



Radio-anatomie de l'articulation scapulohumérale

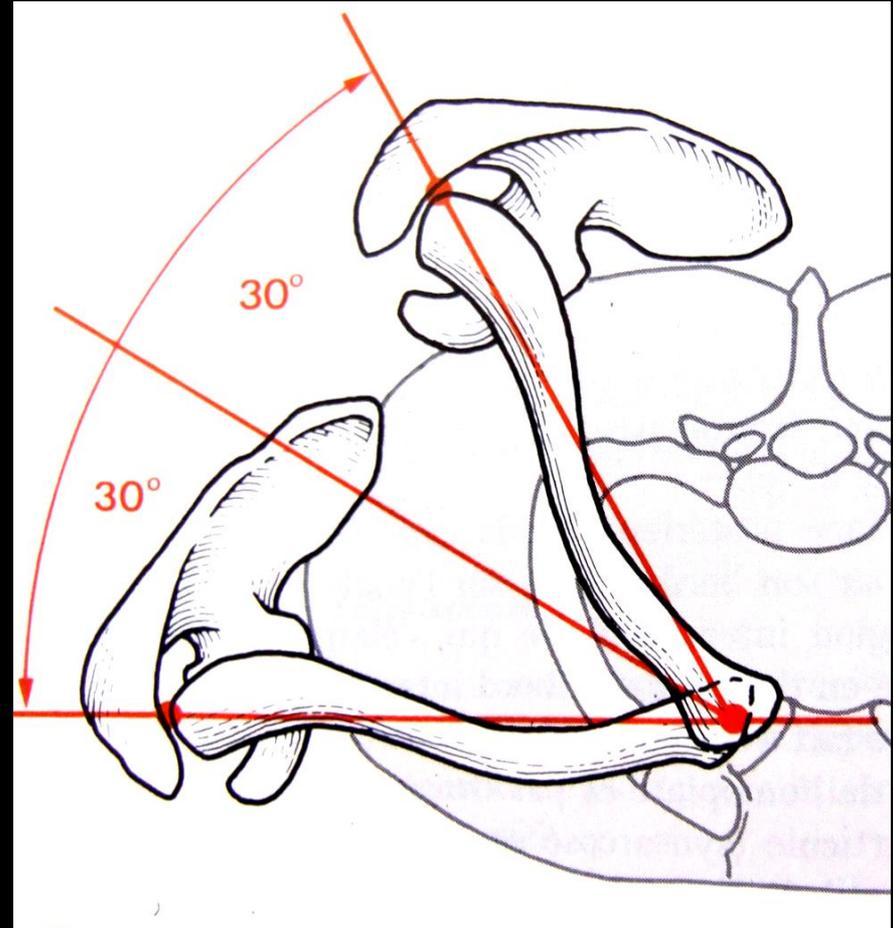
Thomas Le Corroller, Michel Cohen,
Richard Aswad, Pierre Champsaur

