

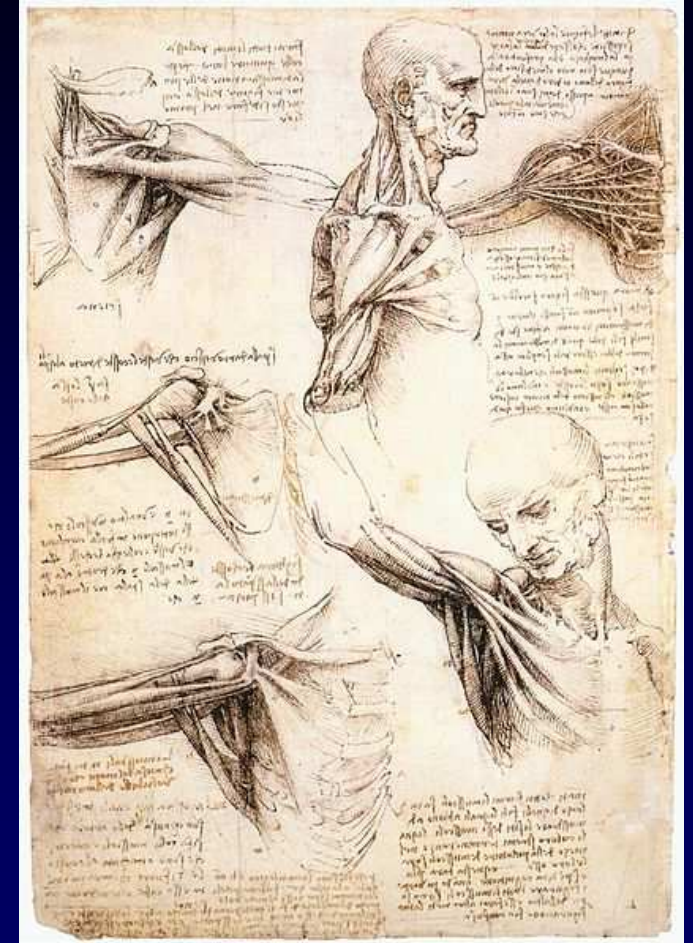
LA SPALLA

Anatomia e Semeiotica RM

Daide Orlandi

Dipartimento di Radiodiagnostica

Università degli studi di Genova



La Spalla: articolazione e parti superficiali

Monza, 11 Ottobre 2014

SOMMARIO

- Anatomia Normale

 - US + MRI

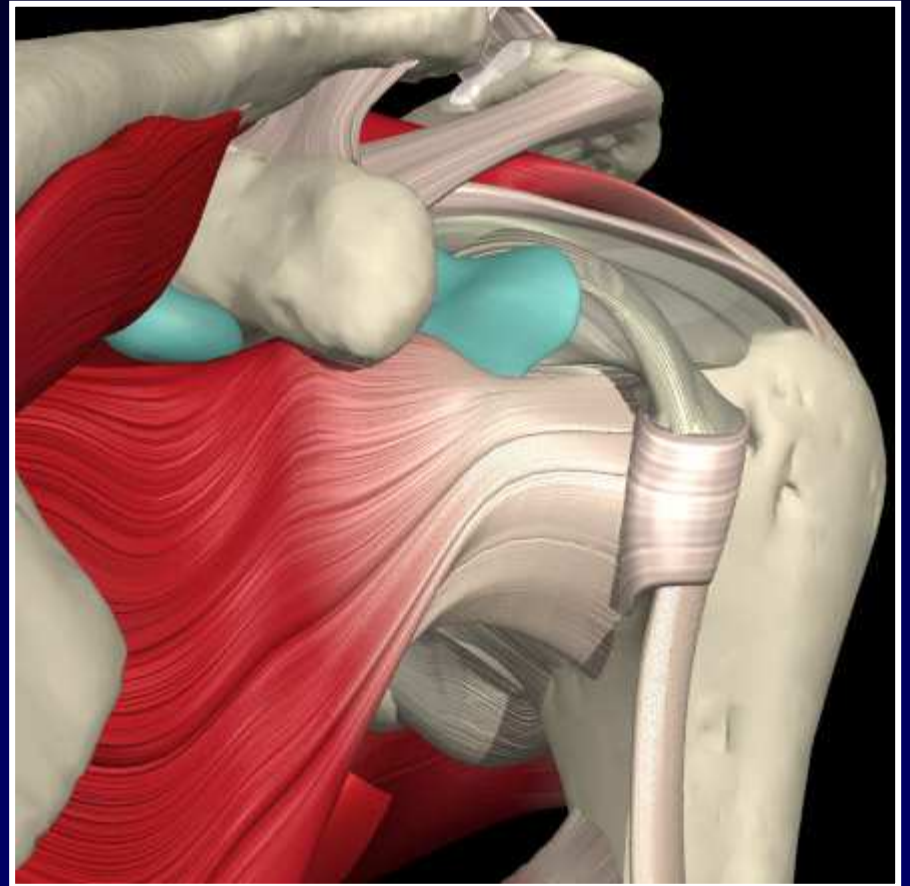
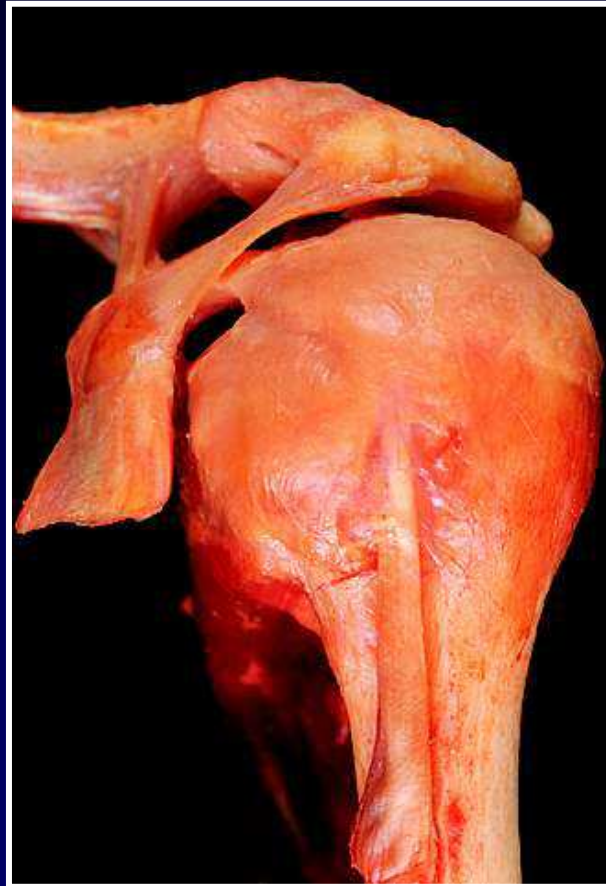
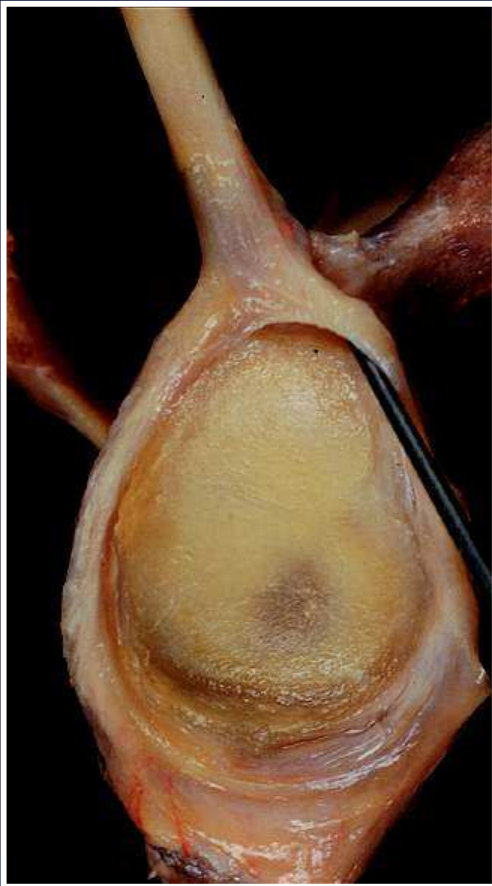
- Impingement

 - Degenerazione tendinea

 - Lesione tendinea

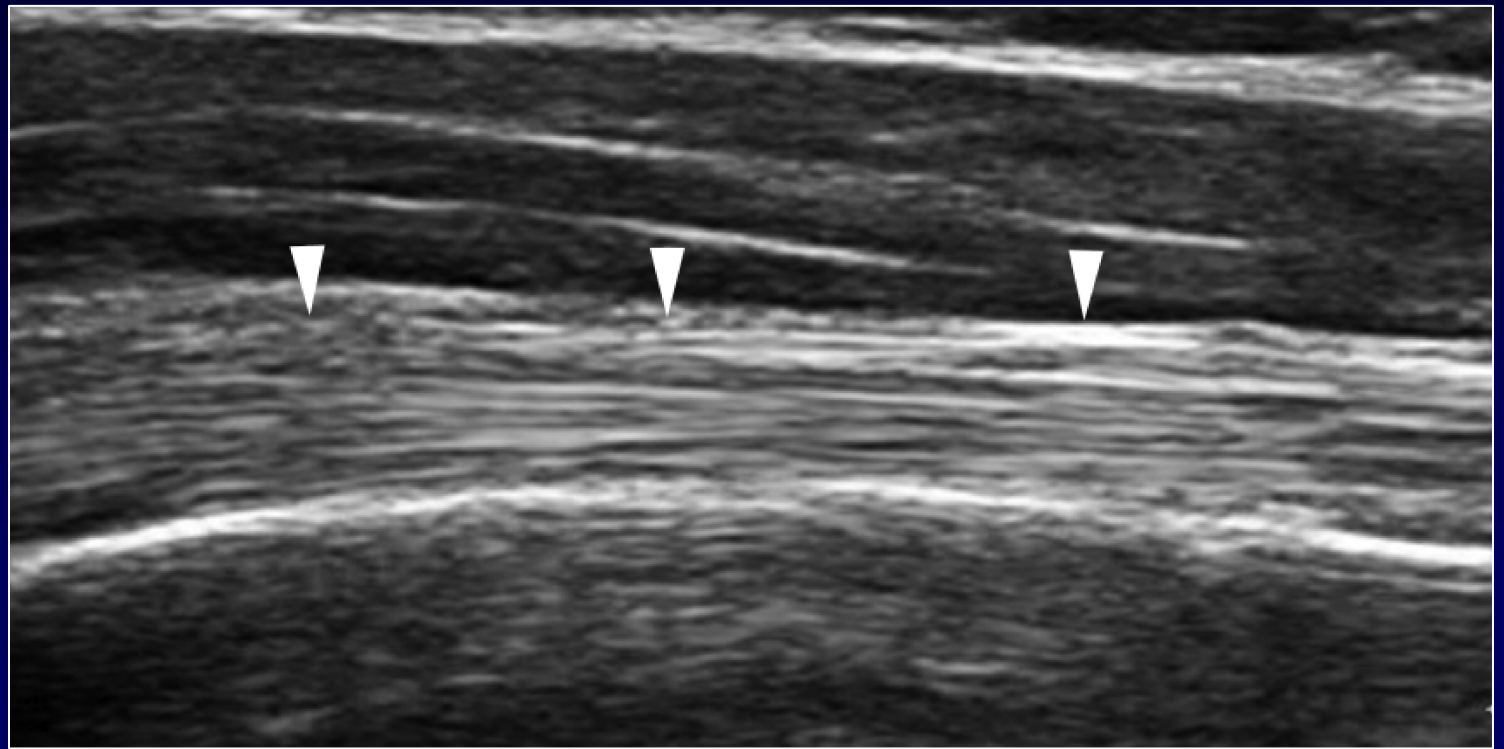
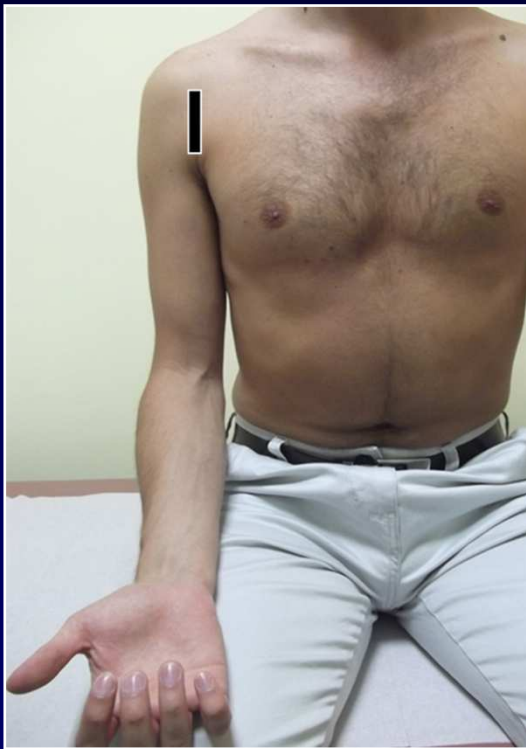
ANATOMIA NORMALE

Tendine del capo lungo del bicipite brachiale



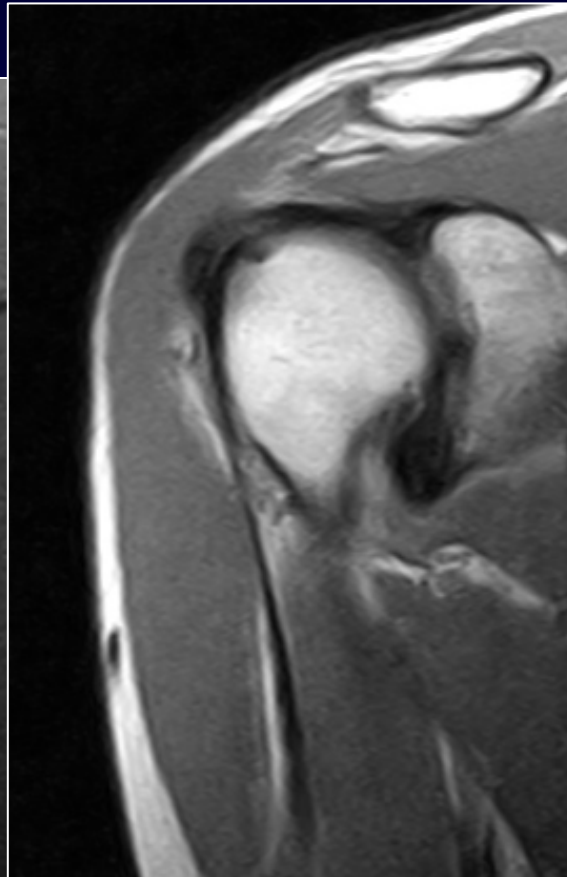
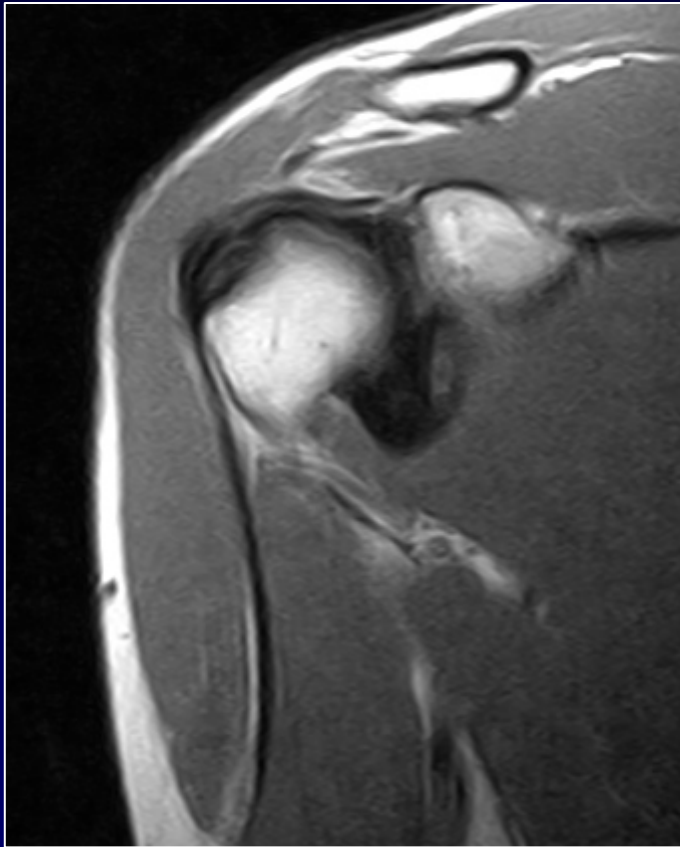
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Tendine del capo lungo del bicipite brachiale



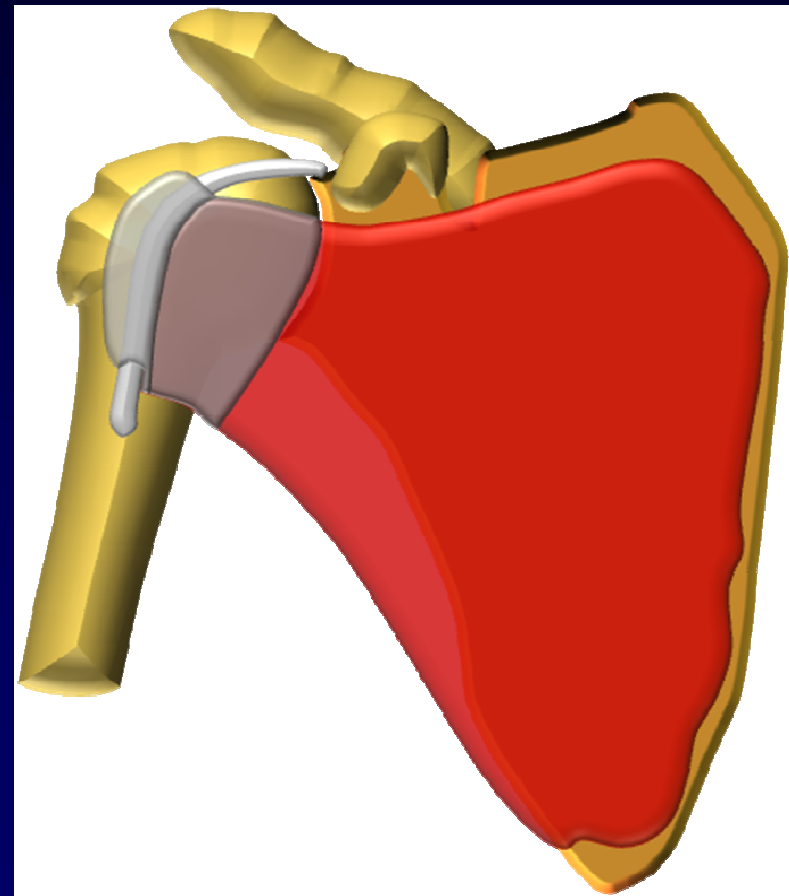
ANATOMIA NORMALE

Tendine del capo lungo del bicipite brachiale



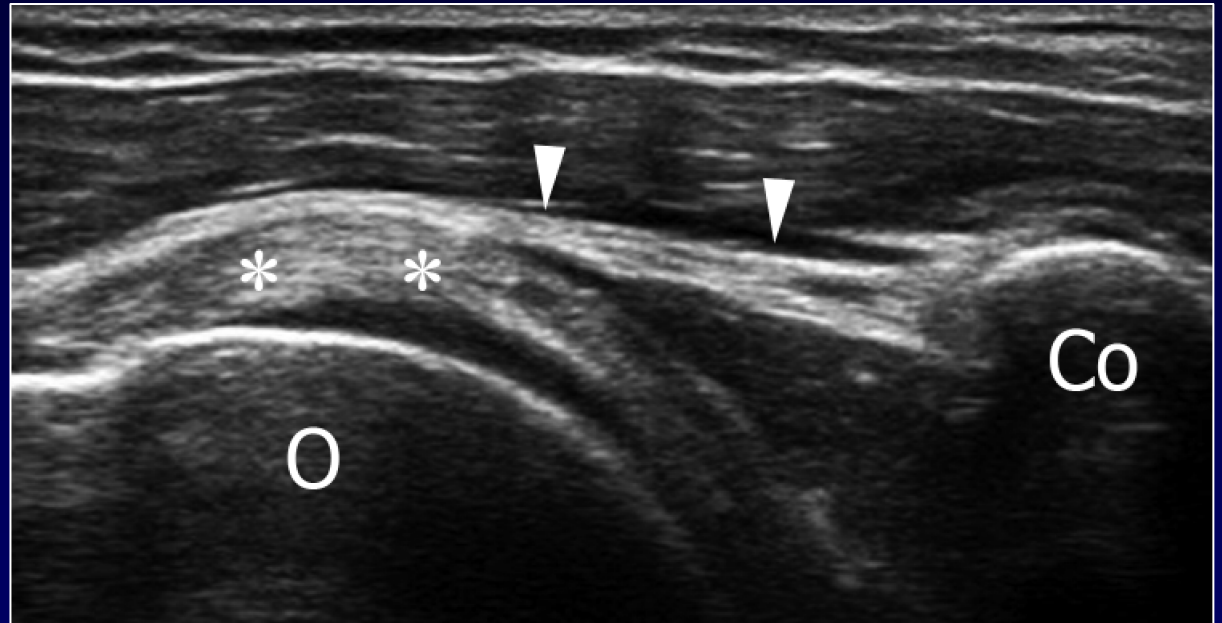
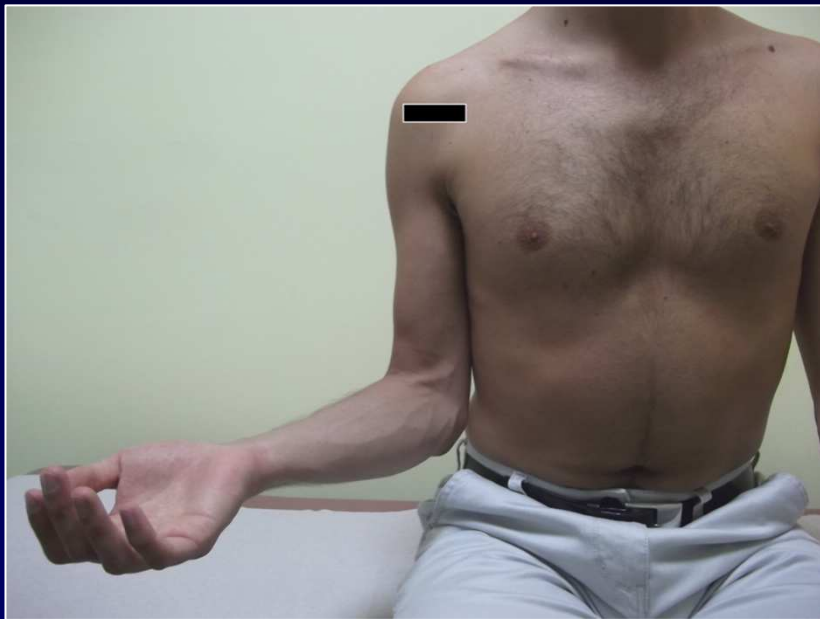
ANATOMIA NORMALE

