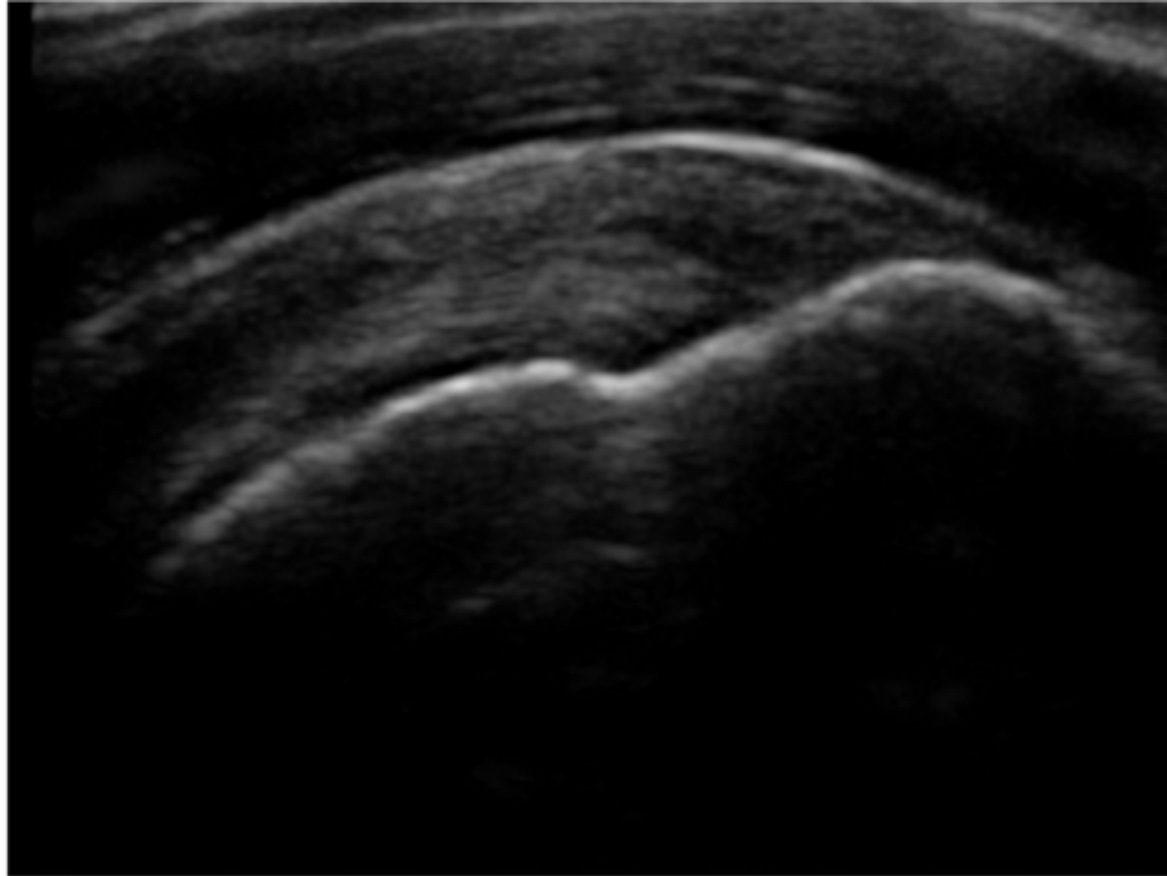


CASE #4

Investigations?