Complexe de l'épaule

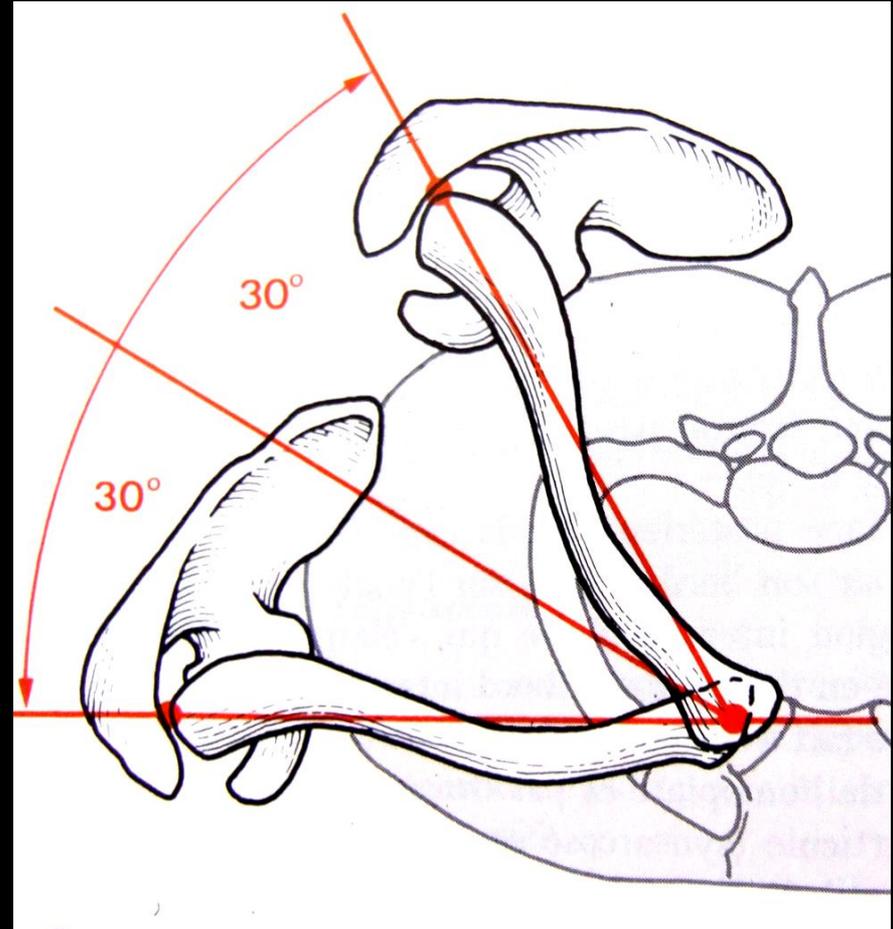
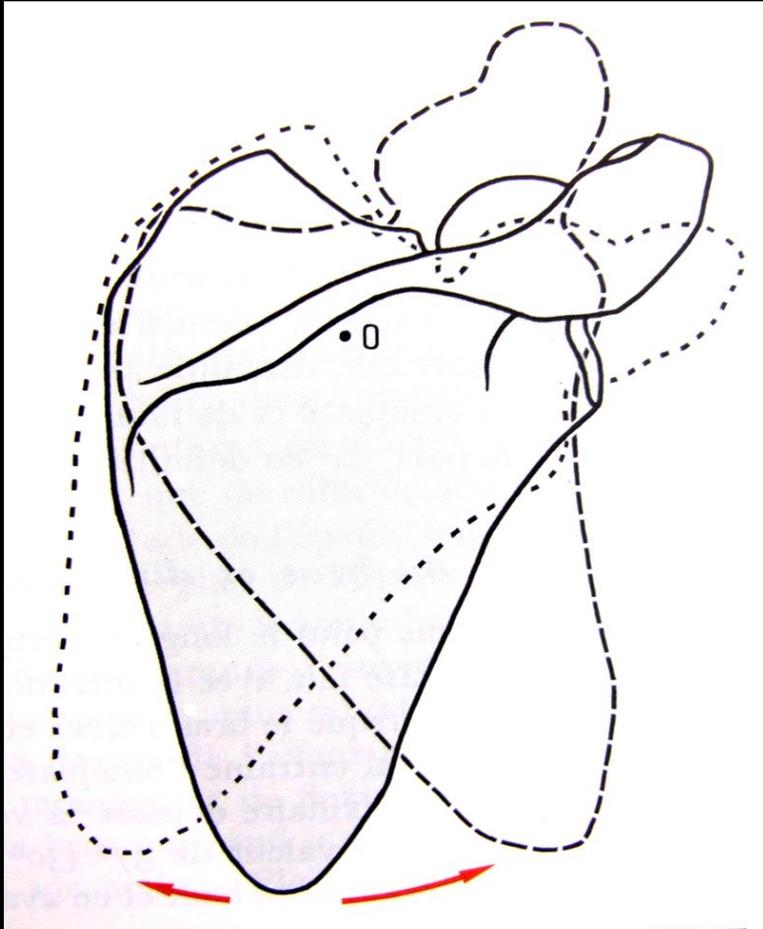
- Relie membre thoracique au squelette axial
- Ensemble le plus mobile du corps
 - Détachement de la scapula
 - Pivot articulaire scapulo-huméral
- 5 articulations
 - 3 synoviales
 - 2 espaces de glissement