Tendine sottoscapolare



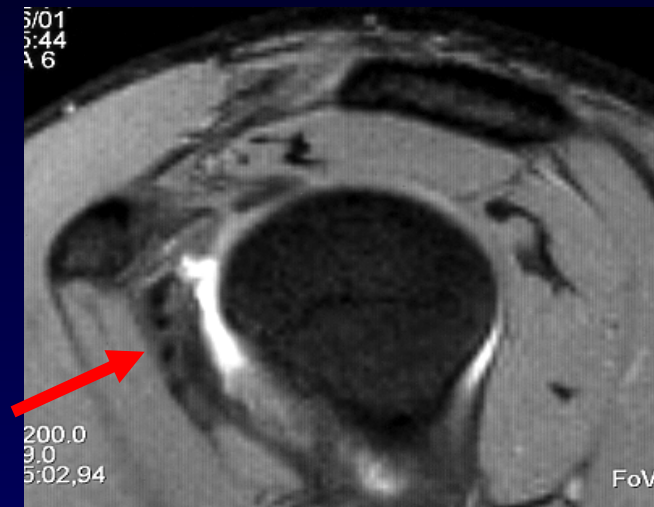
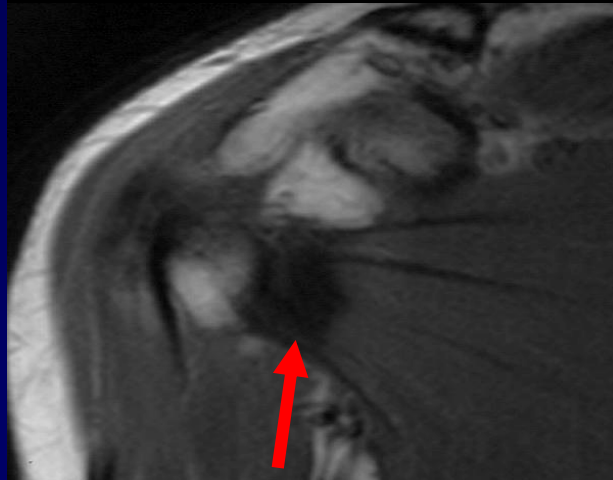
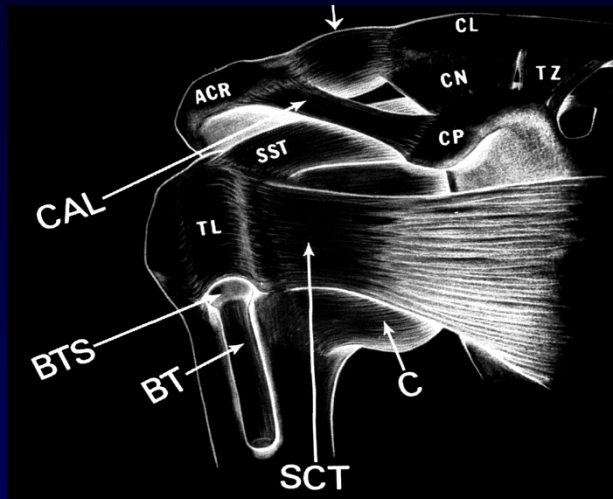
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Tendine sottoscapolare



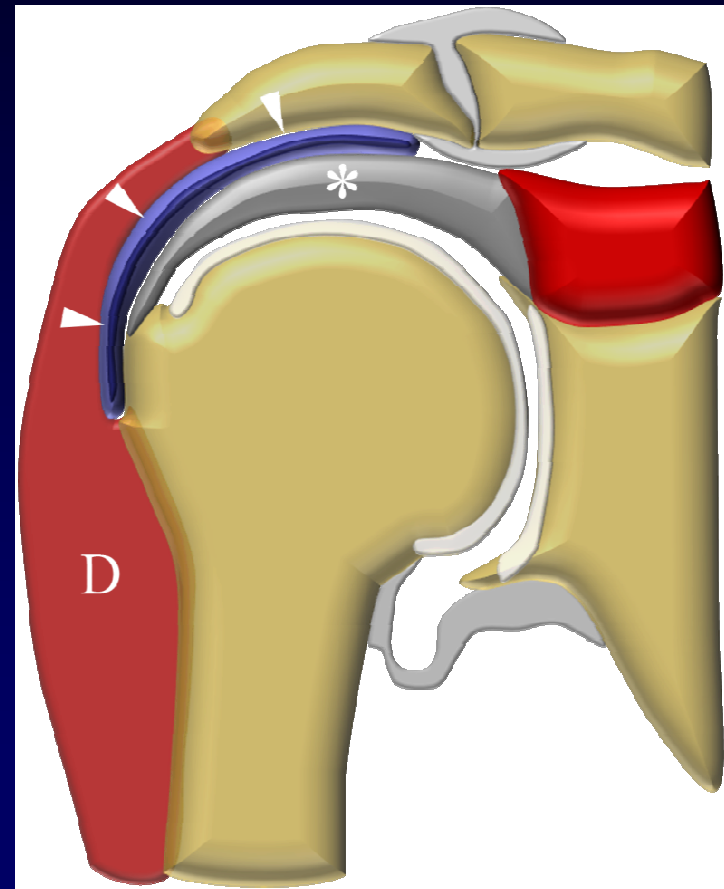
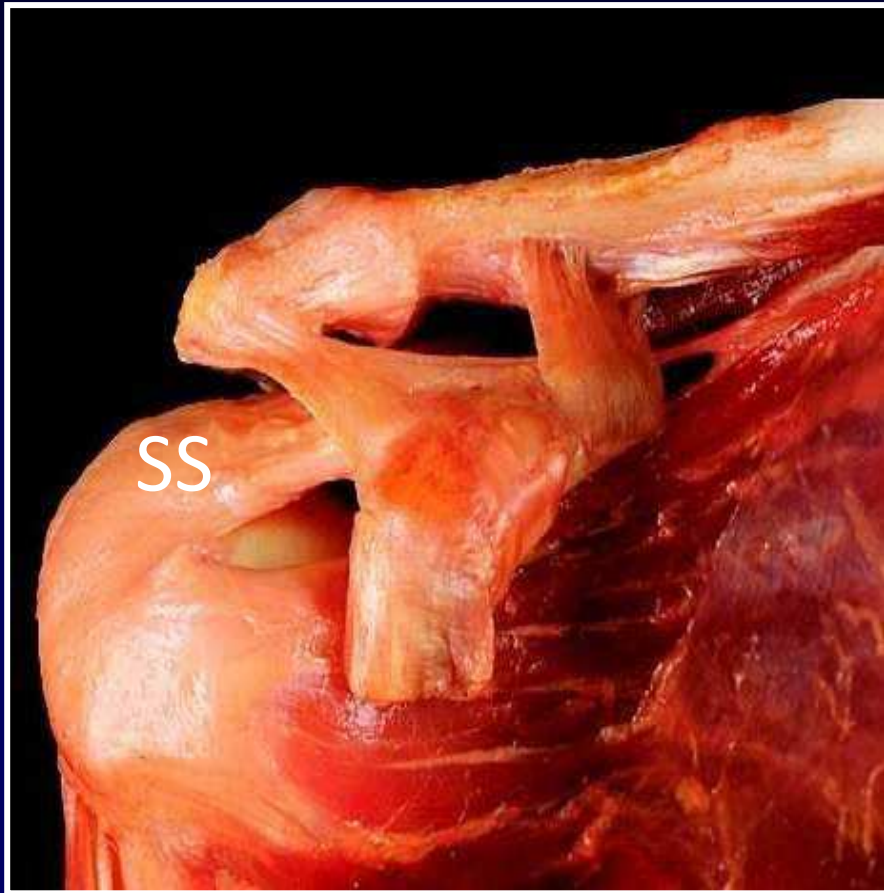
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Tendine sottoscapolare



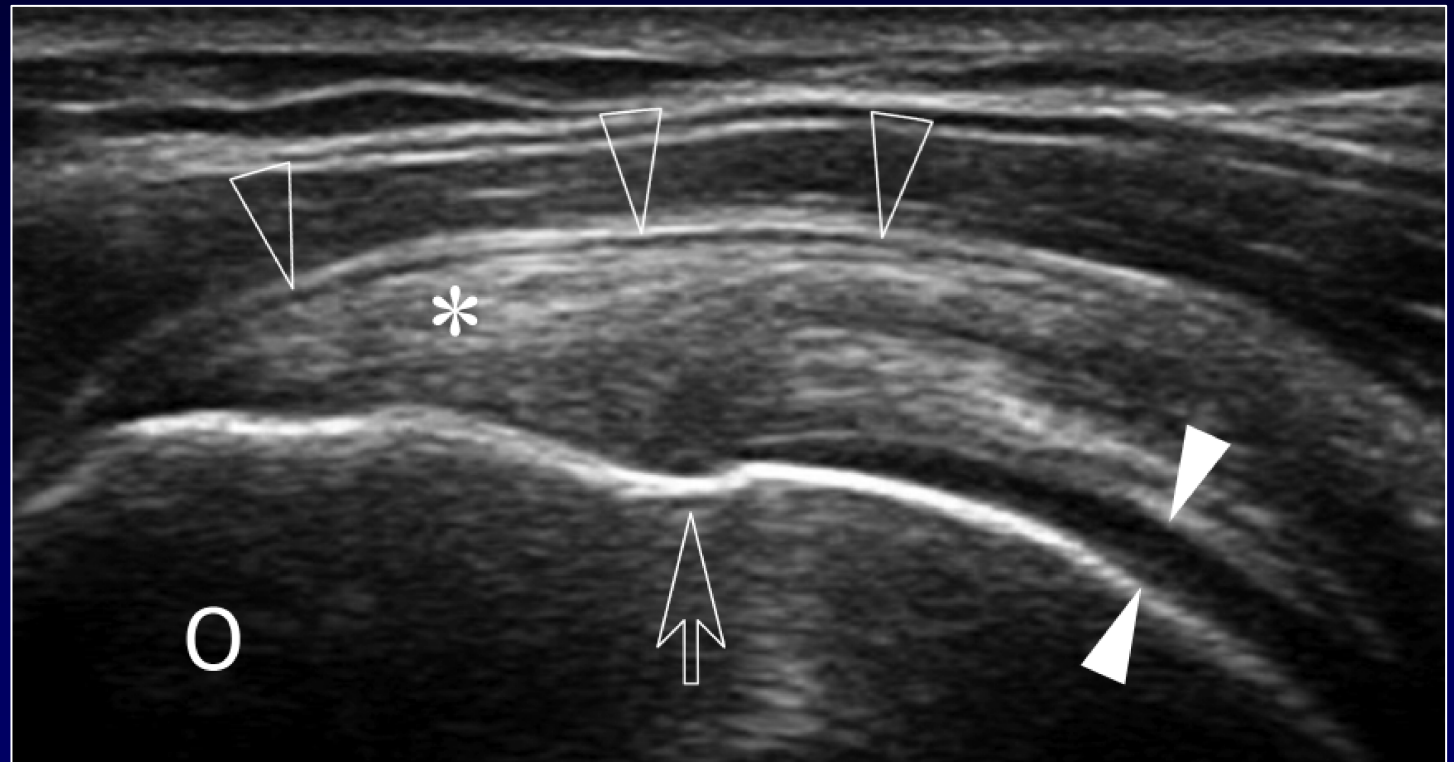
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Tendine sovraspinato



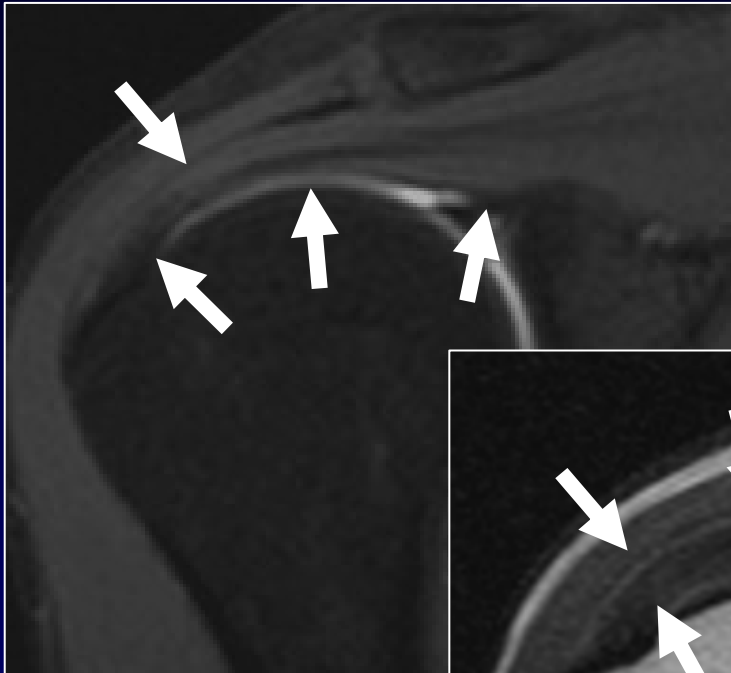
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Tendine sovraspinato



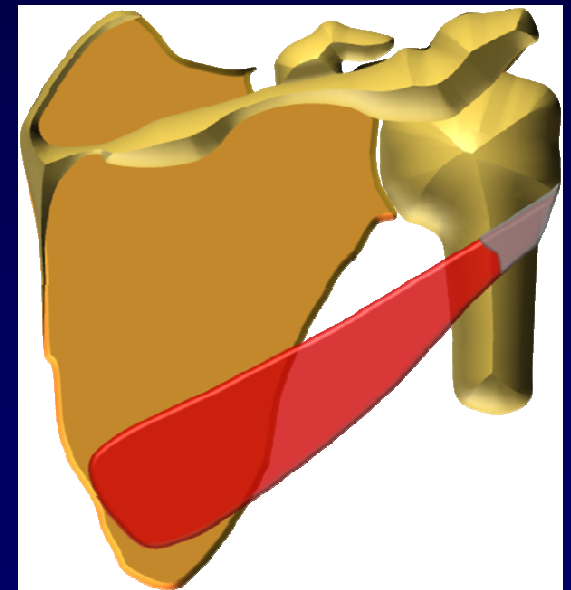
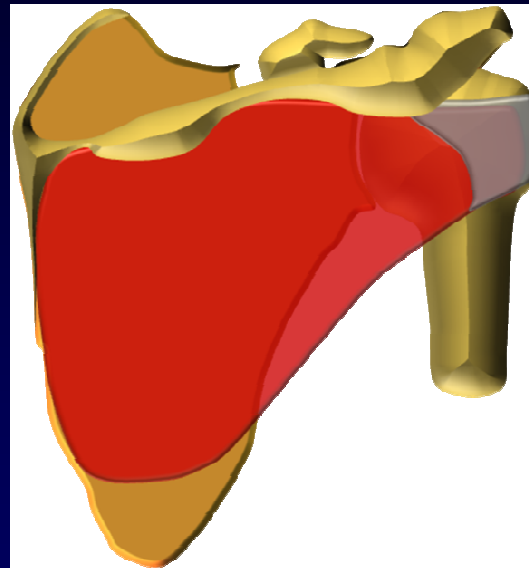
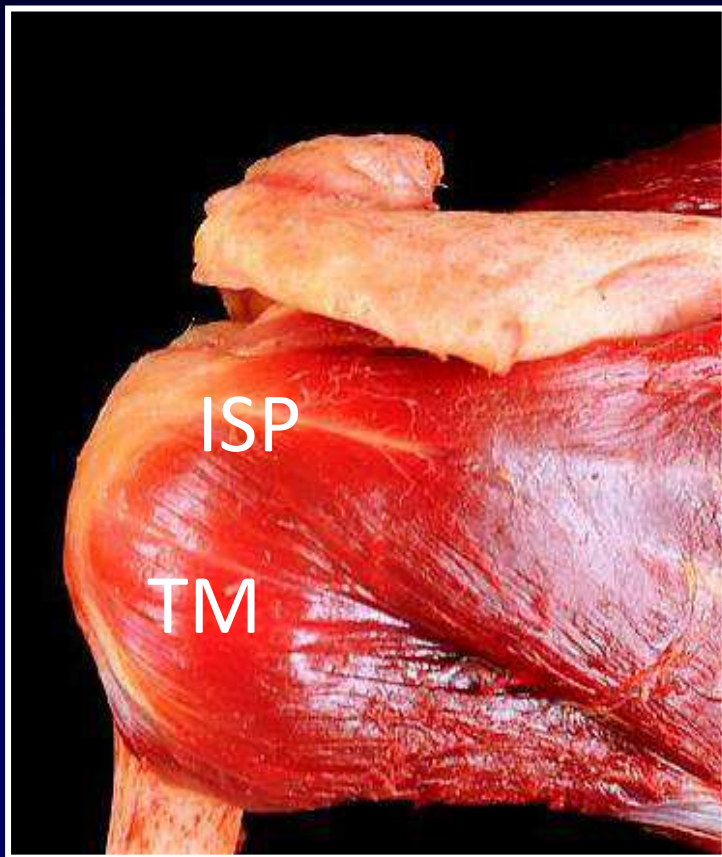
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Tendine sovraspinato



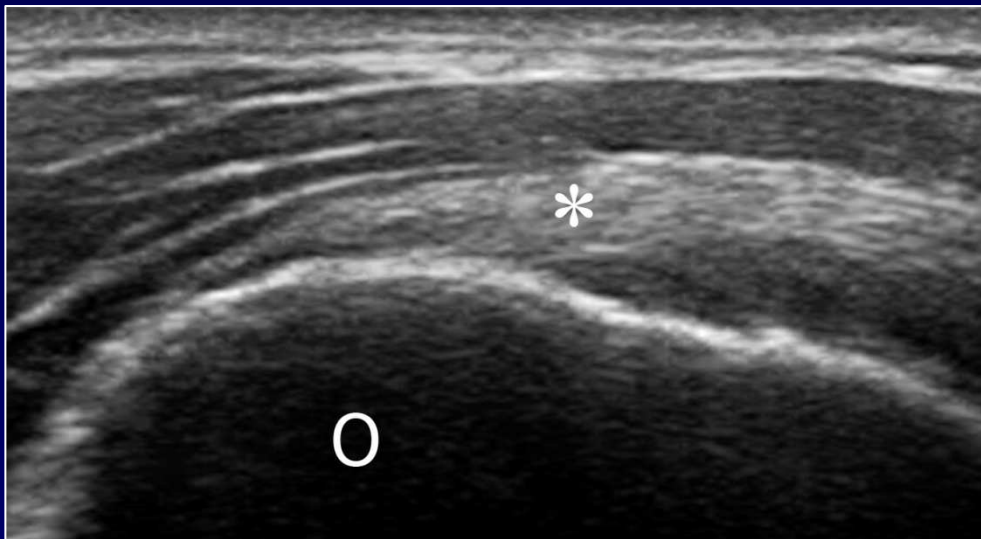
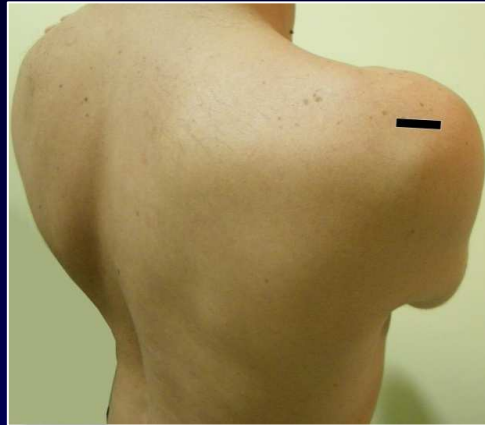
ANATOMIA NORMALE

Tendini extrarotatori



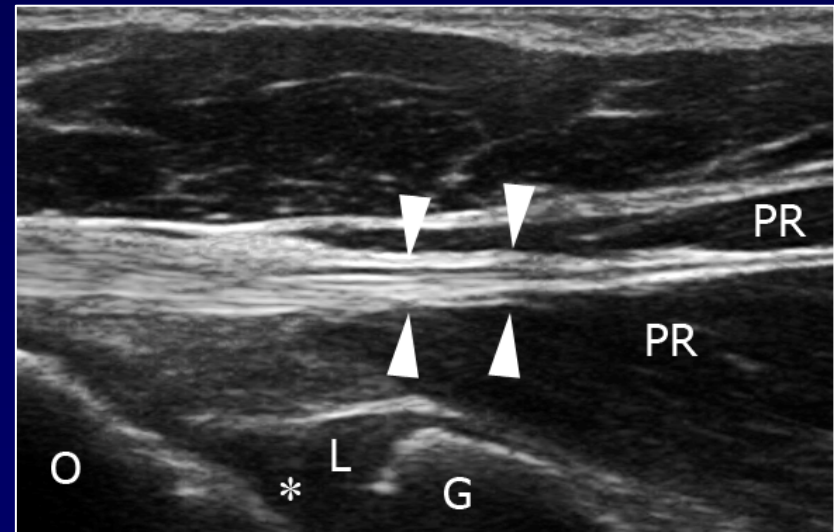
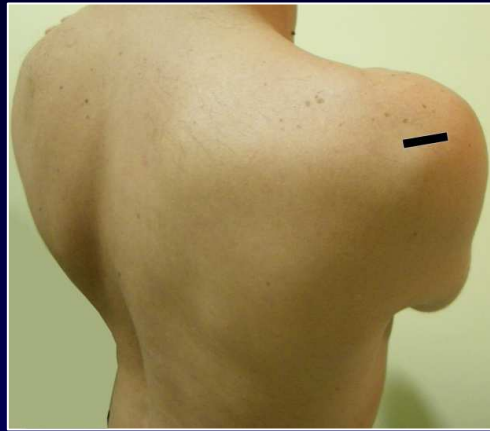
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Tendini extrarotatori