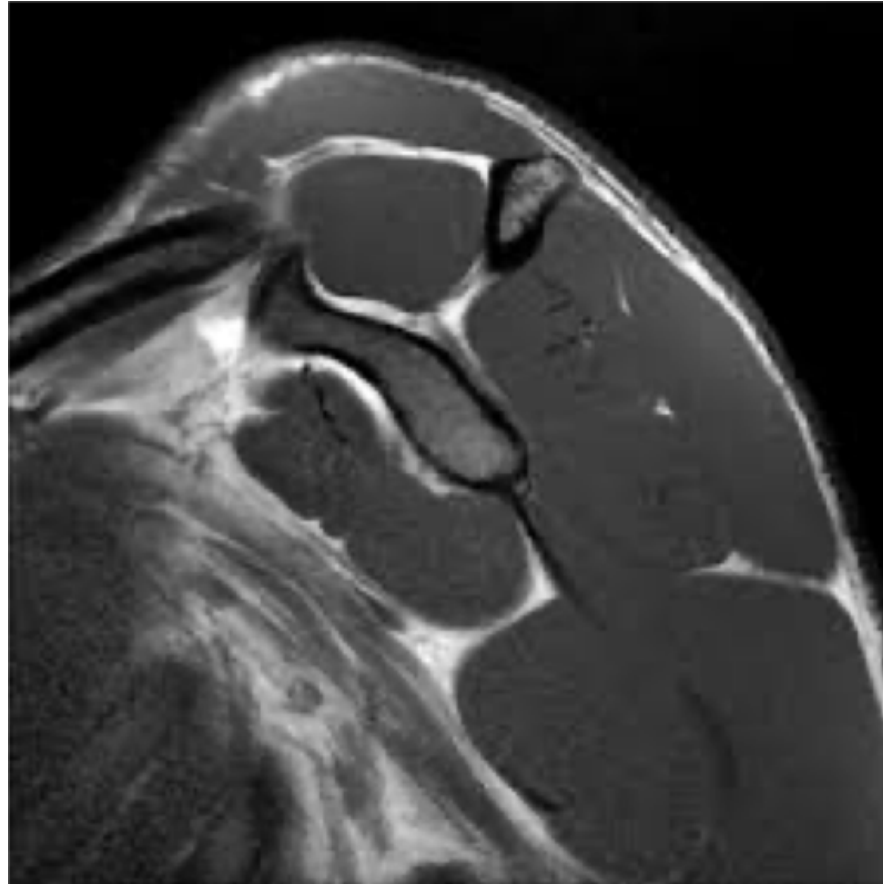
CASE #4



CASE #4



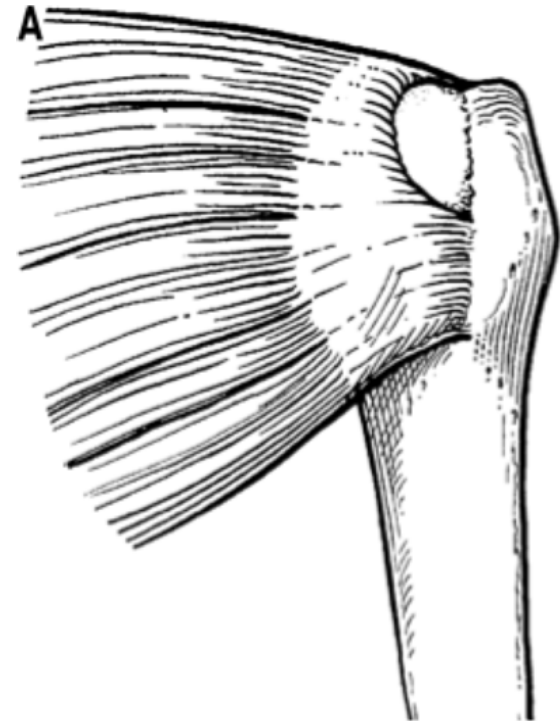
CASE #4



CASE #4

60 year old woman