Ceinture scapulaire

- Articulation sterno-claviculaire
 - Amarrage au sternum
 - Peu mobile
- Clavicule
 - Barre de direction
- Articulation scapulo-thoracique



Ceinture scapulaire



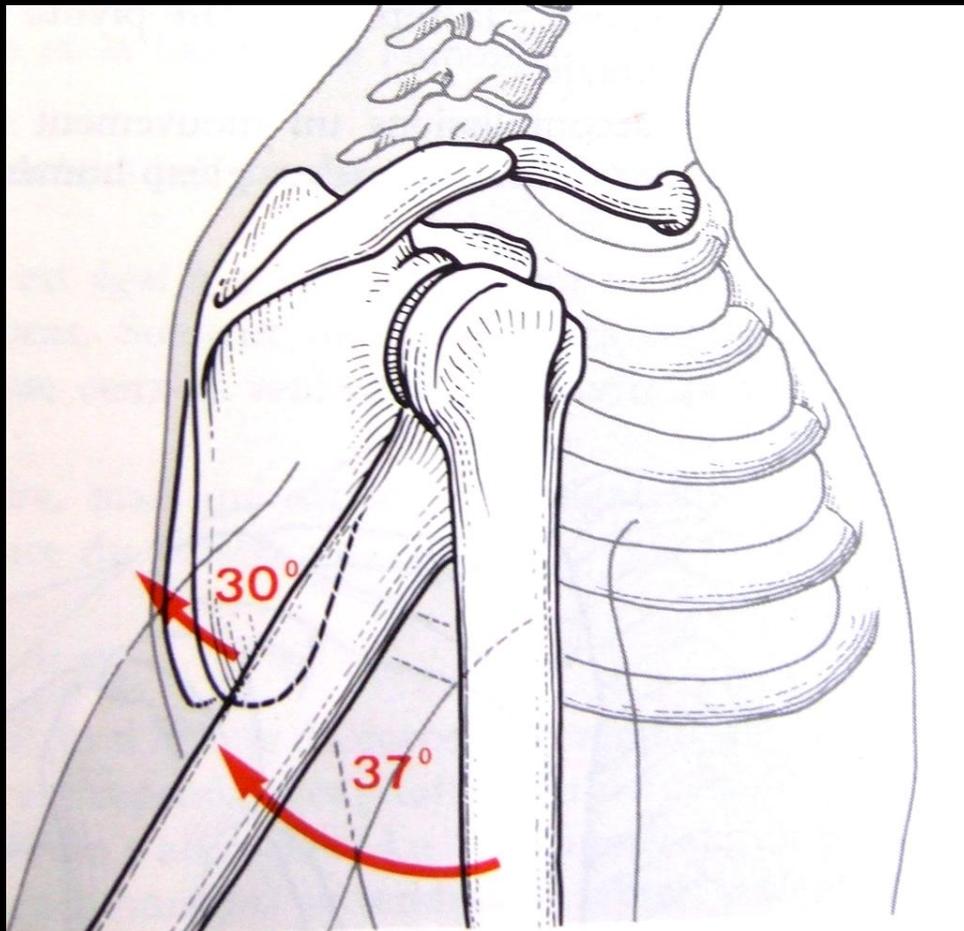
Articulation scapulohumérale

- Synoviale
- Sphéroïde (3 degrés)
- Non portante
- Préhension

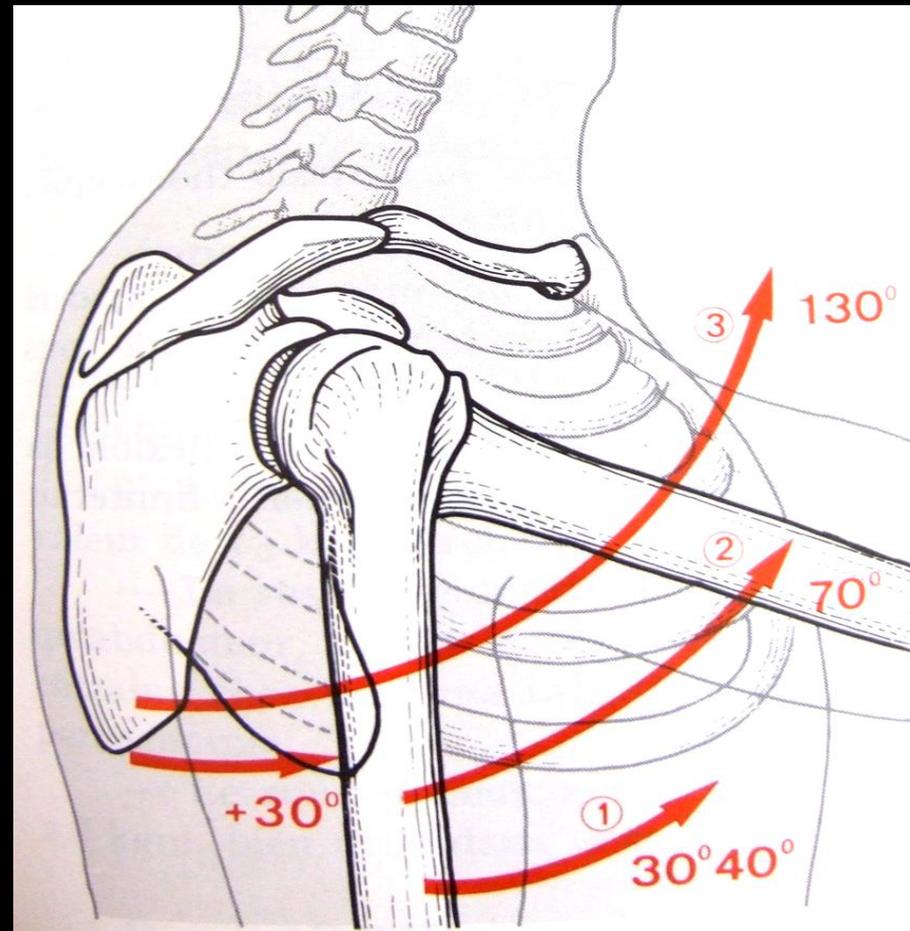
- Pivot articulaire