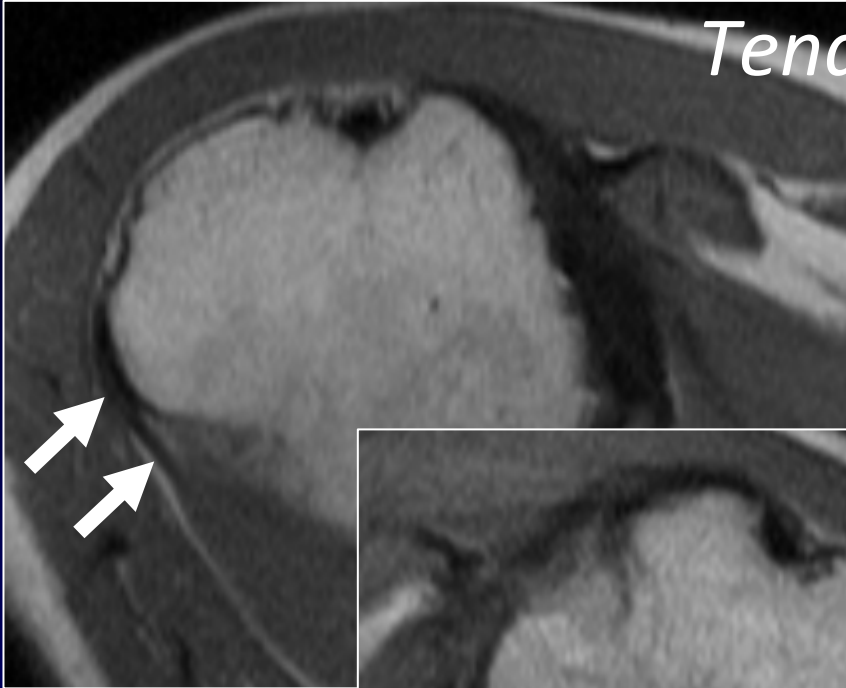
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Tendini extrarotatori



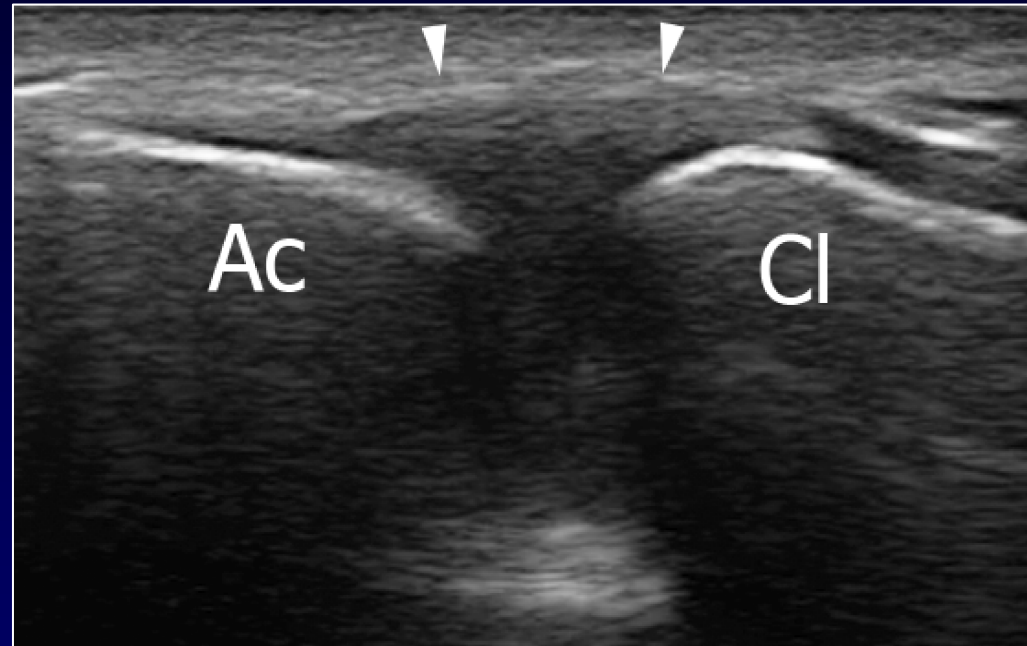
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Tendini extrarotatori



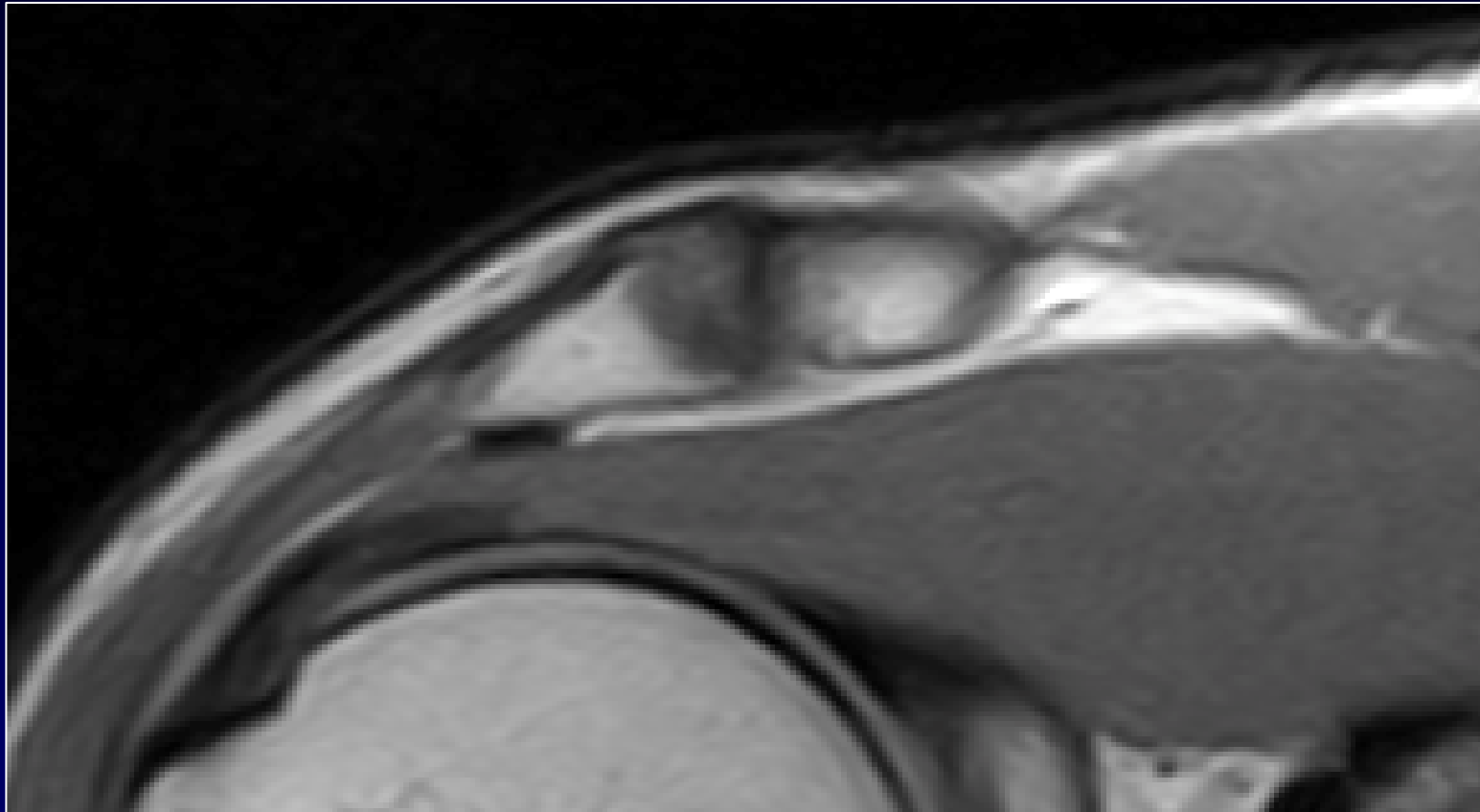
ANATOMIA NORMALE

Articolazione acromion-claveare



ANATOMIA NORMALE

Articolazione acromion-claveare



RM DELLA SPALLA

Valutazione panoramica intra e periarticolare

MR Imaging of Rotator Cuff Injury: What the Clinician Needs to Know
RadioGraphics 2006; 26:1045–1065

- Anomalie scheletriche periarticolari
(arco coraco-acromiale, spazio subcoracoideo)
- Borsa SAD
- Matrice tendinea (tendinosi)
- Caratteristiche e dimensioni della lesione
(parziale, a tutto spessore, completa)
- Retrazione del moncone tendineo
- Trofismo dei ventri muscolari
- Presenza di lesioni associate
(Intervallo, CLB, cercine)



CUFFIA DEI ROTATORI

Cause di lesione

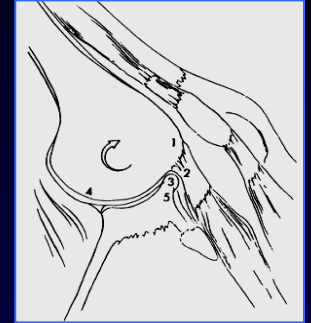
- ✓ Impingement
- ✓ Morfologia dell'arco coraco-acromiale
- ✓ Sovraccarico
- ✓ Anormalità biomeccaniche
- ✓ Vascolarizzazione anomala
- ✓ Degenerazione
- ✓ Trauma
- ✓ Instabilità



SINDROMI DA IMPINGEMENT

Charles S. Neer II, MD - 1972

Anterior acromionplasty for the chronic impingement syndrome in the shoulder
J Bone Joint Surg 1972; 54 A:41-50



“Painful syndrome caused by the compression of supraspinatus tendon, SASD bursa, and biceps tendon in between the humeral head and the acromial arch”

- ✓ Riduzione dello spazio subacromiale
- ✓ Alterazioni CR-> lesione

SINDROMI DA IMPINGEMENT

ESTERNE

- ✓ ANTERO-SUPERIORE
(outlet)
- ✓ ANTERO-MEDIALE
(coraco-omerale)

INTERNE

- ✓ POSTERO-SUPERIORE
- ✓ ANTERO-SUPERIORE
(cercine ant-sup glenoide)

*Gerber-Sebesta 2000
J Shoulder Elbow Surg*

FISIOPATOLOGIA DELL'IMPINGEMENT

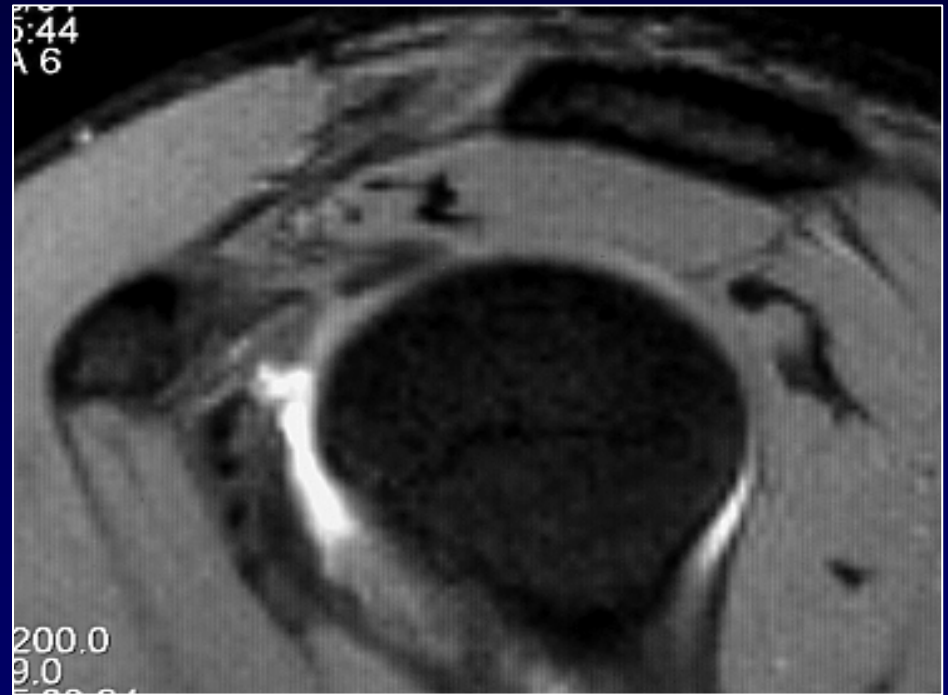
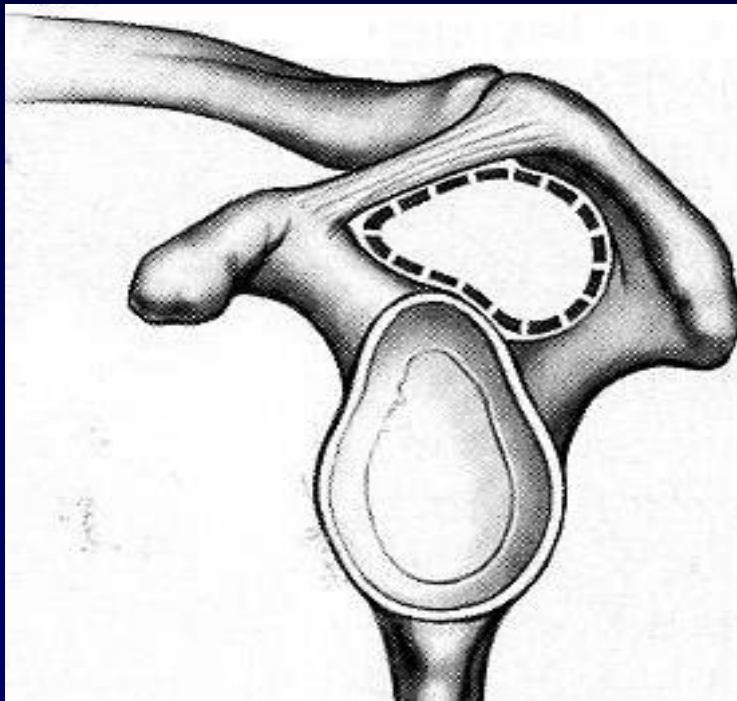
The Circular Crown Theory (Resnick)



IMPINGEMENT ANTERO-SUPERIORE

Outlet impingement

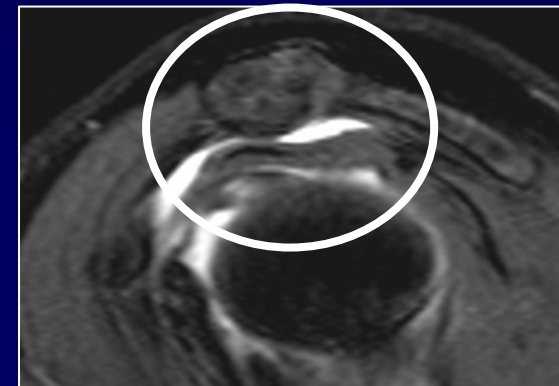
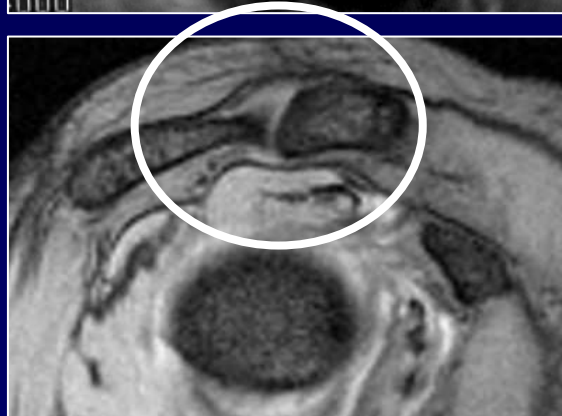
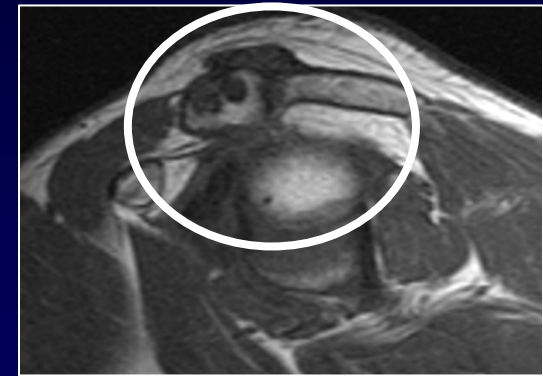
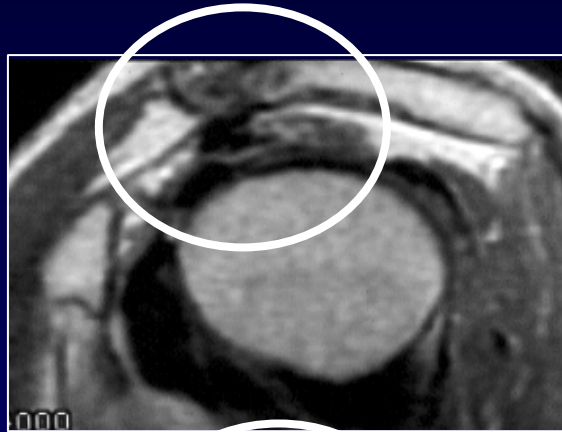
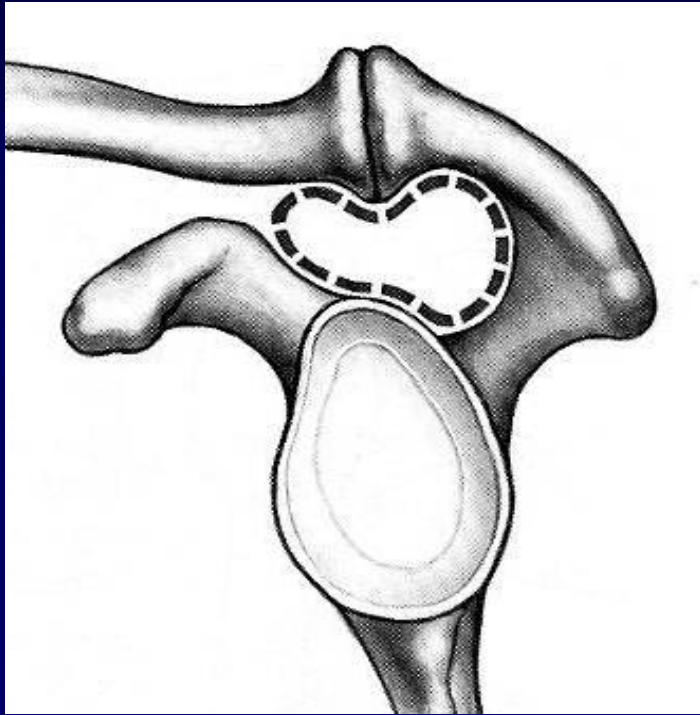
ARCO CORACOACROMIALE



IMPINGEMENT ANTERO-SUPERIORE

Outlet impingement

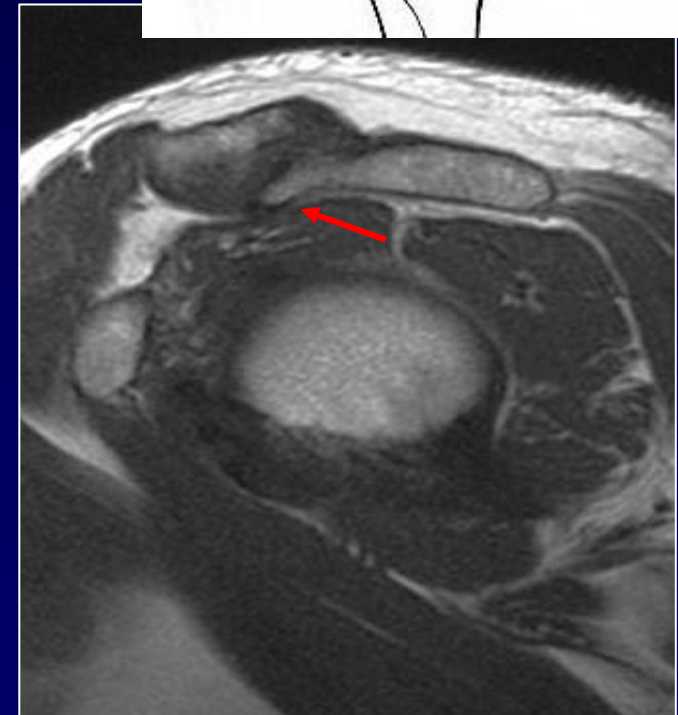
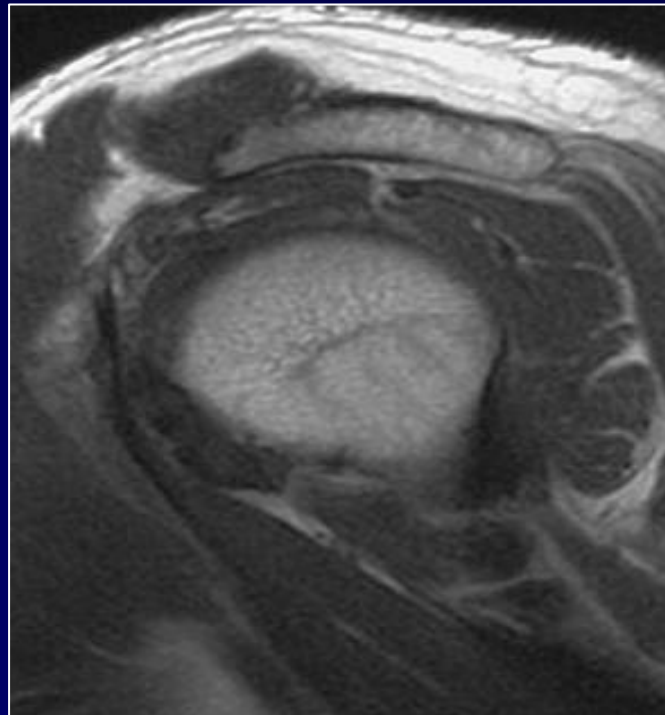
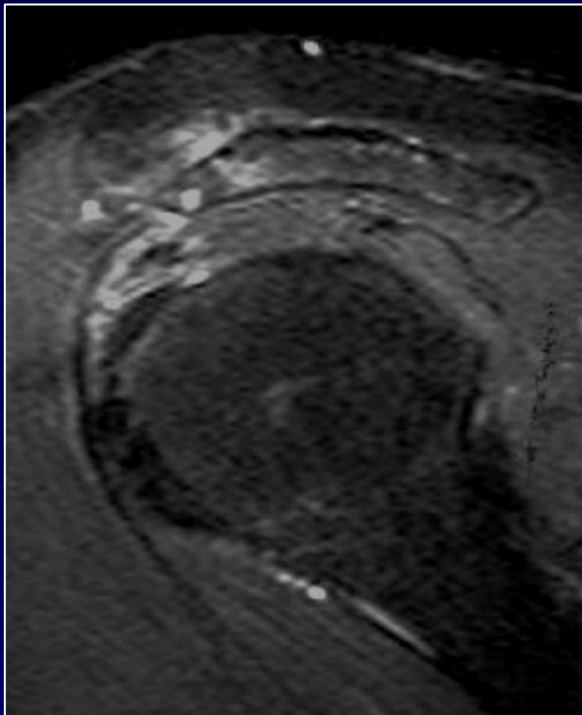
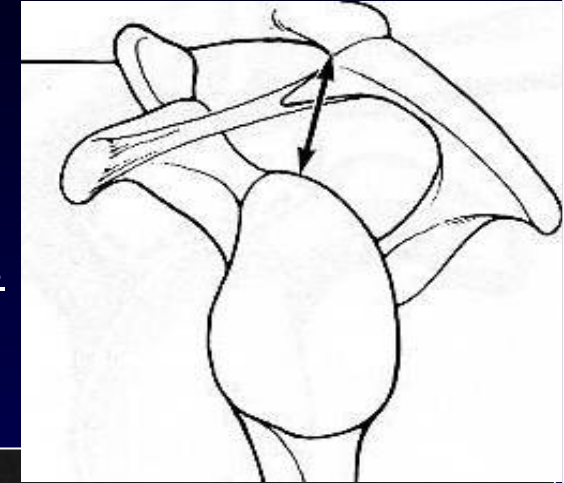
OUTLET DEFORMITY