2cm crescentic tear

Mx options



CASE #4

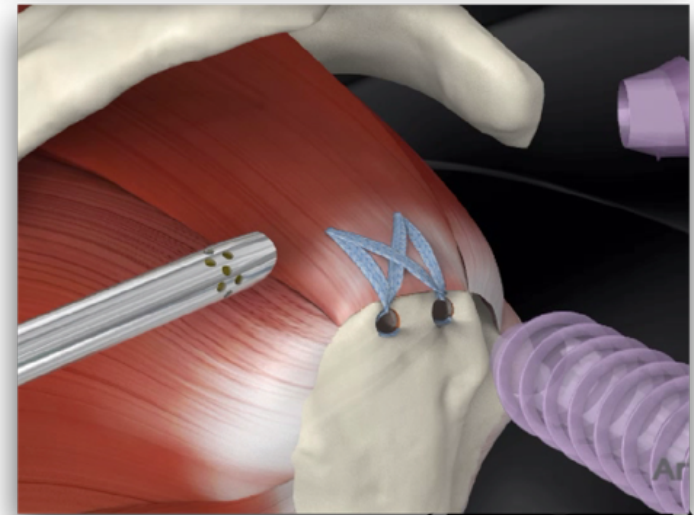
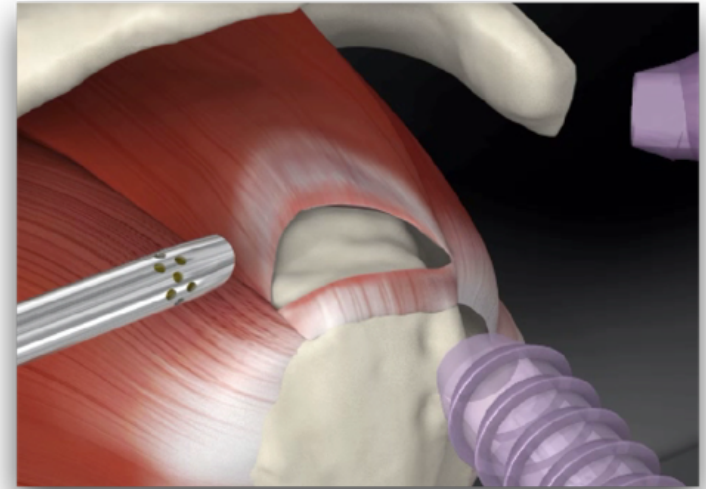
“Transosseous
equivalent”