Rétropulsion-Antépulsion

40°

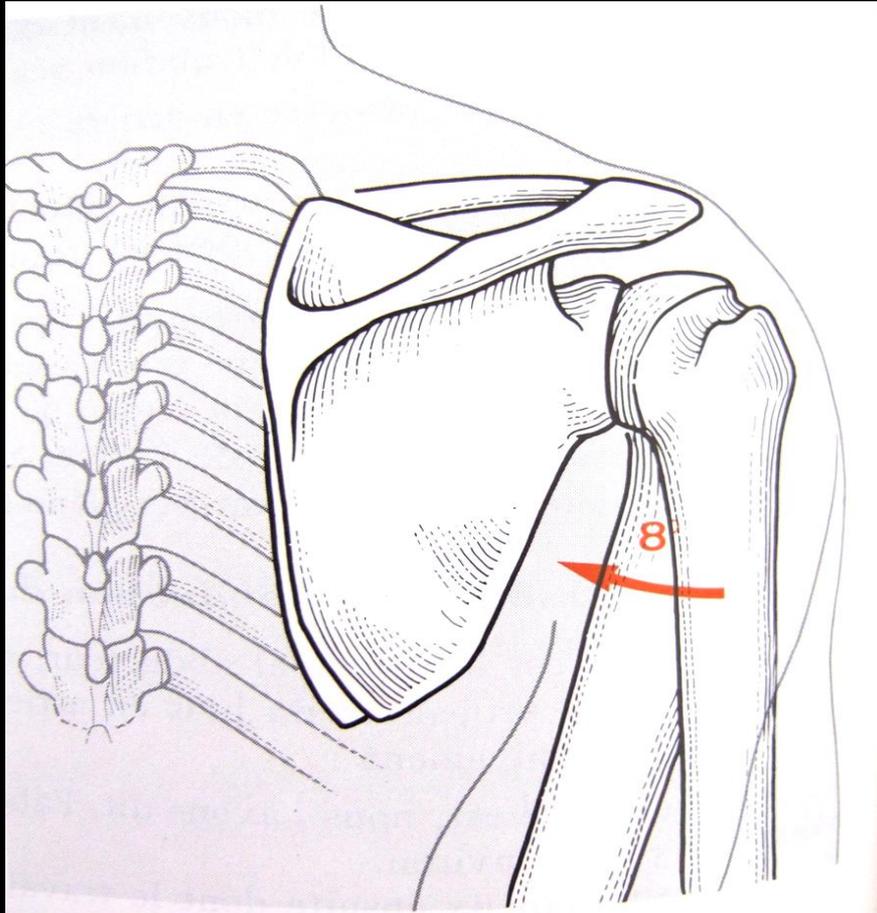


160°

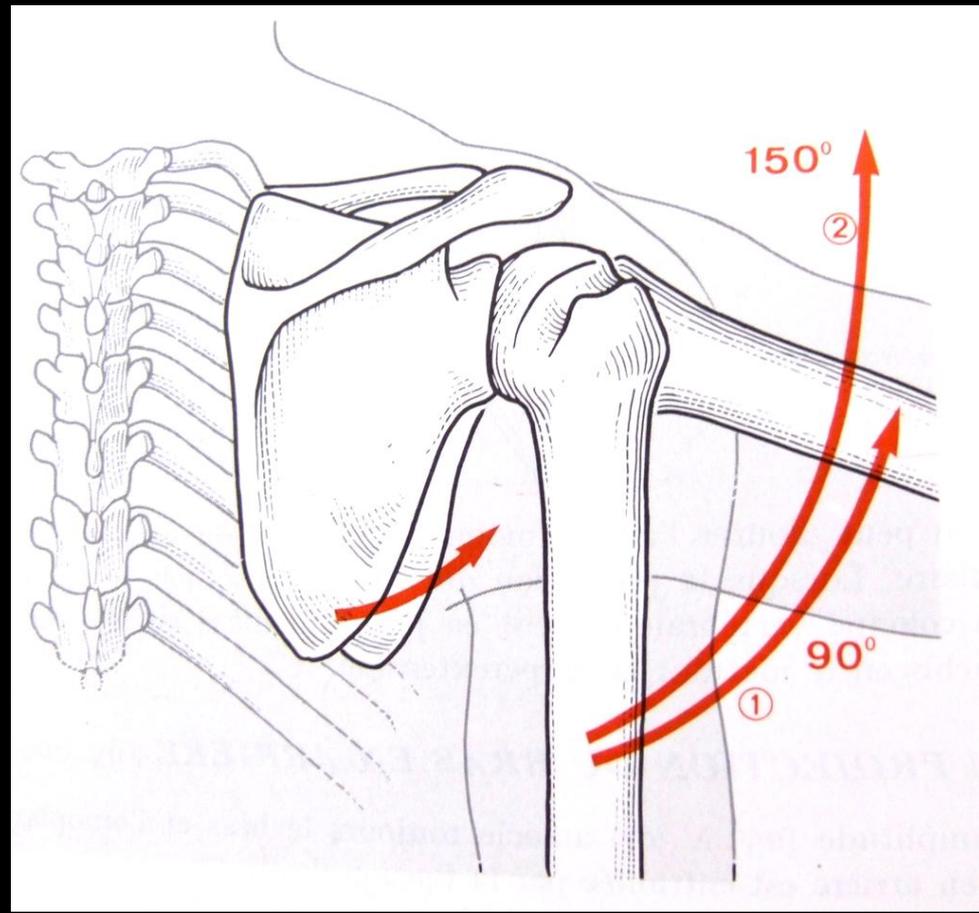


Adduction-Abduction

30°

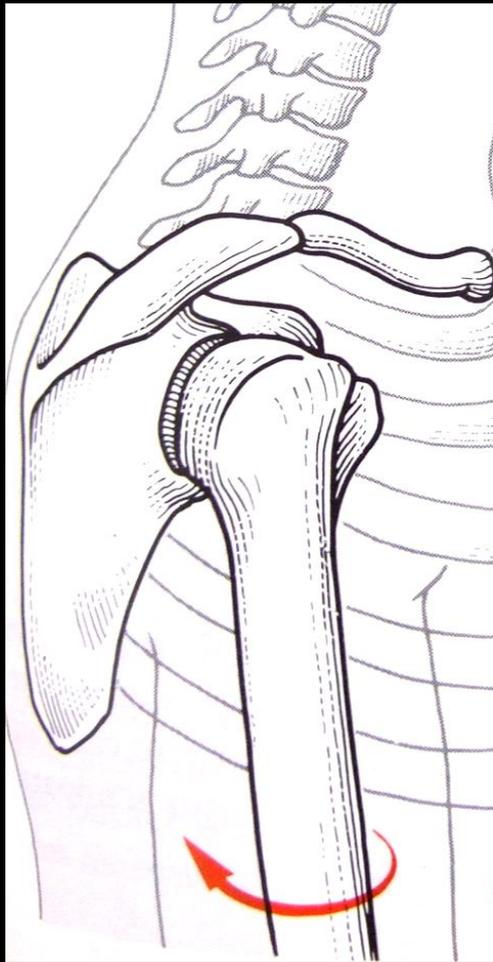