IMPINGEMENT ANTERO-SUPERIORE

Outlet impingement

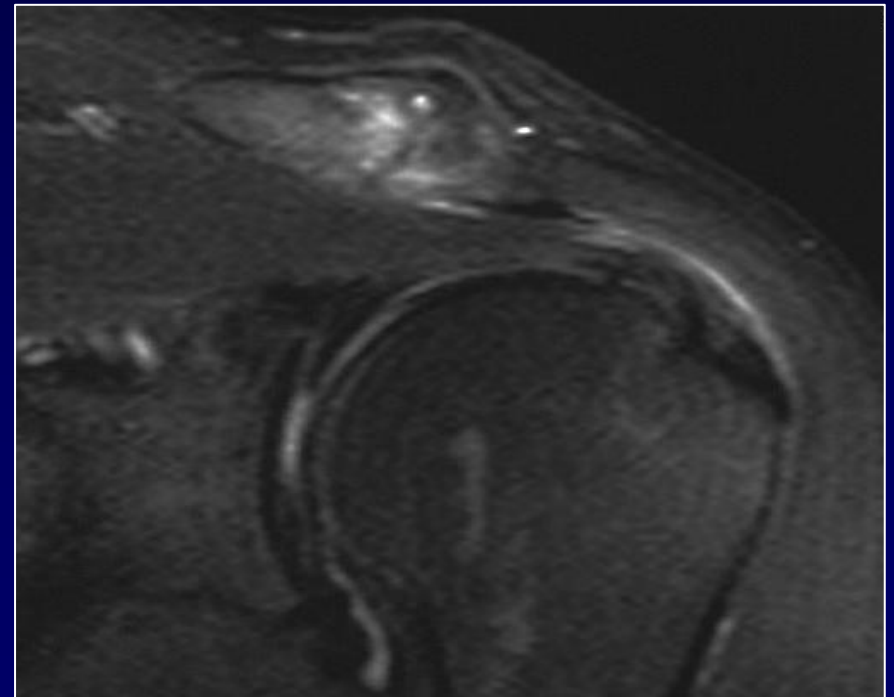
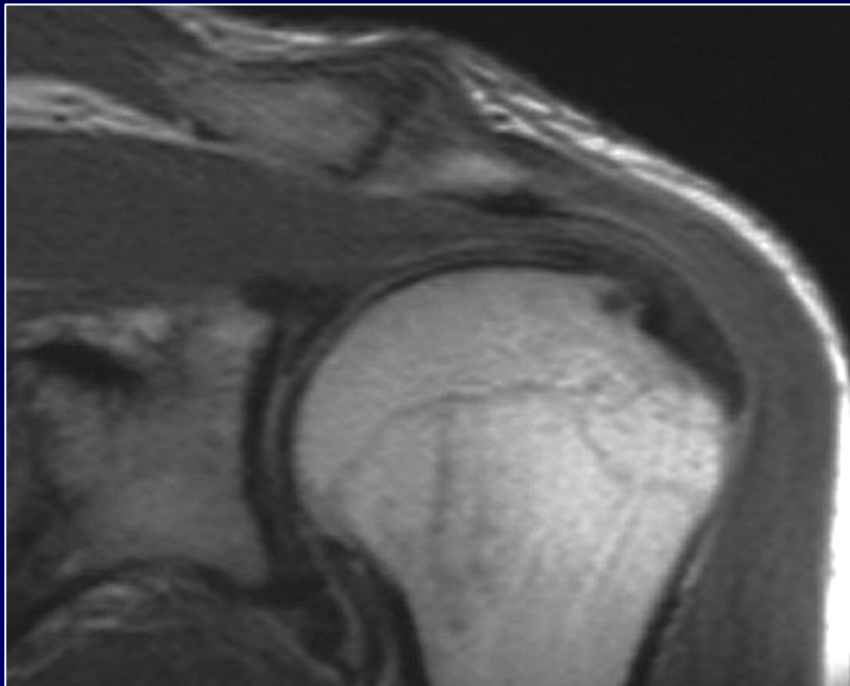
OSTEOFITI DA TRAZIONE
LEGAMENTO CORACO ACROMIALE



IMPINGEMENT ANTERO-SUPERIORE

Outlet impingement

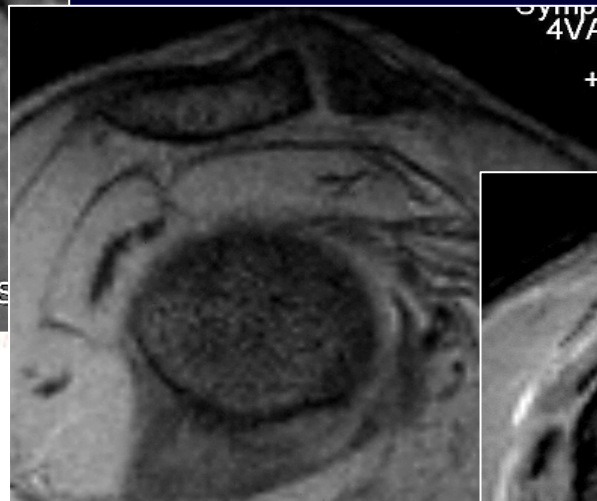
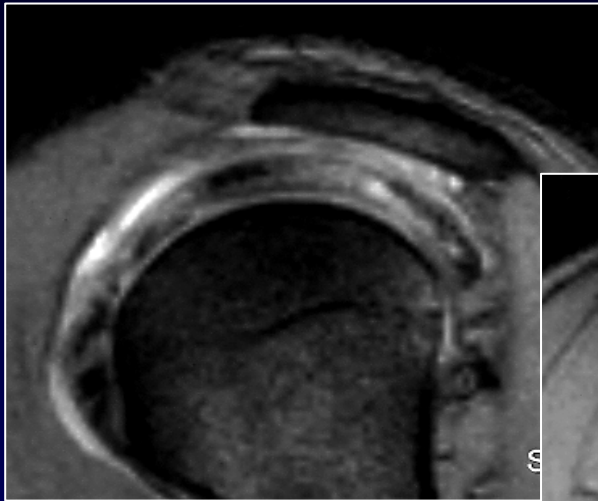
ALTERAZIONI DEGENERATIVE IPERTROFICHE DELL' ACJ



IMPINGEMENT ANTERO-SUPERIORE

Outlet impingement

MORFOLOGIA ACROMION

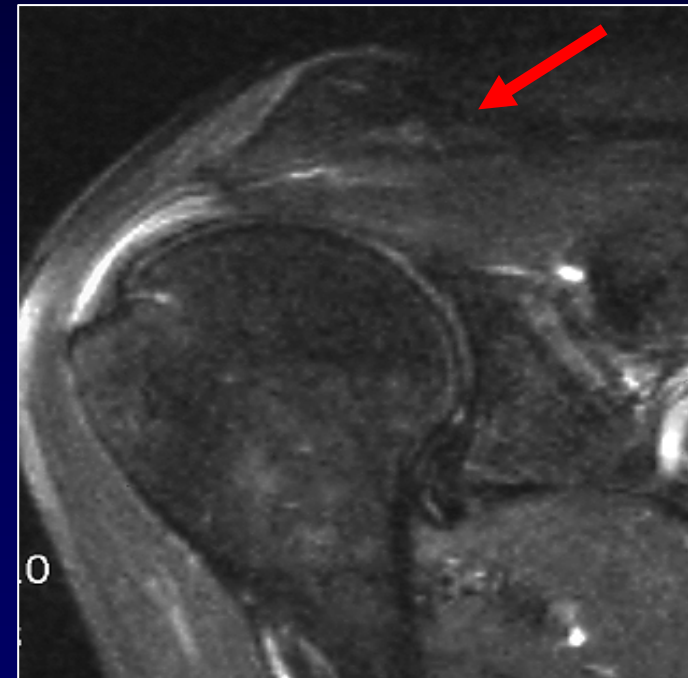
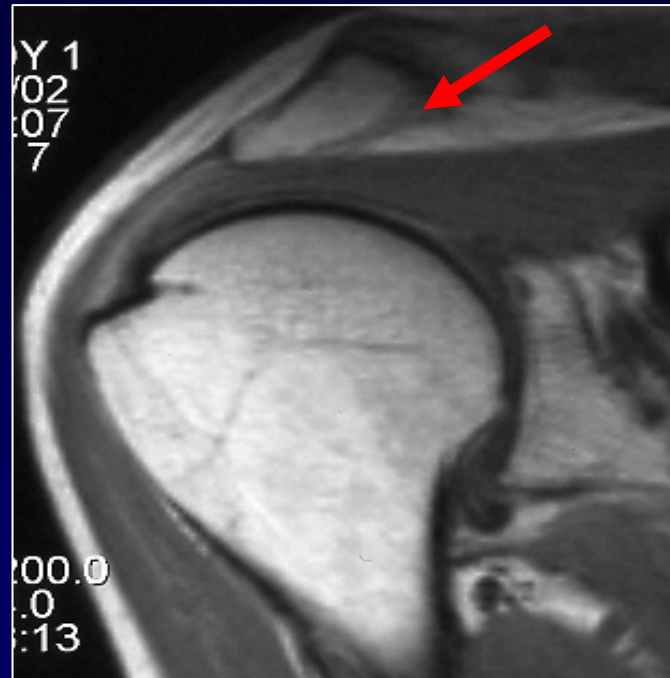
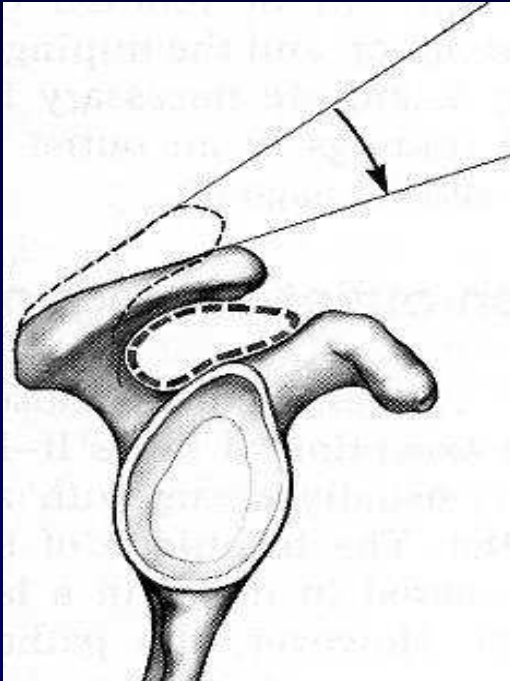


Bigliani classification, 1986

IMPINGEMENT ANTERO-SUPERIORE

Outlet impingement

PENDENZA ACROMIALE >40°

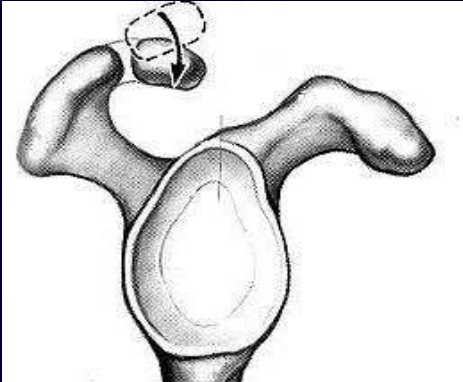


Correlation of acromial morphology with impingement syndrome and rotator cuff tears.

Balke M1 et al. Acta Orthop. 2013

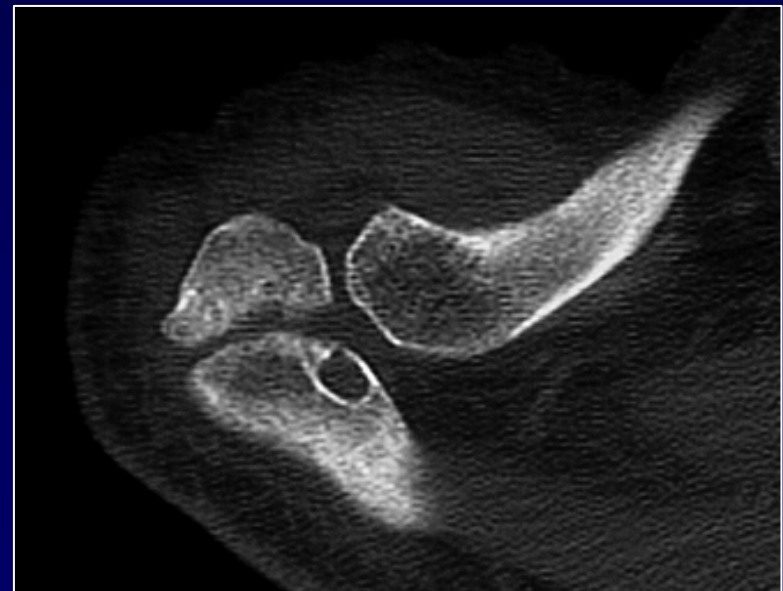
IMPINGEMENT ANTERO-SUPERIORE

Outlet impingement



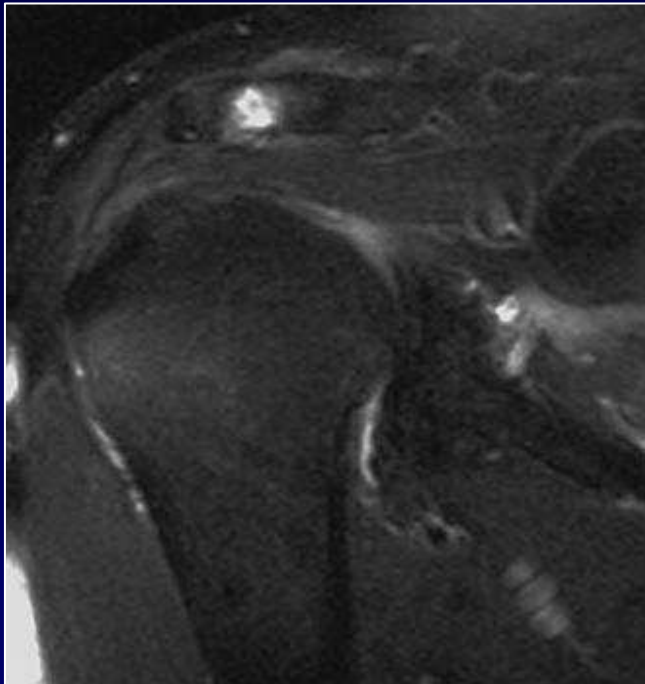
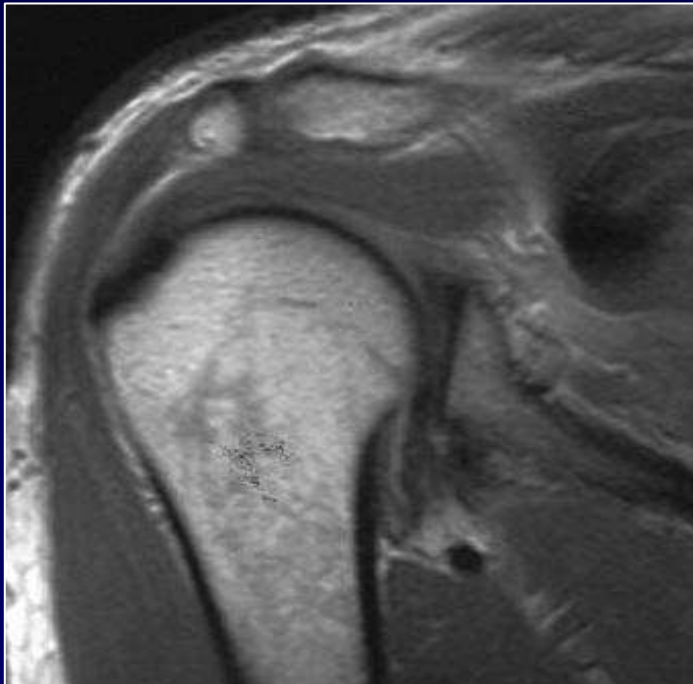
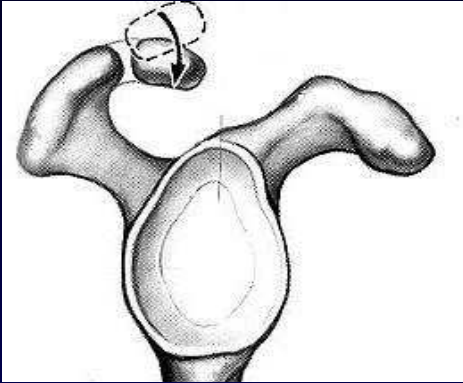
OS ACROMIALE

- Nucleo di ossificazione non fuso
- Ipermobilità o frammento instabile



IMPINGEMENT ANTERO-SUPERIORE

Outlet impingement

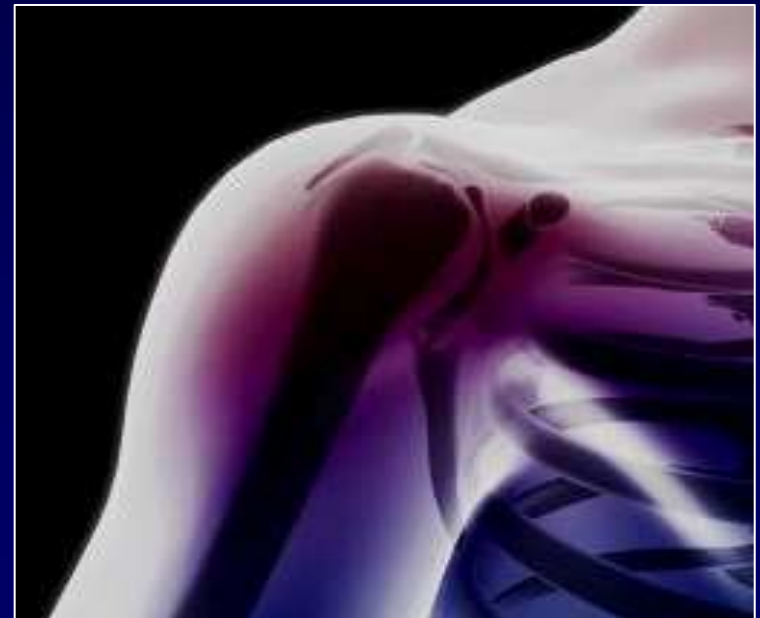


IMPINGEMENT ANTERO-SUPERIORE

Outlet impingement

THREE STAGES OF IMPINGEMENT (*NEER*)

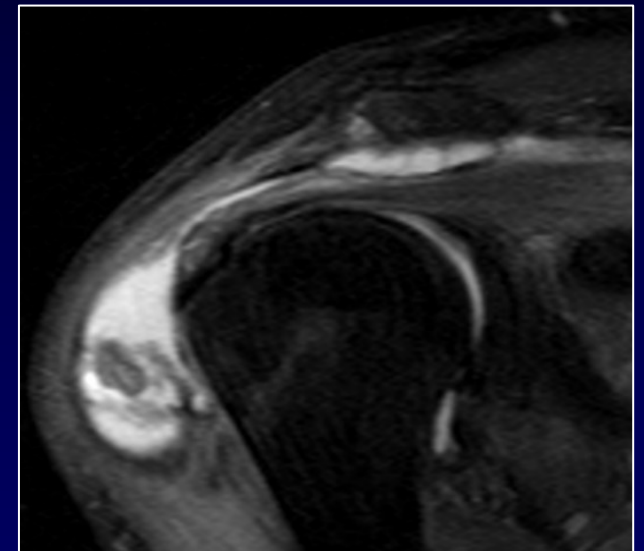
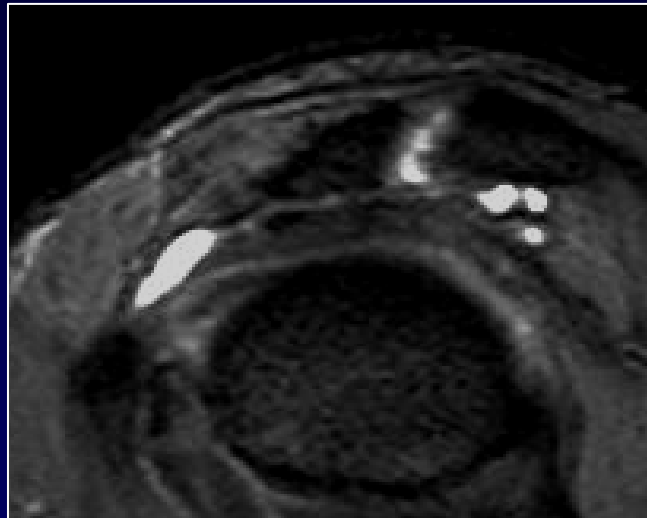
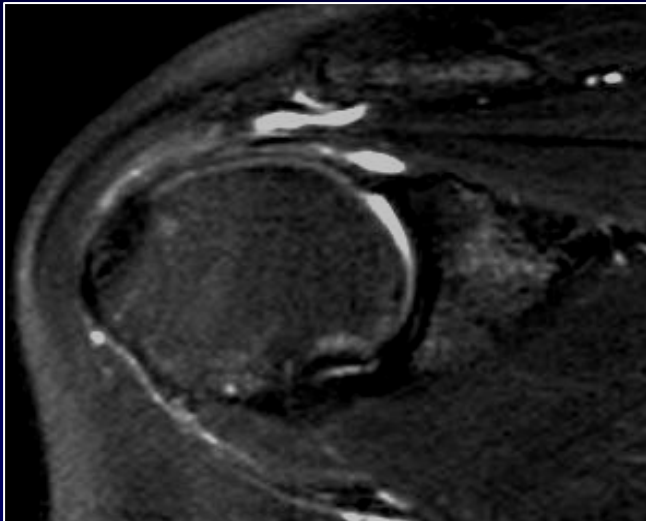
1. EDEMA AND HEMORRAGE
2. FIBROSIS AND TENDINITIS
3. DEGENERATION AND TEAR