Double row

Covers whole footprint

Crescentic tear

Mobile



CASE #4

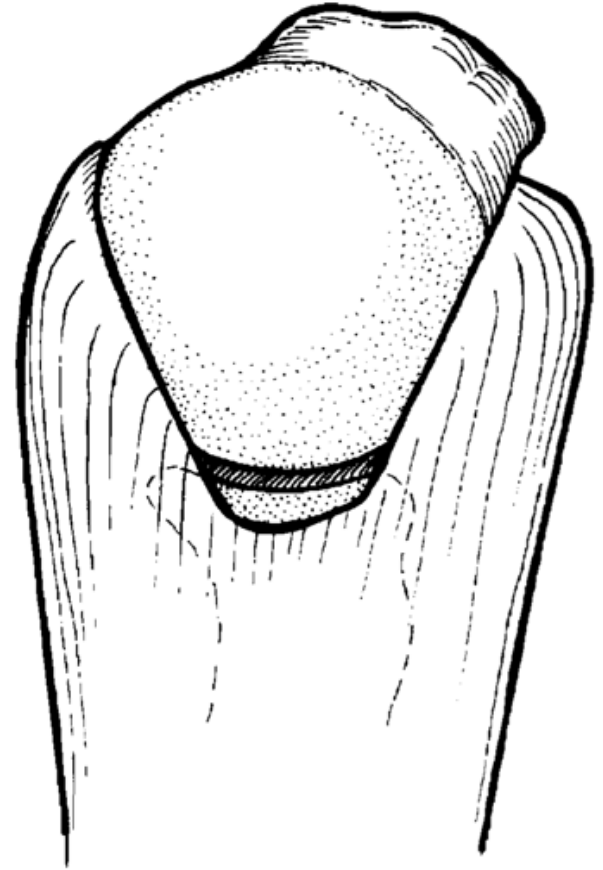
60 year old woman

Supraspinatus

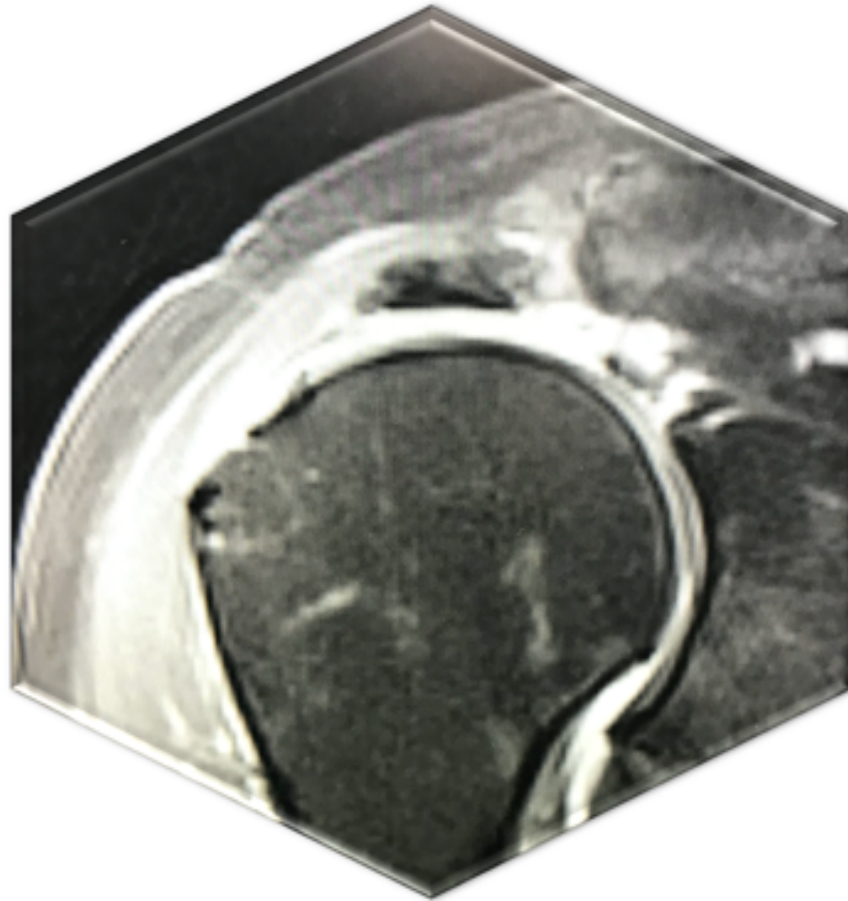
Infraspinatus