160°

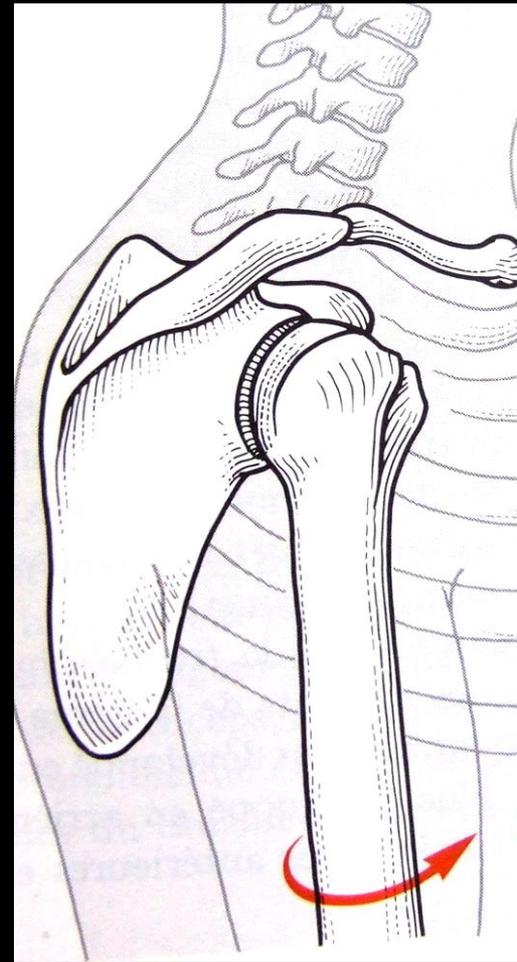


Rotation latérale-médiale

40°

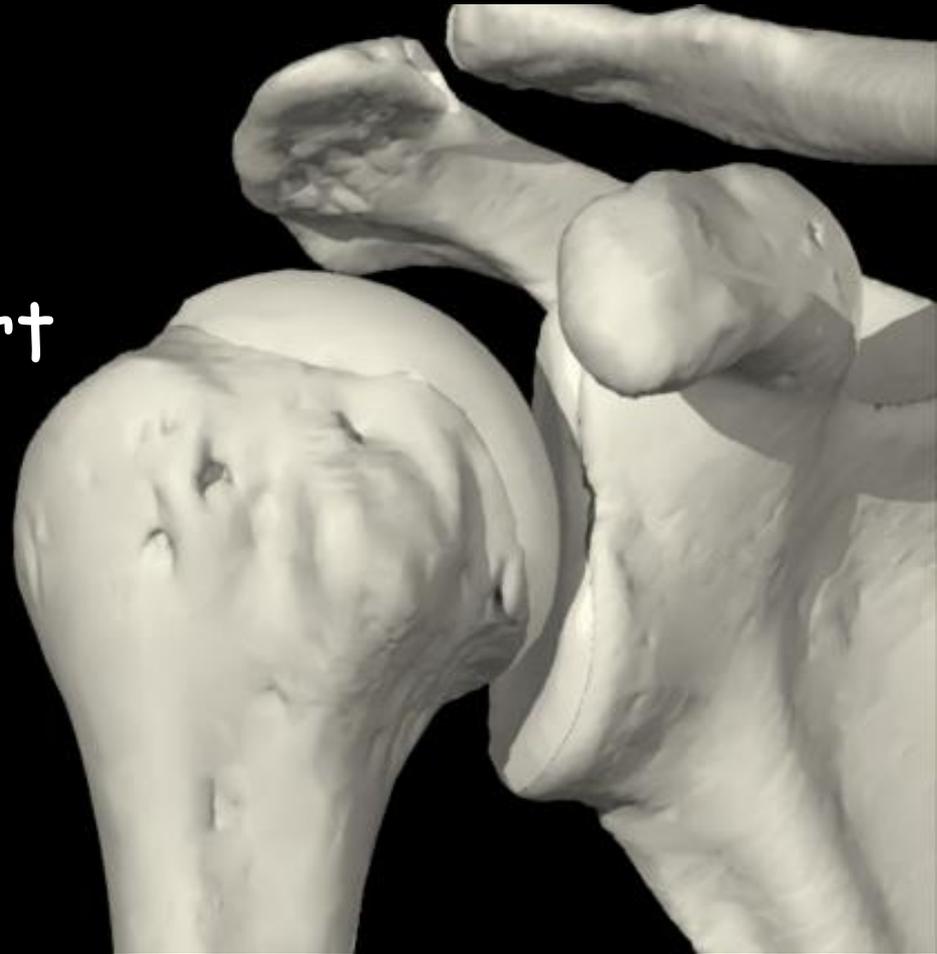


95°



Extrémité proximale de l'humérus

- Tête humérale
- 1/3 de sphère