ANTERIOR SUPERIOR IMPINGEMENT

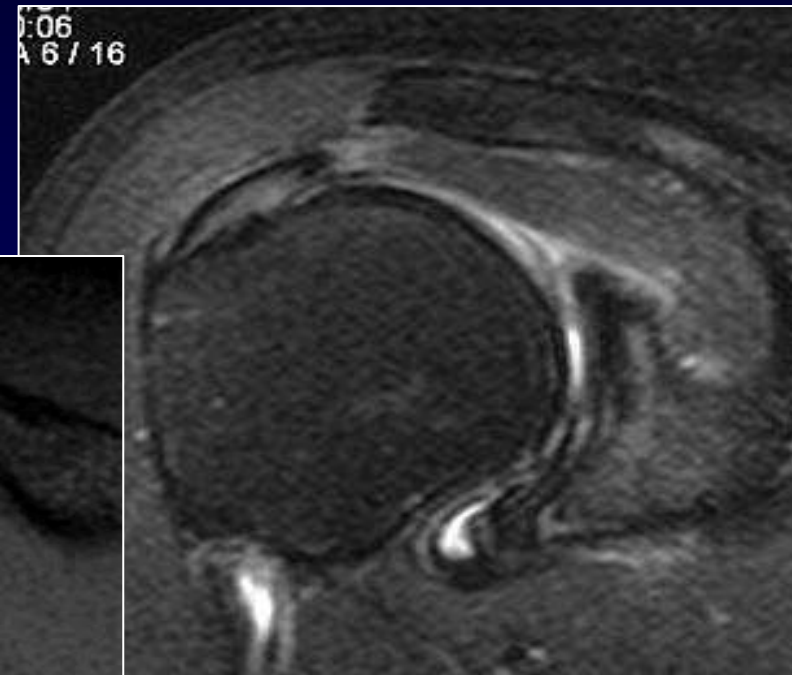
Outlet impingement

BORSITE SASD



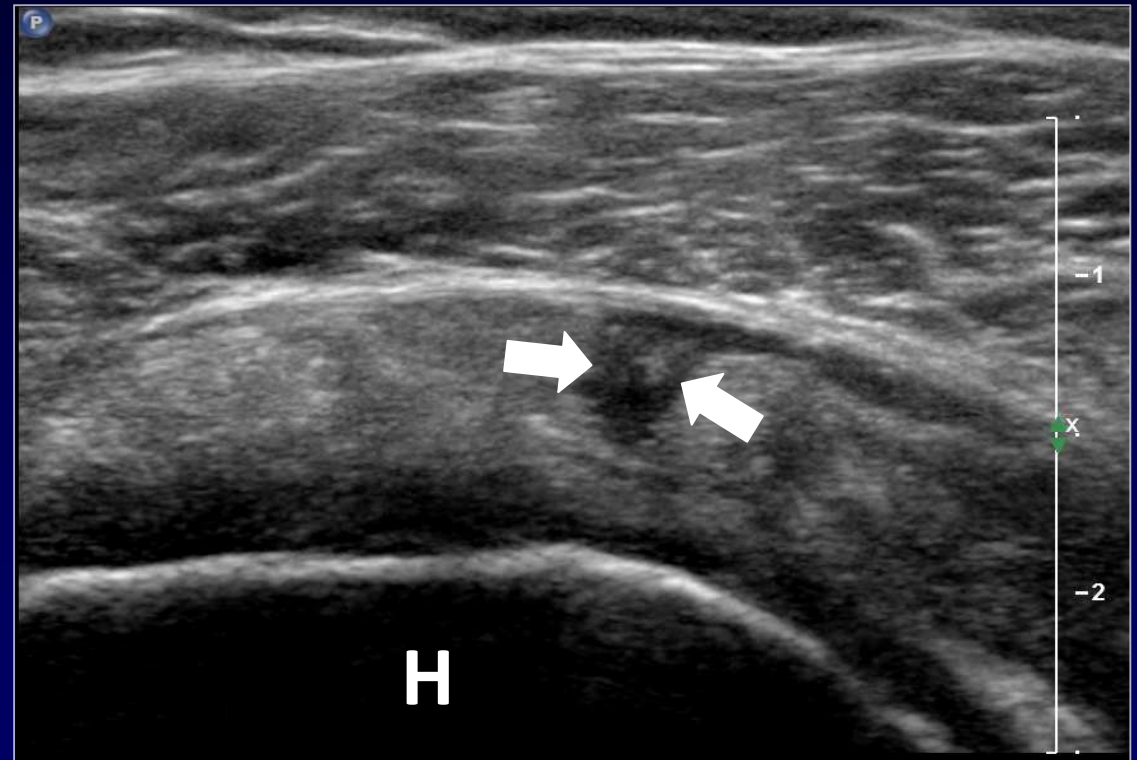
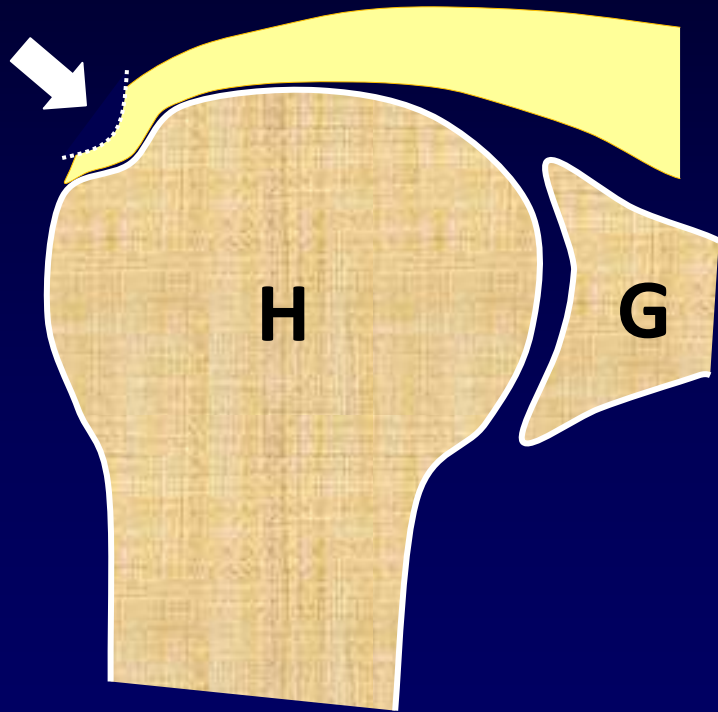
ANTERIOR SUPERIOR IMPINGEMENT

Alterazioni fibrotiche



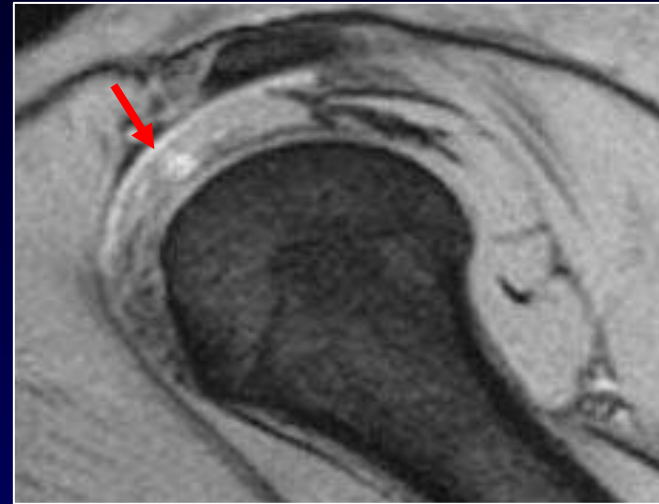
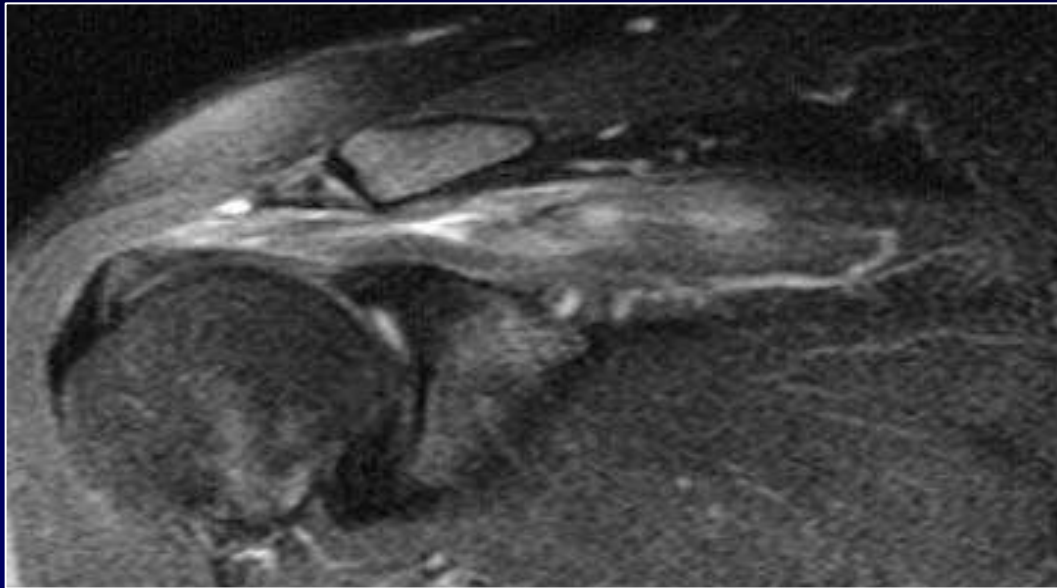
Lesione parziale del versante bursale

Tendine sovraspinato



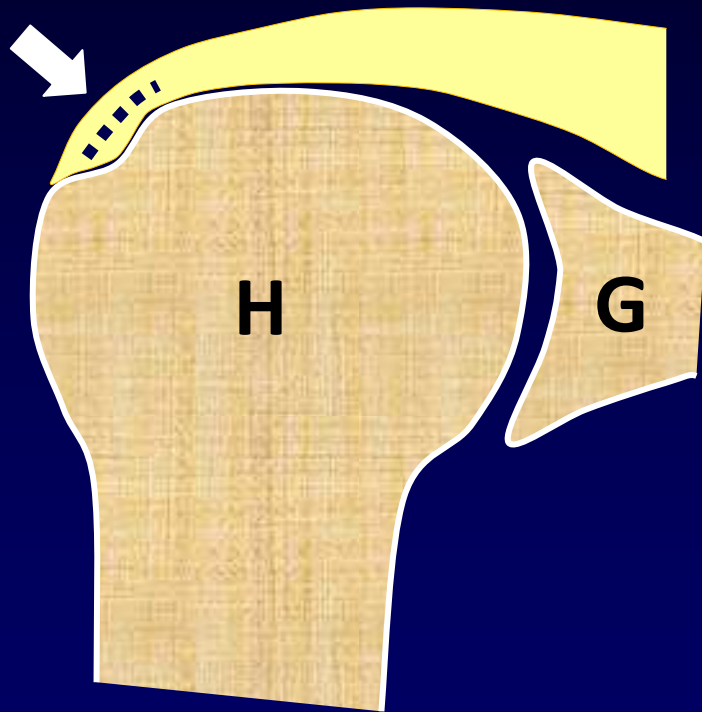
Lesione parziale del versante bursale

Tendine sovraspinato



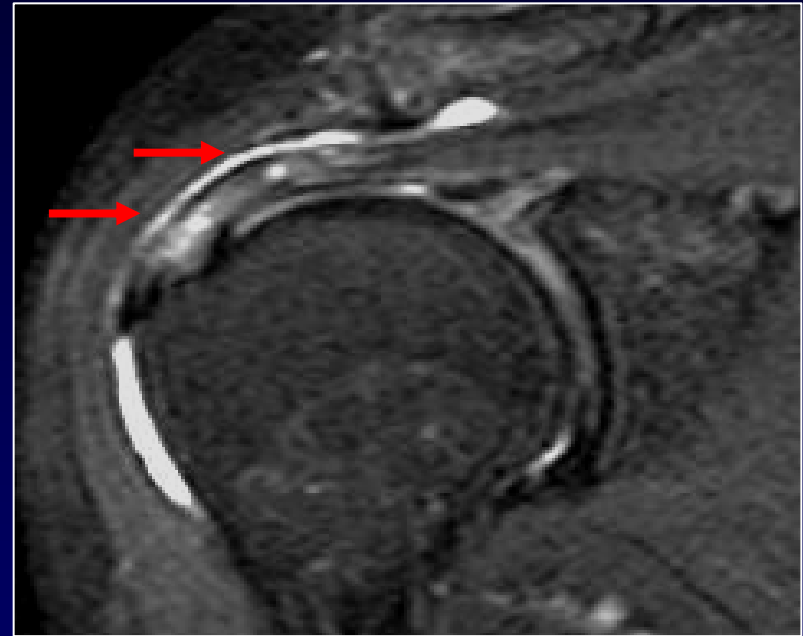
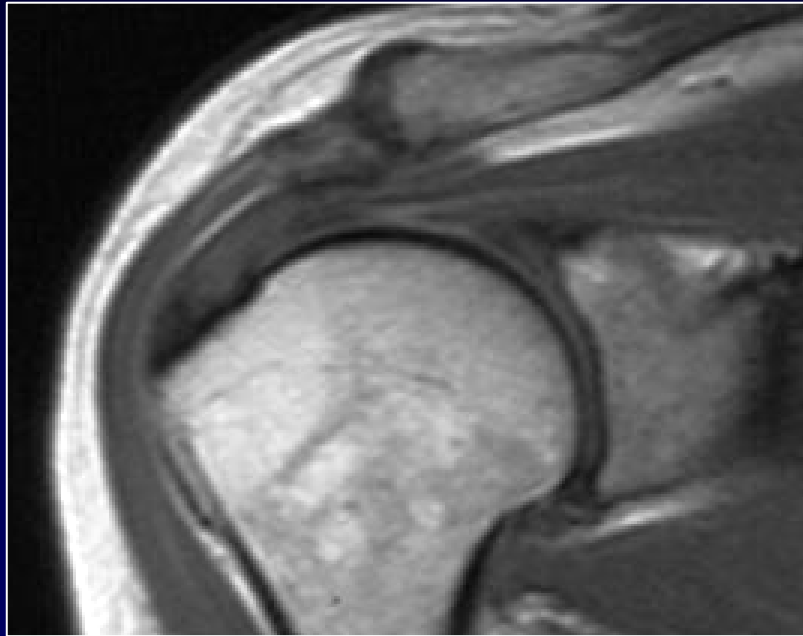
Lesione interstiziale

Tendine sovraspinato



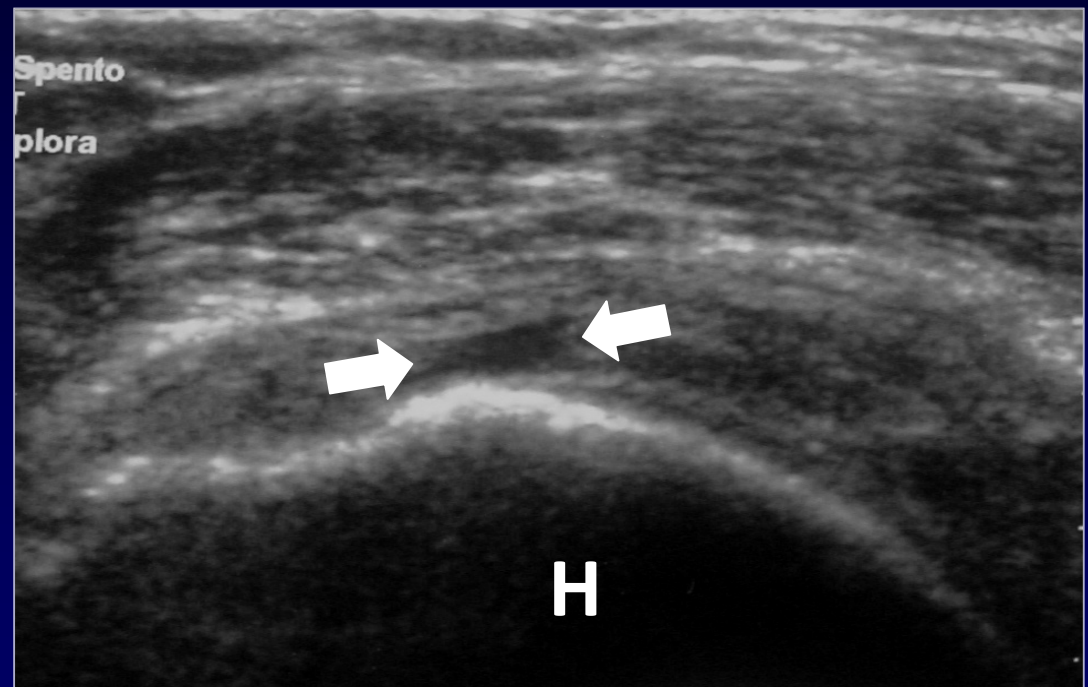
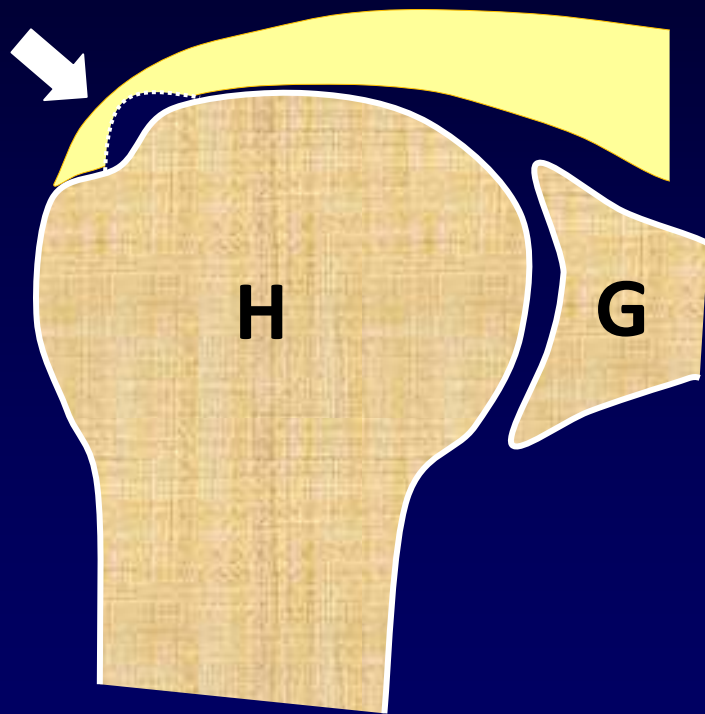
Lesione interstiziale

Tendine sovraspinato



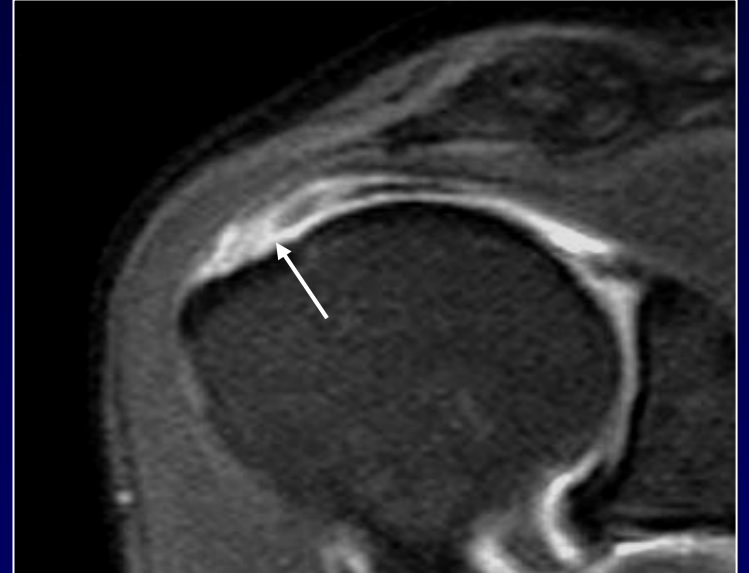
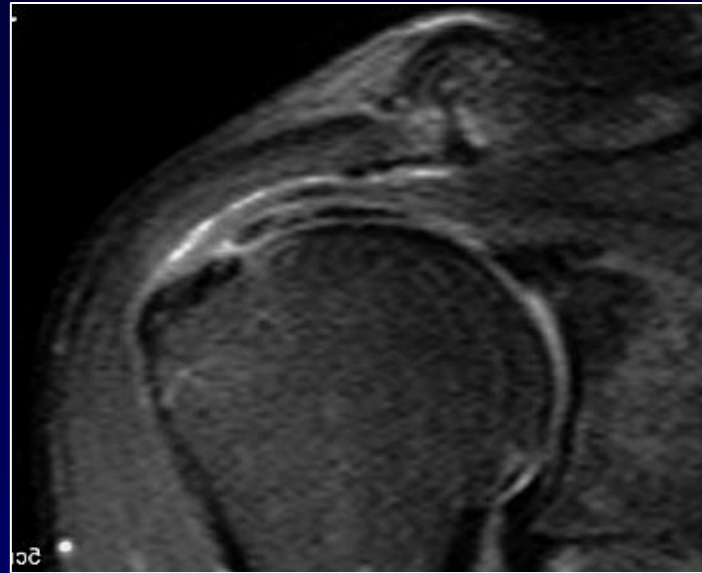
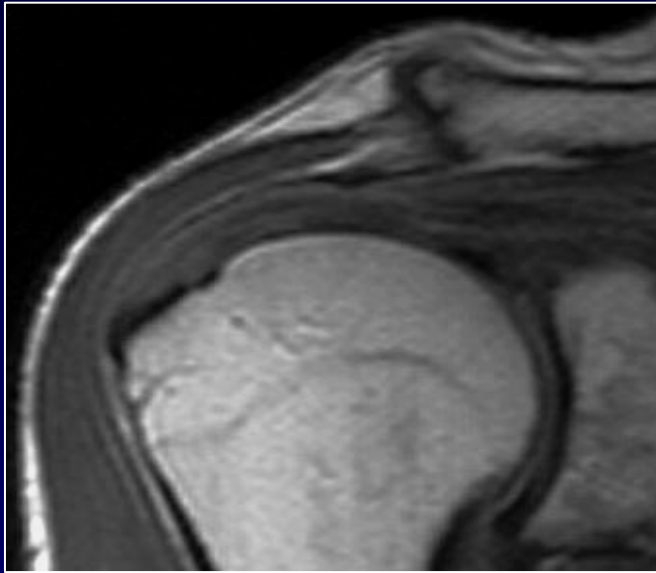
Lesione parziale del versante articolare