Subscapularis

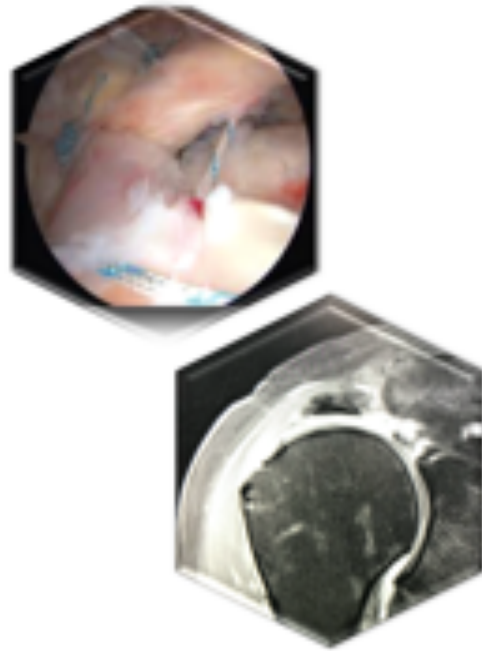
Mx options



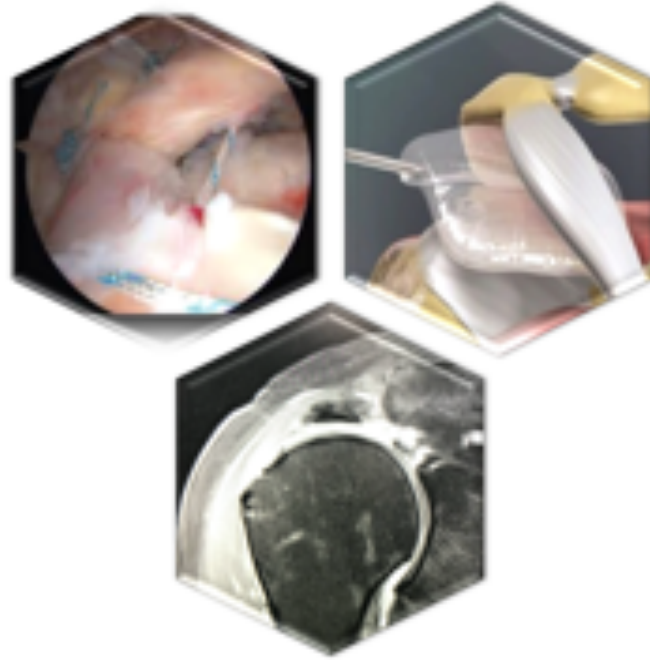
Massive Cuff Tears



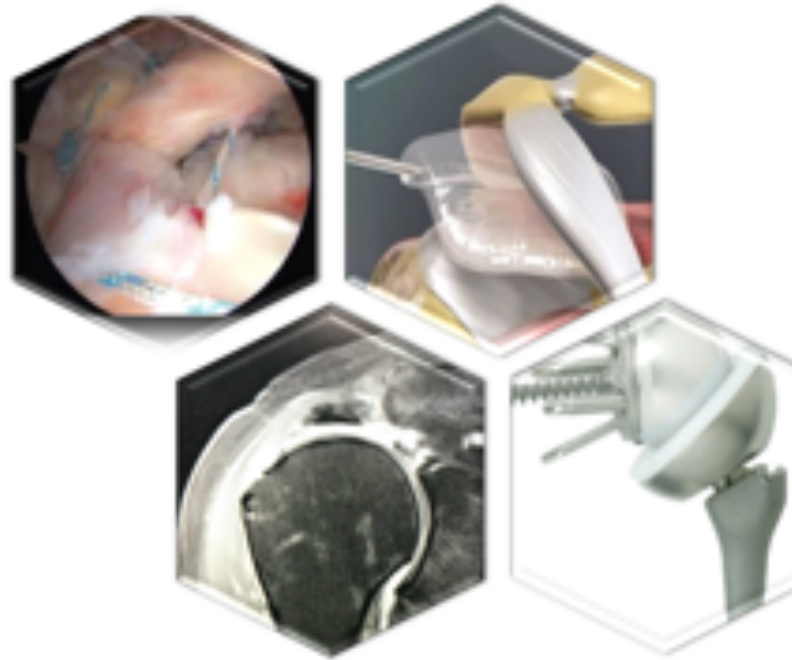
Massive Cuff Tears



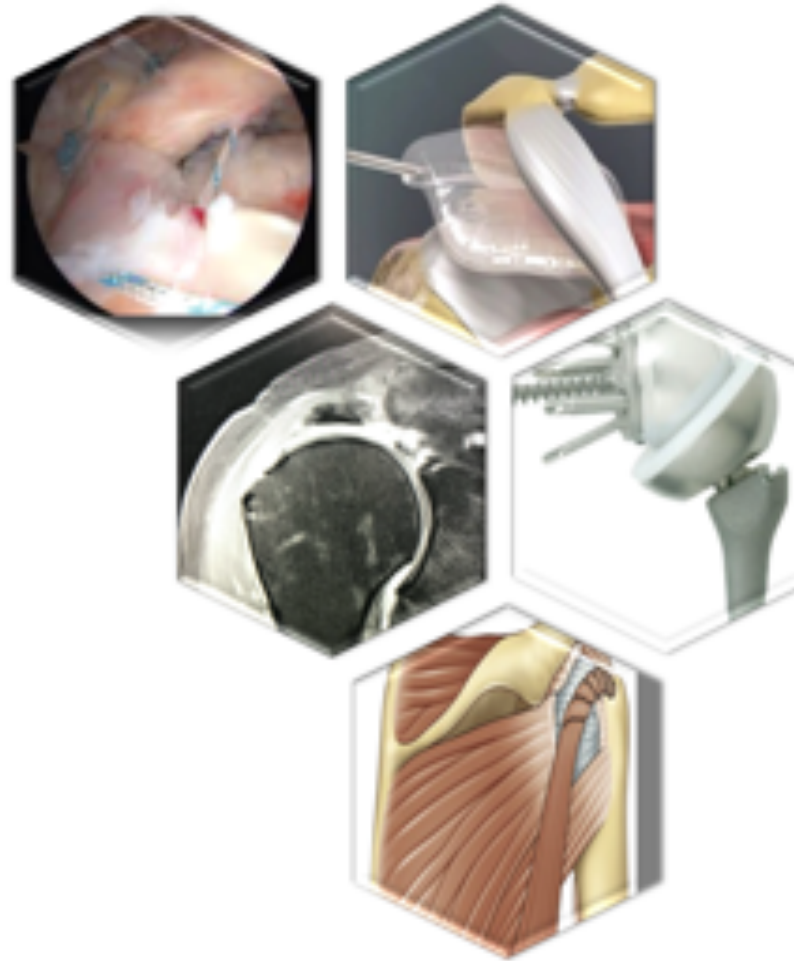
Massive Cuff Tears



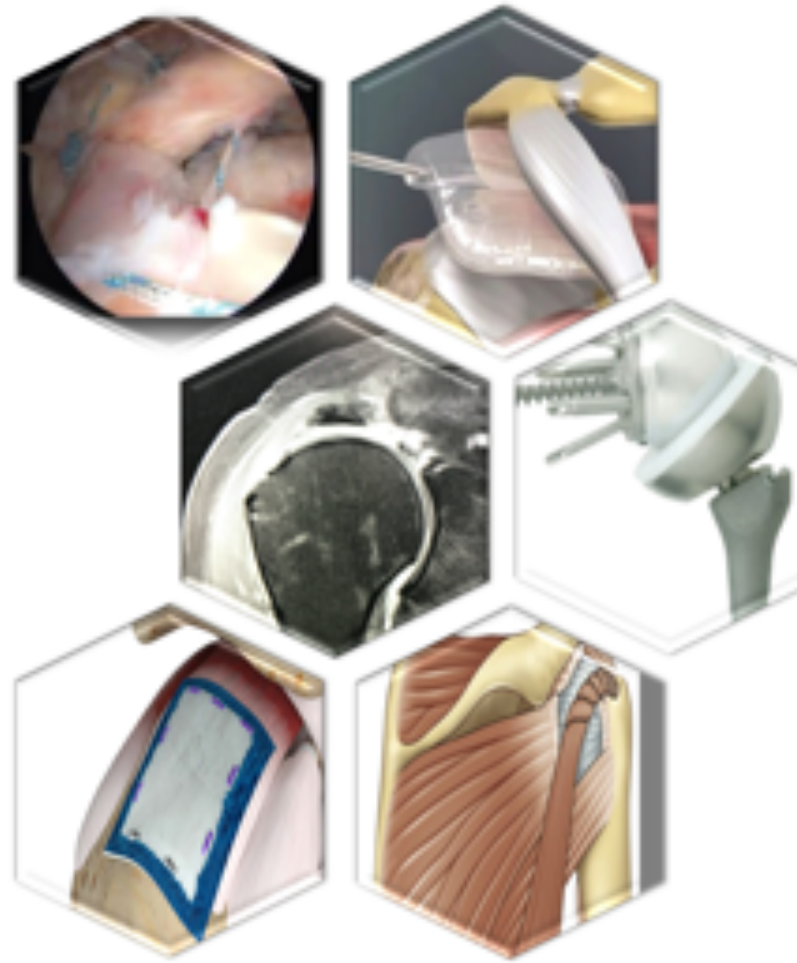
Massive Cuff Tears



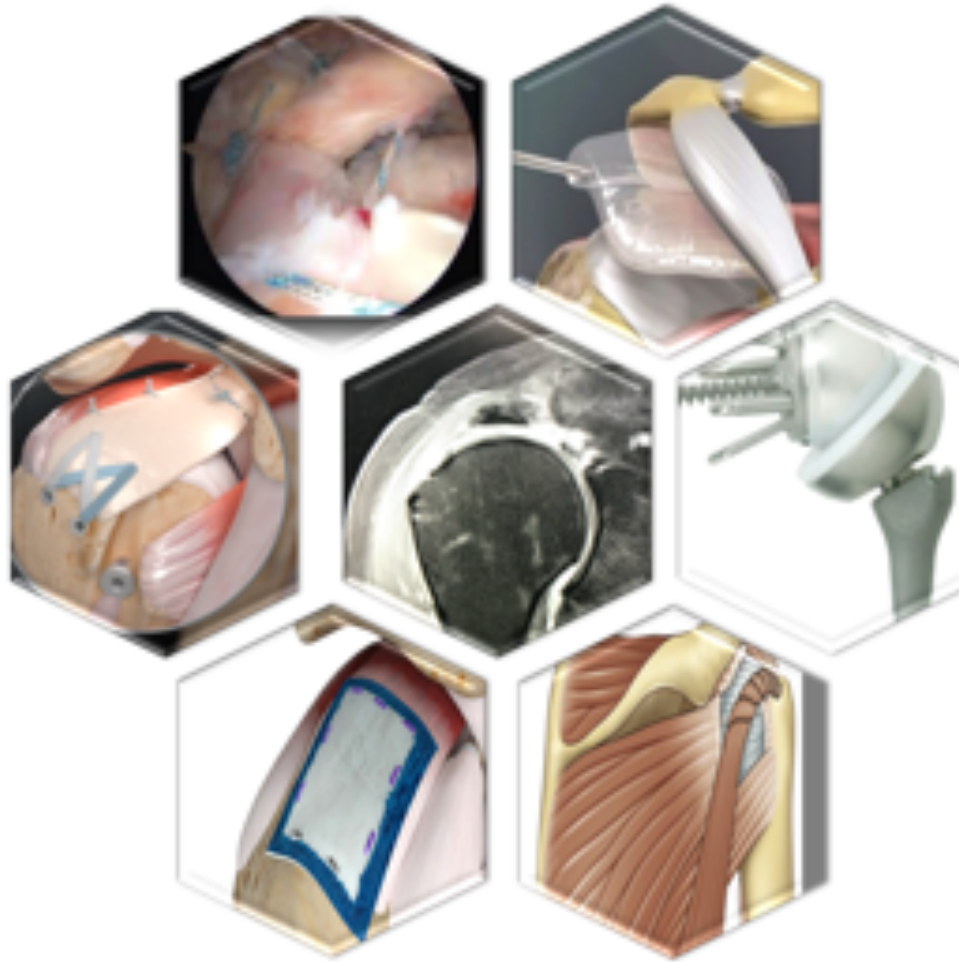
Massive Cuff Tears



Massive Cuff Tears



Massive Cuff Tears



Massive Cuff Tears



Massive Cuff Tears



Massive Cuff Tears



Massive Cuff Tears



Massive Cuff Tears



Massive Cuff Tears



One Shot?



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