Tendine sovraspinato



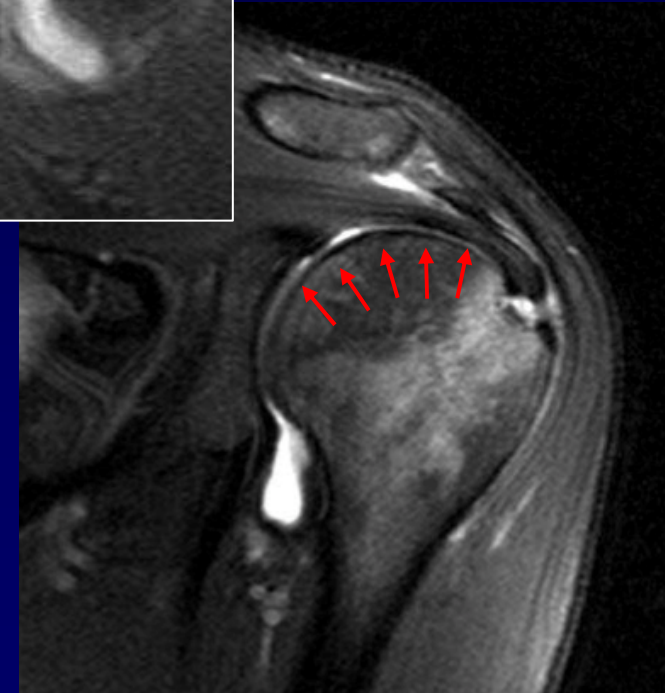
Lesione parziale del versante articolare

Tendine sovraspinato

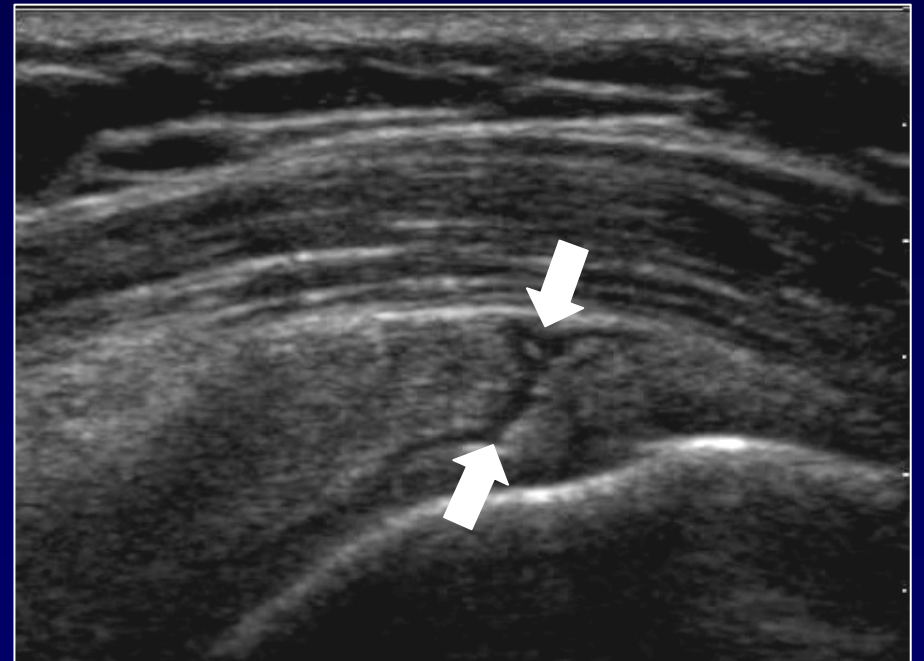
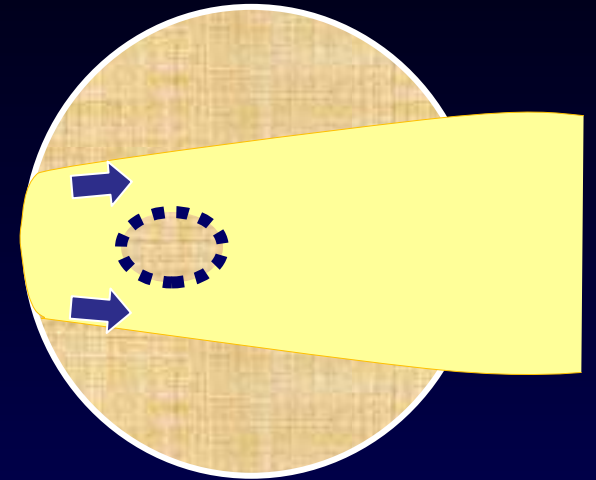
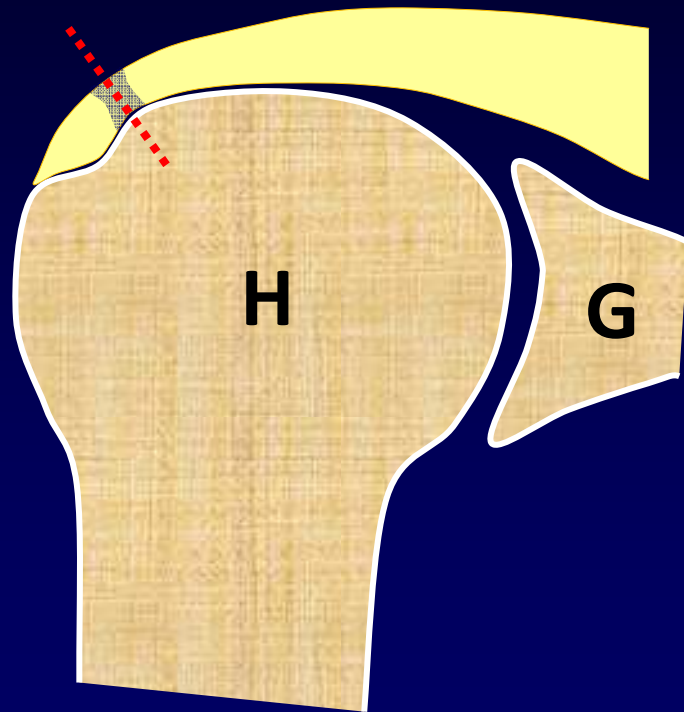


Lesione parziale del versante articolare

Tendine sovraspinato

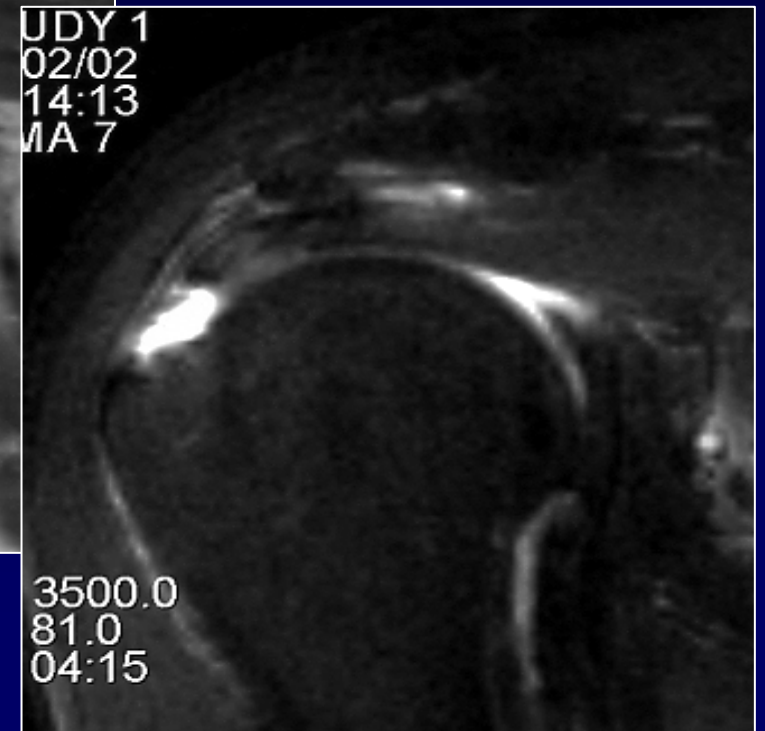
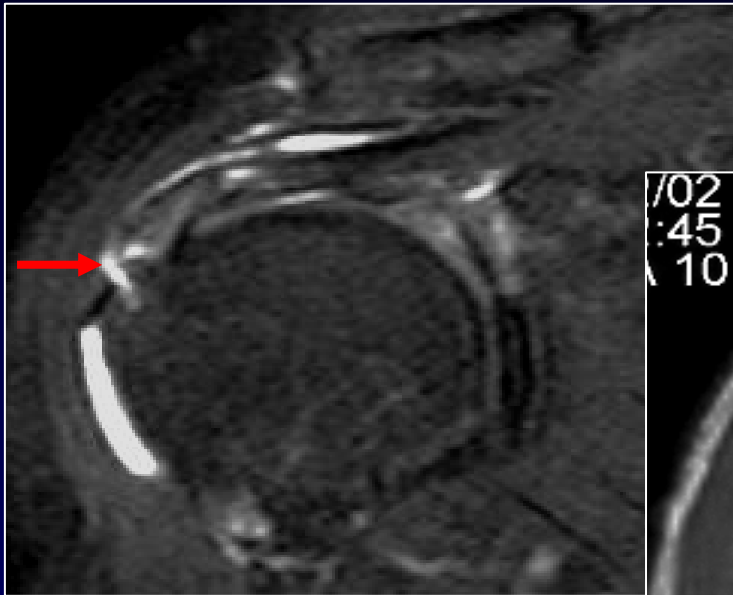


Lesione a tutto spessore *Tendine sovraspinato*



Lesione a tutto spessore

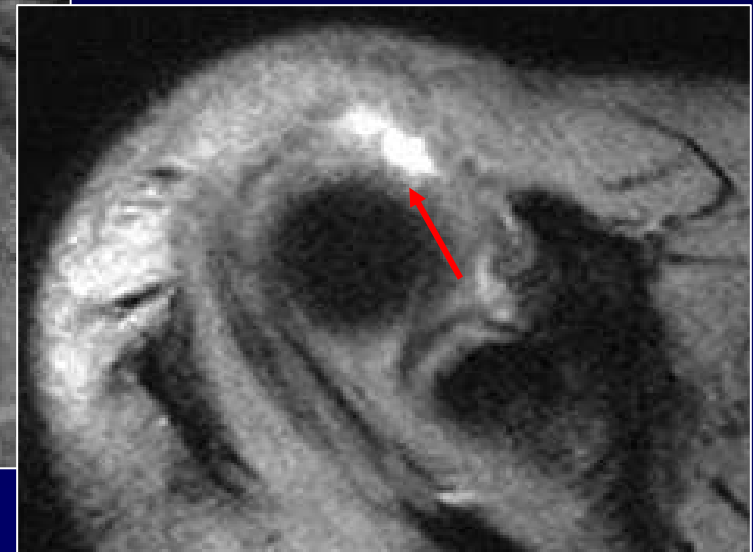
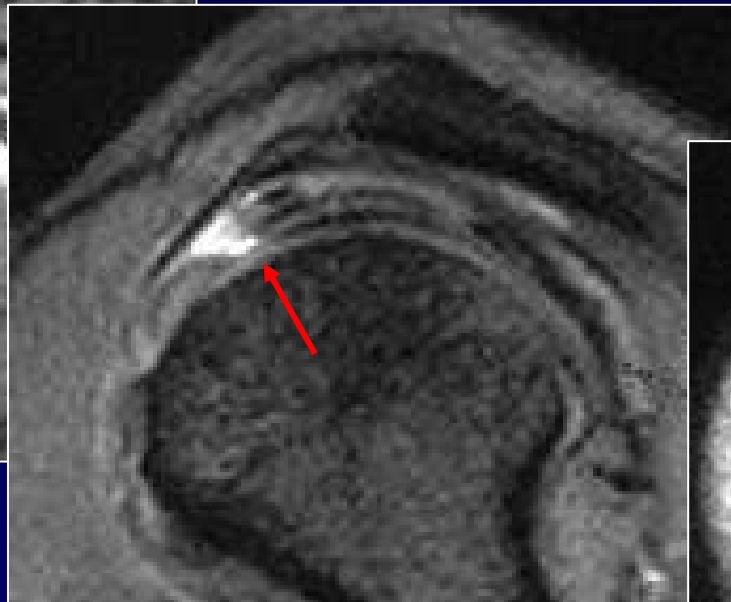
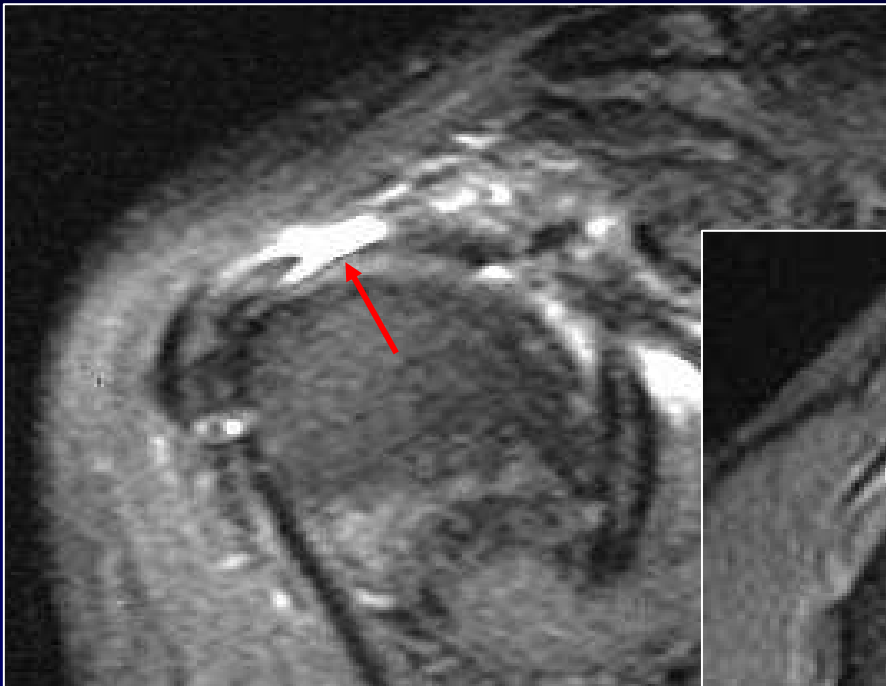
Tendine sovraspinato



Lesione a tutto spessore

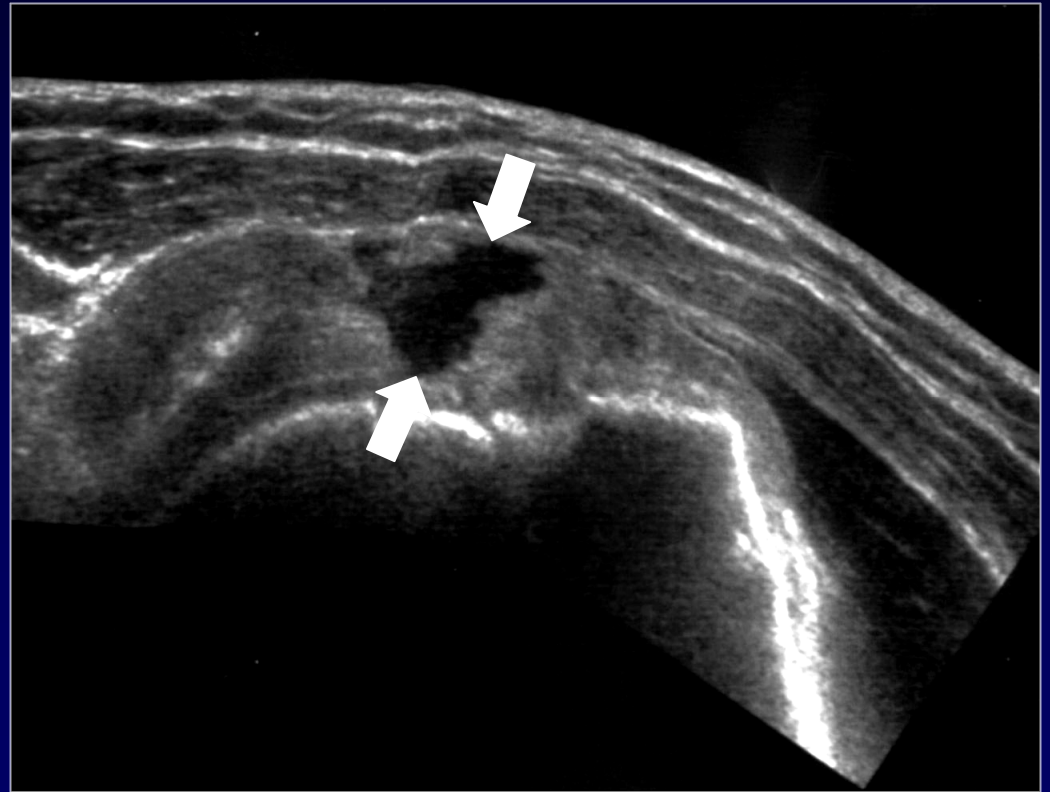
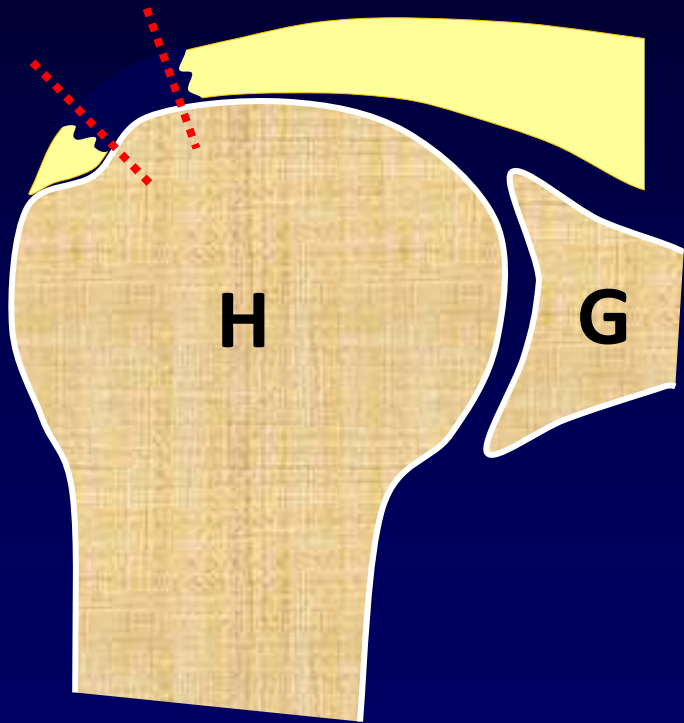
Tendine sovraspinato

VALUTAZIONE MULTIPLANARE !!!



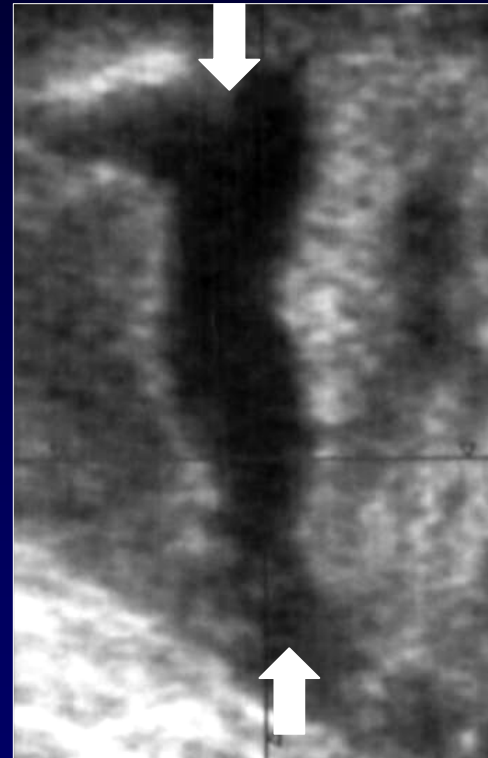
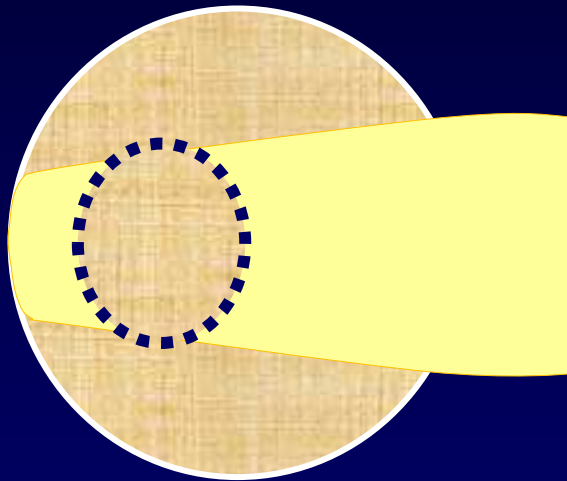
Lesione completa

Tendine sovraspinato



Lesione completa

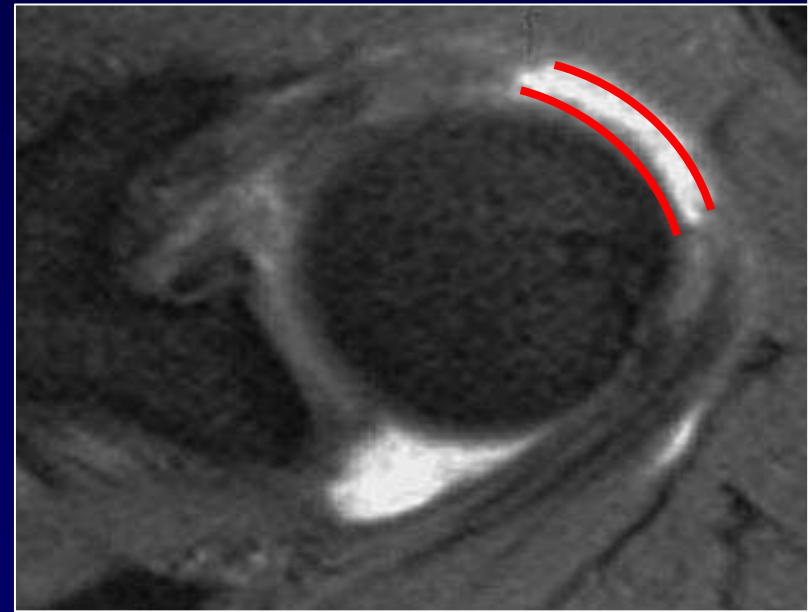
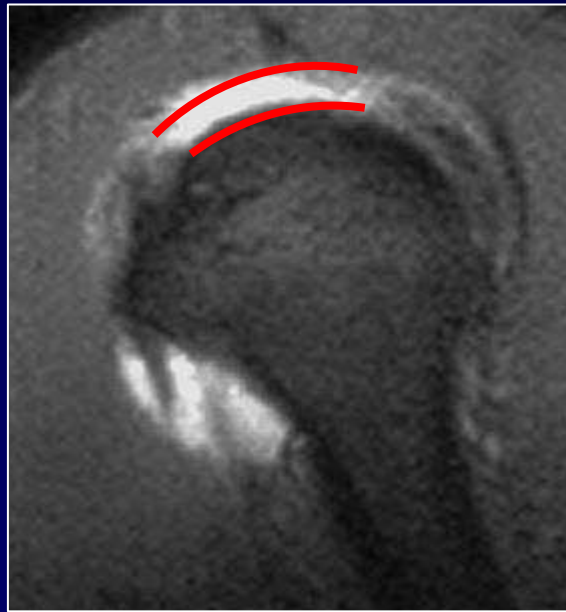
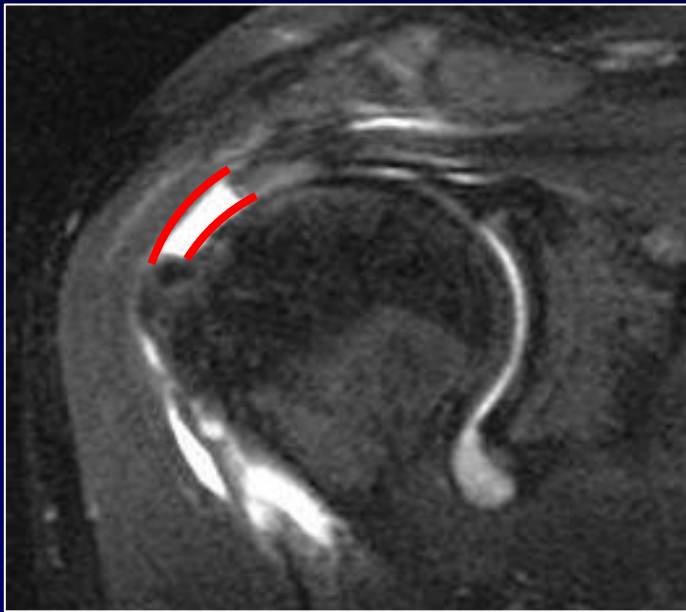
Tendine sovraspinato



Lesione completa

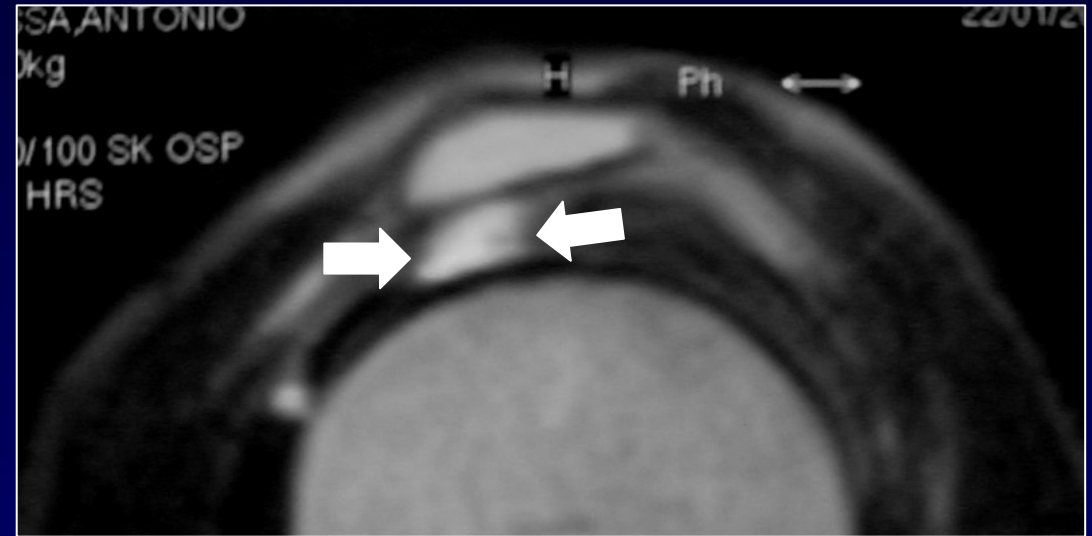
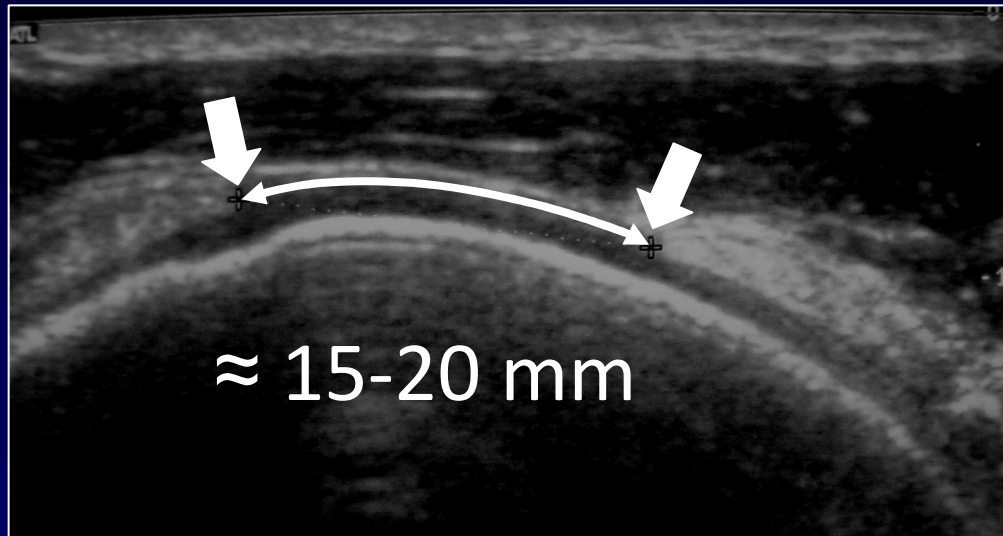
Tendine sovraspinato

Valutazione multiplanare



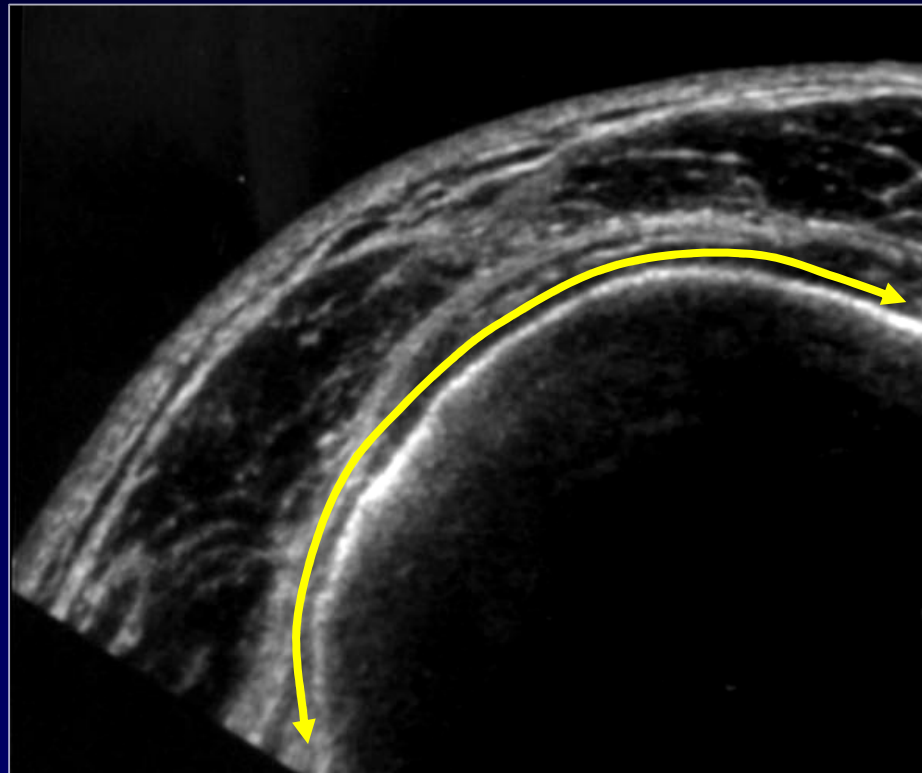
Lesione completa

Tendine sovraspinato



Lesione massiva

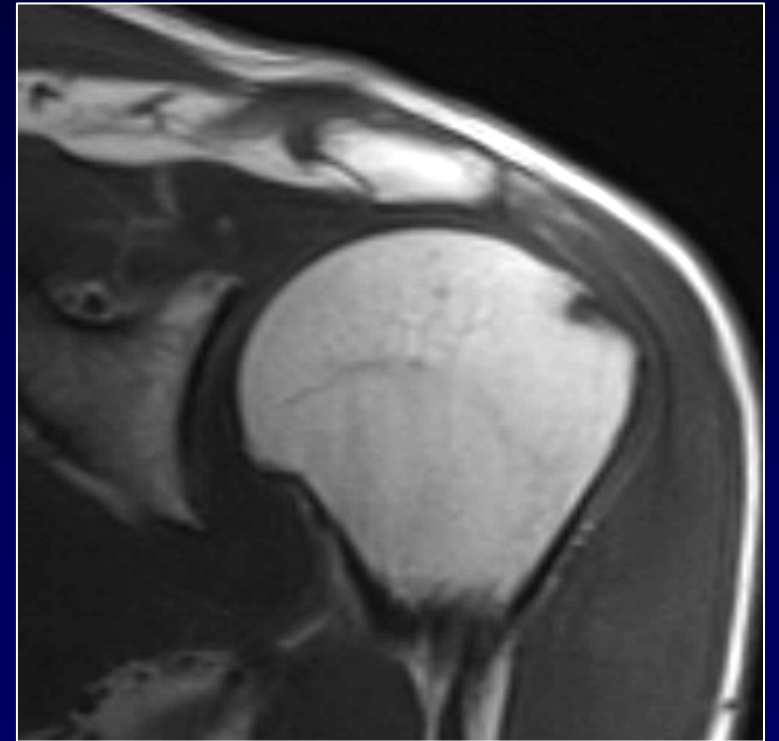
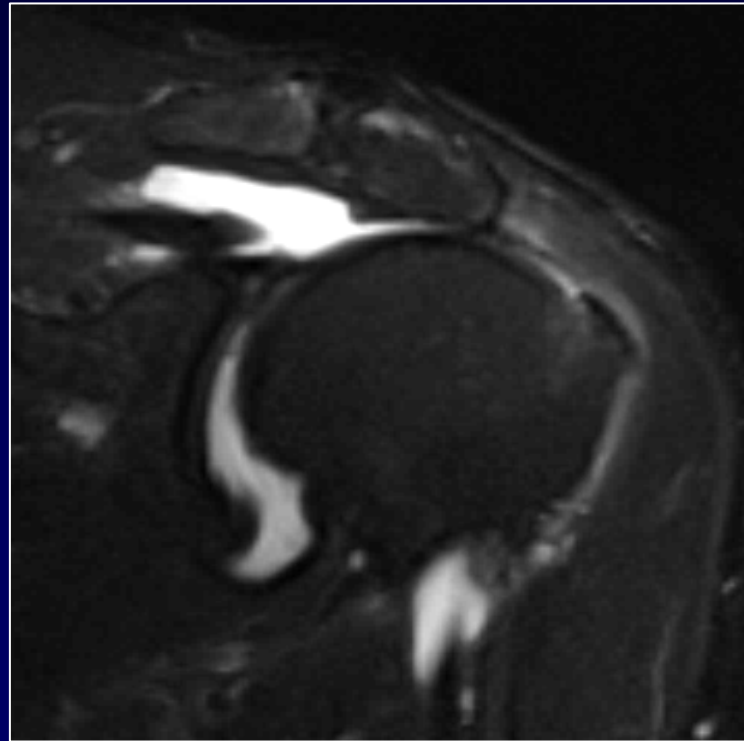
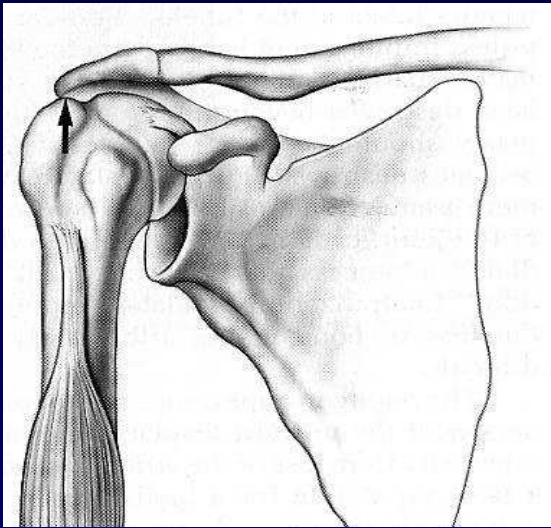
Tendine sovraspinato + sottospinato



LESIONE MASSIVA

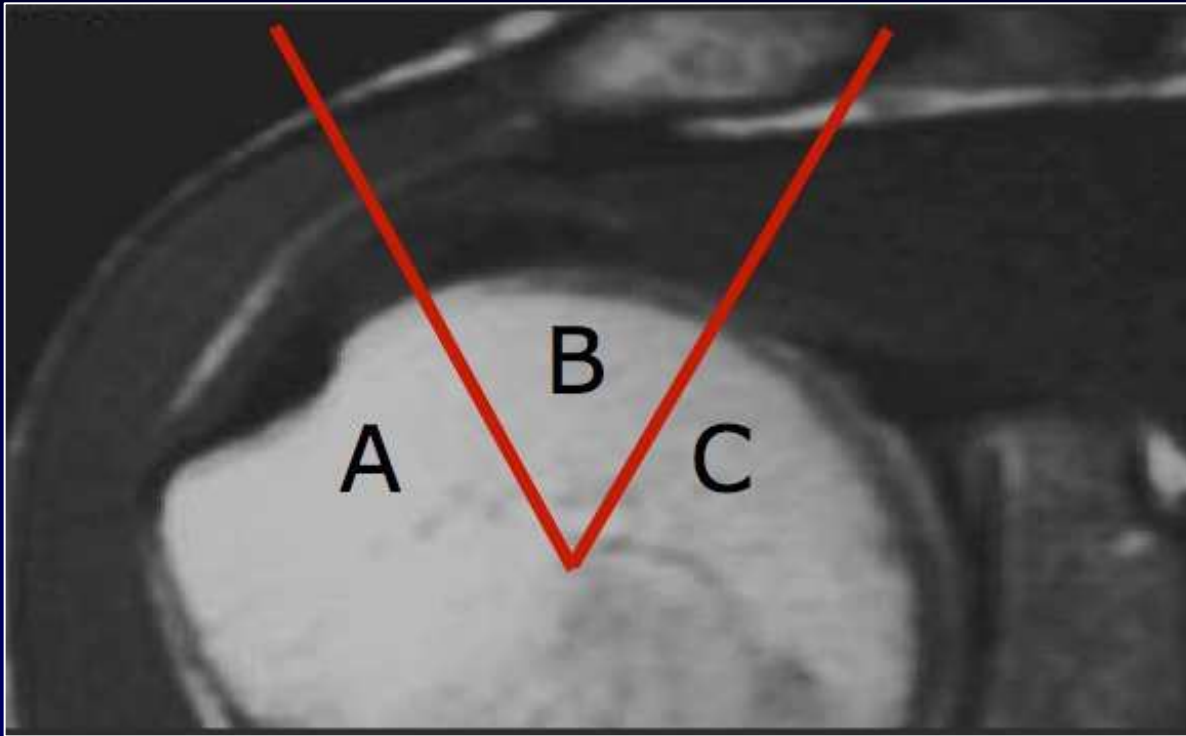
Retrazione completa

Acetabulizzazione dell'acromion



LESIONE MASSIVA

Retrazione tendinea



A: LATERALE

B: INTERMEDIO

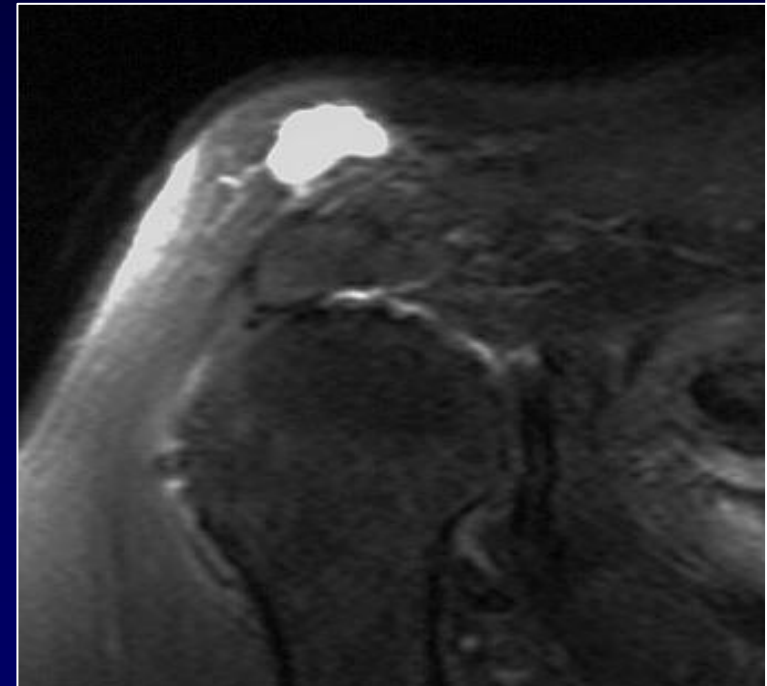
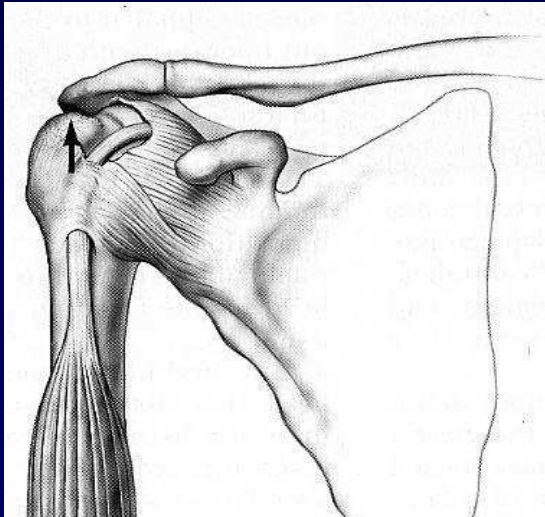
C: MEDIALE

La lesione è irreparabile quando il moncone è mediale alla fossa glenoidea. Thomazeau, Clin Ort Rel Res, 1997

LESIONE MASSIVA

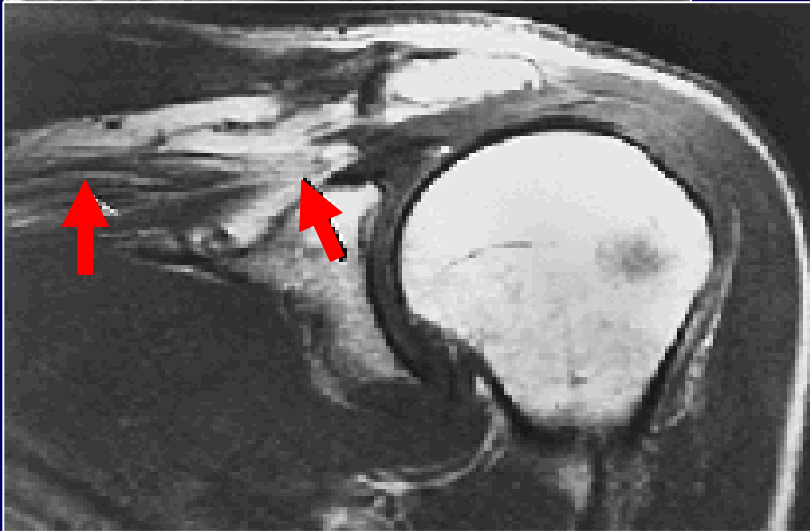
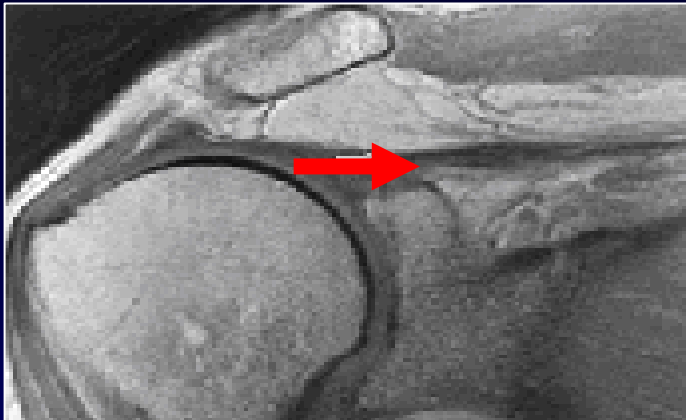
Retrazione completa

Involuzione fibroadiposa del ventre muscolare



INVOLUZIONE ADIPOSITA

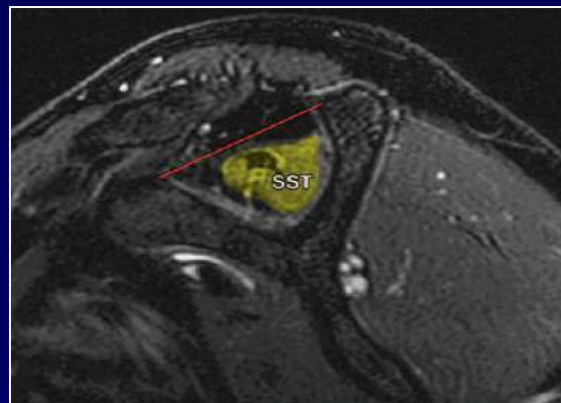
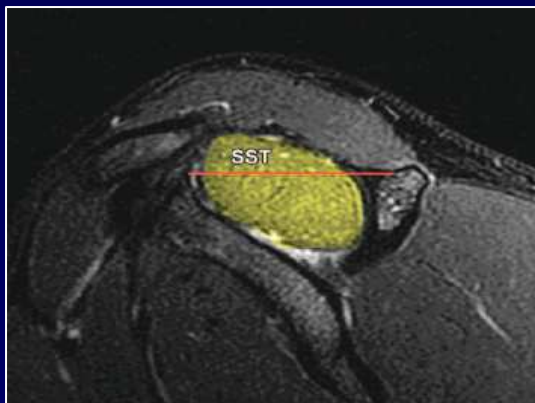
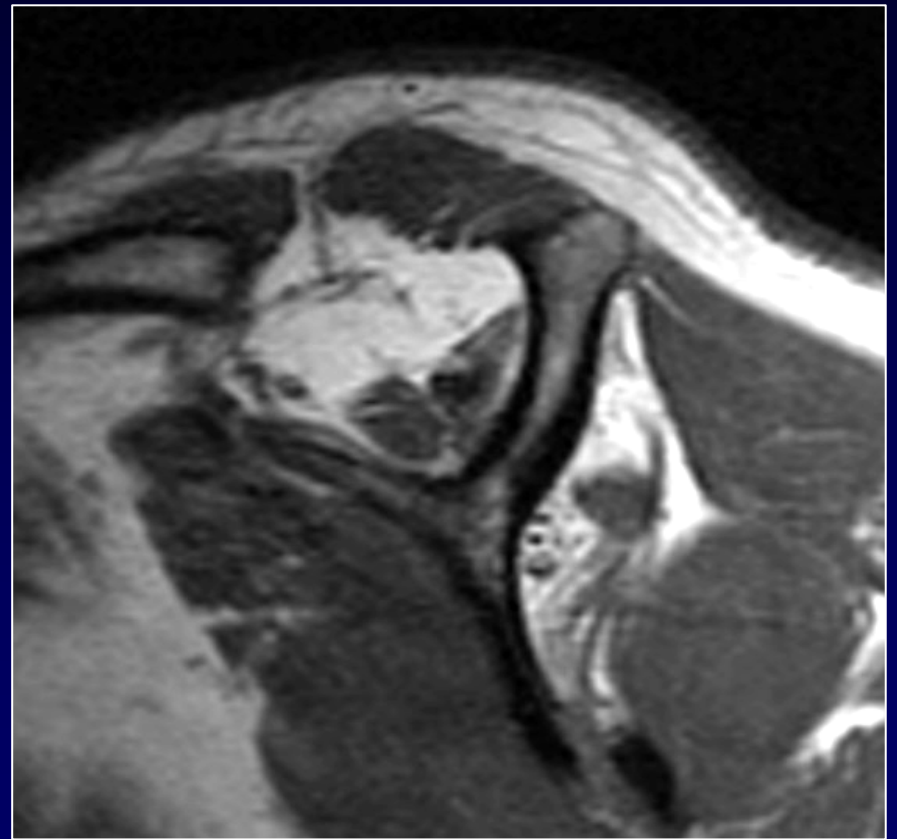
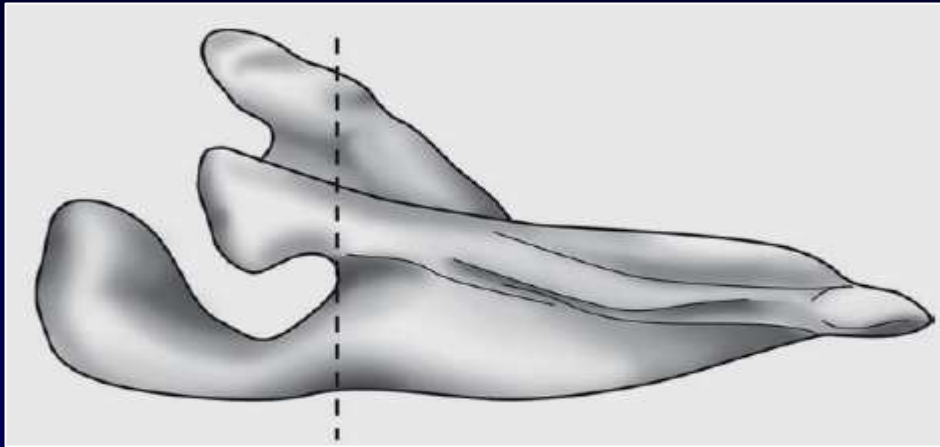
Goutallier's classification



- Grade I: lieve involuzione adiposa
- Grade II: < 50%
- Grade III: 50%
- Grade IV: > 50%

INVOLUZIONE ADIPOSA

Goutallier's classification



RadioGraphics 2006; 26:1045–1065

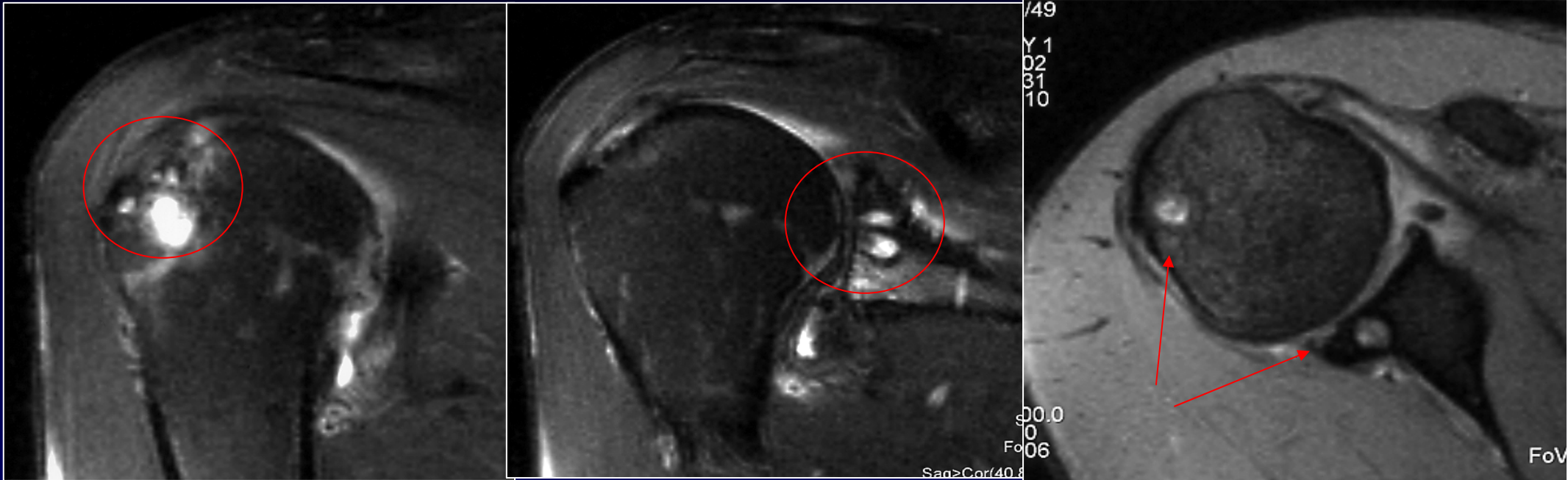
IMPINGEMENT POSTEROSUPERIORE

- Sport Overhead
- Abduzione-extrarotazione
- Grande tuberosità – Sovra/sottospinato
- Labbro glenoideo postero-superiore/cercine
- IGHL



IMPINGEMENT POSTEROSUPERIORE

Segni associati



IMPINGEMENT POSTEROSUPERIORE

Posizione AB-ER



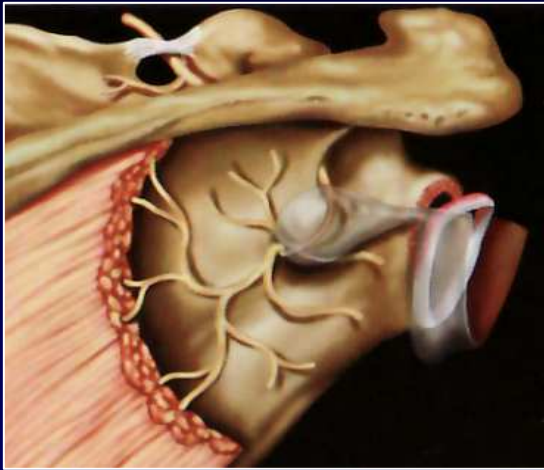
IMPINGEMENT POSTEROSUPERIORE

Segni associati



IMPINGEMENT POSTEROSUPERIORE

Cisti paralabrale



LESIONE TENDINE SOTTOSCAPOLARE

- Extrarotazione forzata
- Secondaria ad instabilità

Lesioni associate

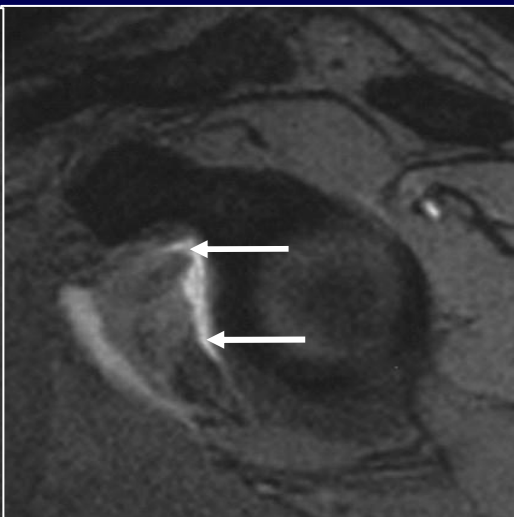
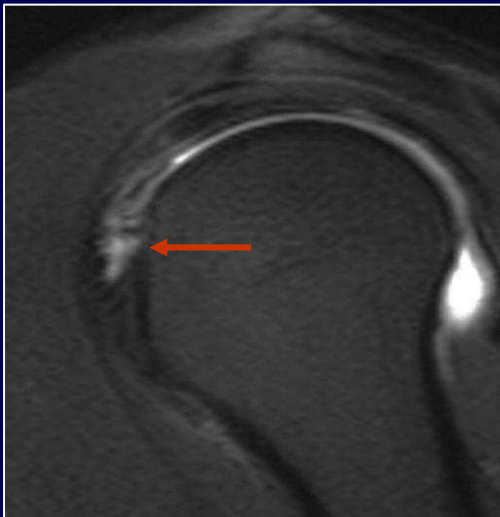
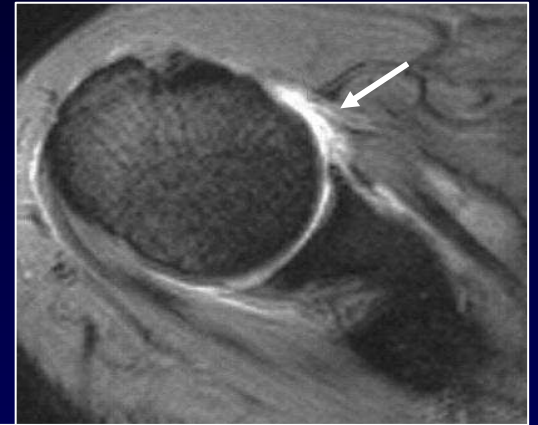
- Lesione anterosuperiore o massiva di cuffia
- Impingement sottocoracoideo

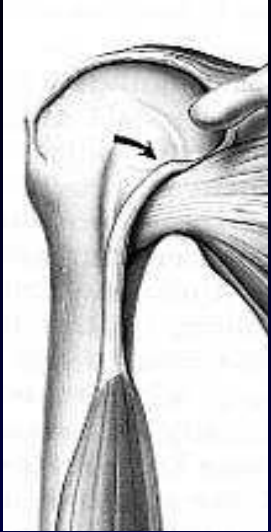


LESIONE TENDINE SOTTOSCAPOLARE

Grading della lesione

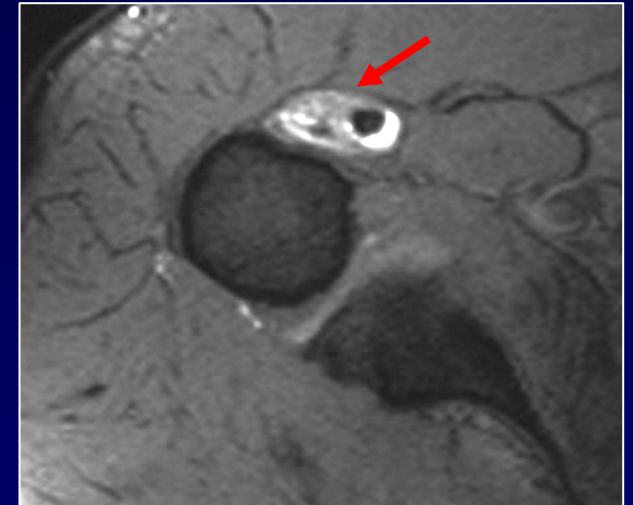
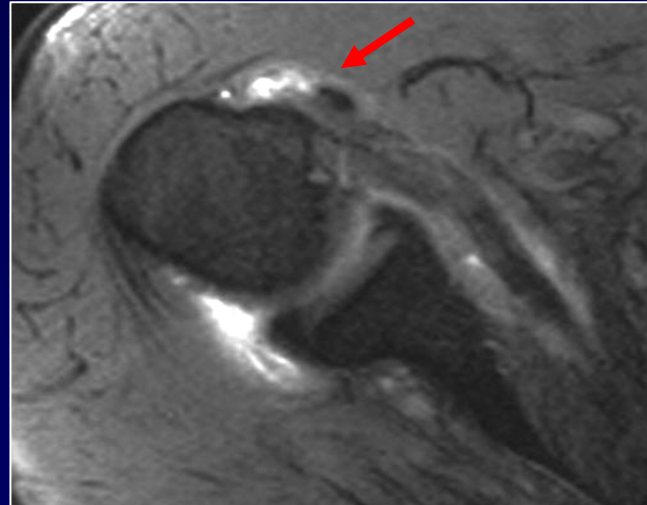
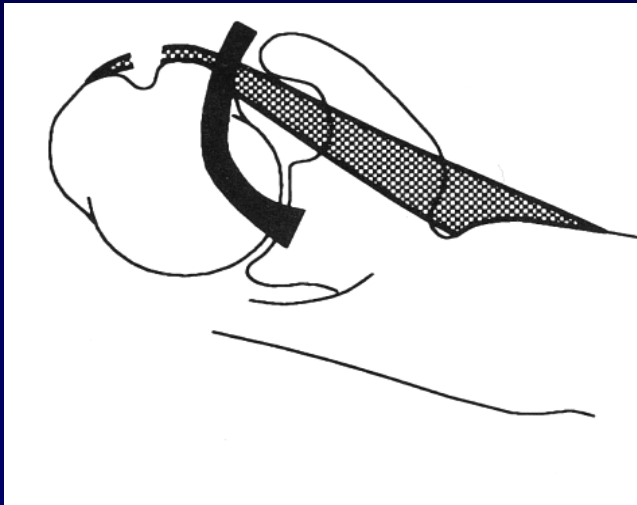
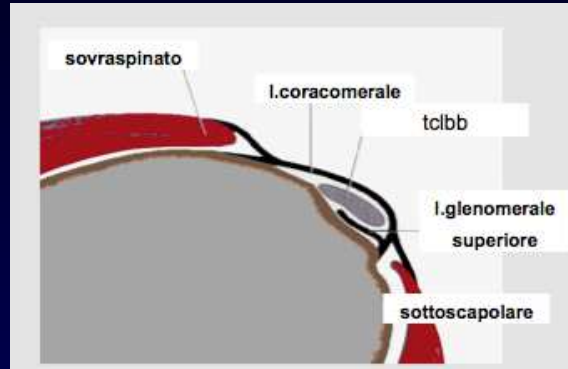
- GRADO 1: $< \frac{1}{4}$ dal versante superiore
- GRADO 2: $> \frac{1}{4}$ ma sempre parziale
- GRADO 3: lesione completa (distacco)





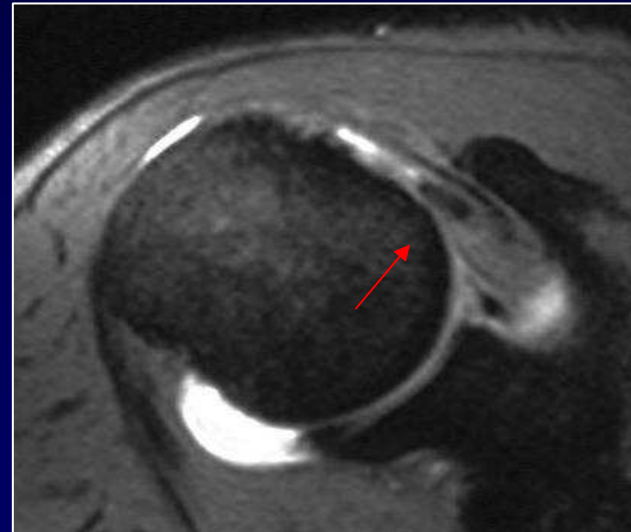
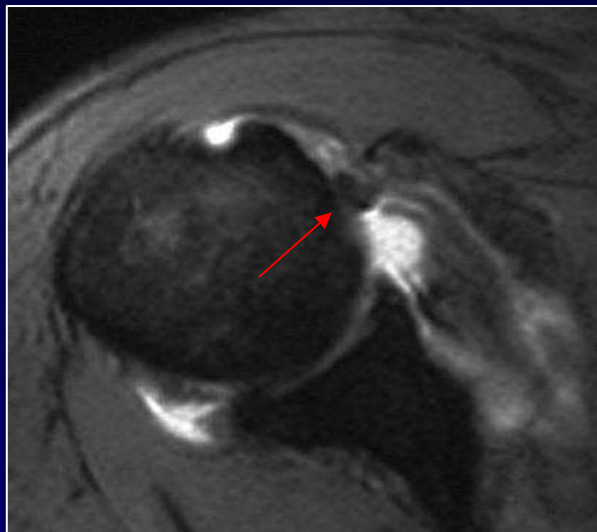
LESIONE TENDINE SOTTOSCAPOLARE

Instabilità del TCLBB



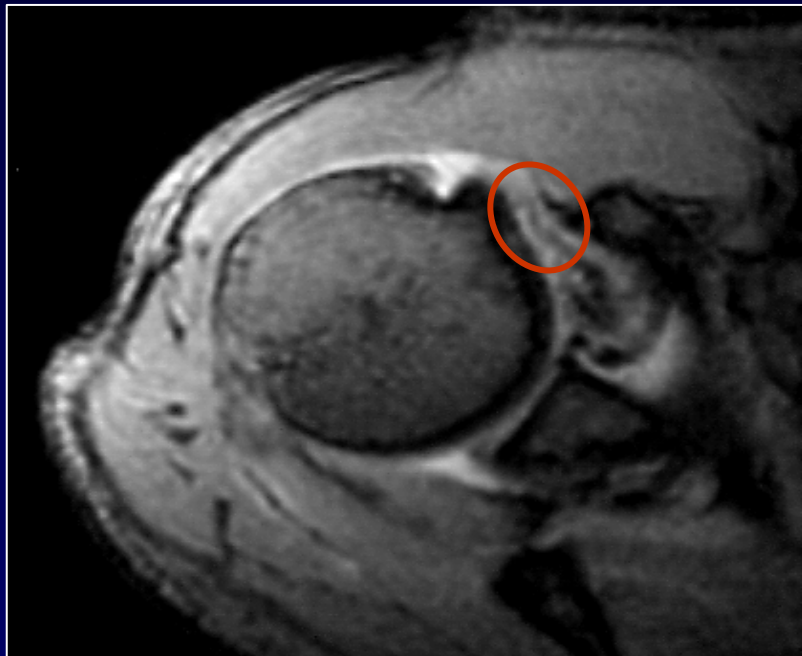
LESIONE TENDINE SOTTOSCAPOLARE

Instabilità del TCLBB



LESIONE TENDINE SOTTOSCAPOLARE

Impingement Coraco-omerale



RIASSUMENDO...

Indicazioni

■ Lesioni parziali

■ MRI > US

■ Lesioni complete

■ MRI = US

■ US

■ Limitato alla cuffia dei rotatori

■ Difficile valutazione del versante inferiore dell'arco acromiale

■ Economica e diffusa

■ Claustrofobia

■ RM può evidenziare anomalie associate

■ Artro-RM

CONCLUSIONI

ESAME RM

VALUTAZIONE PANORAMICA CUFFIA DEI ROTATORI
EVENTUALI CAUSE DI IMPINGEMENT

ARTRO-RM

DISCORDANZA DATI CLINICO-STRUMENTALI
DUBBI ALL'ESAME SENZA MDC



DD ALTERAZIONI DEGENERATIVE E LESIONI PARZIALI
BILANCIO DI ESTENSIONE FISSURAZIONI E SLAMINAMENTI
LESIONI ASSOCIATE CERCINE E LEGAMENTI
AMPIEZZA RECESSI CAPSULARI –INTERVALLO ROTATORI

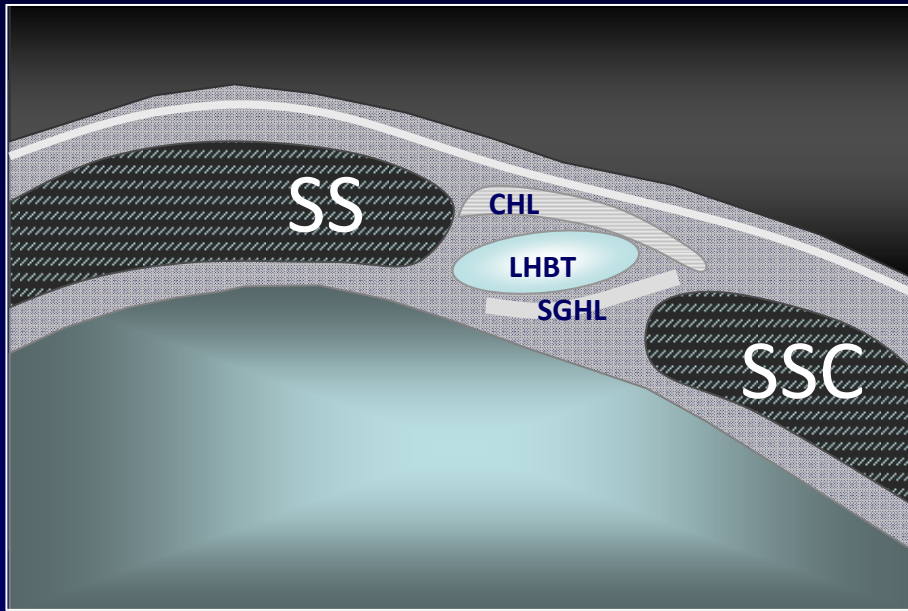
Grazie.



my.davideorlandi@gmail.com

INJECTION TECHNIQUE

Gleno-humeral Joint



Rotator interval