- Col anatomique court
- Tubercules +++



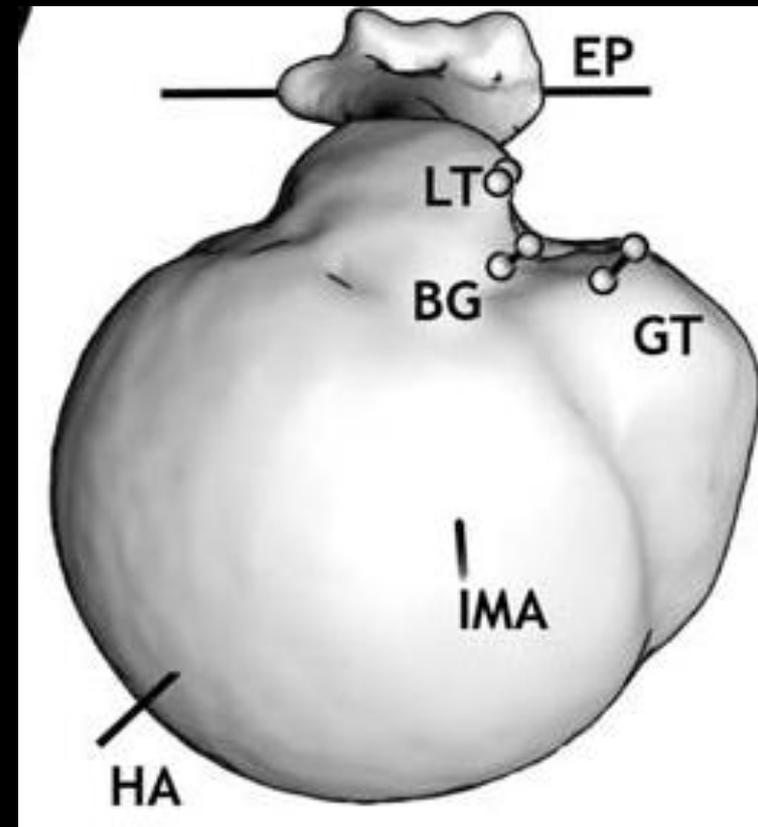
Extrémité proximale de l'humérus

- Tête humérale
- 1/3 de sphère
- Angles
 - Cervicodiaphysaire 130°



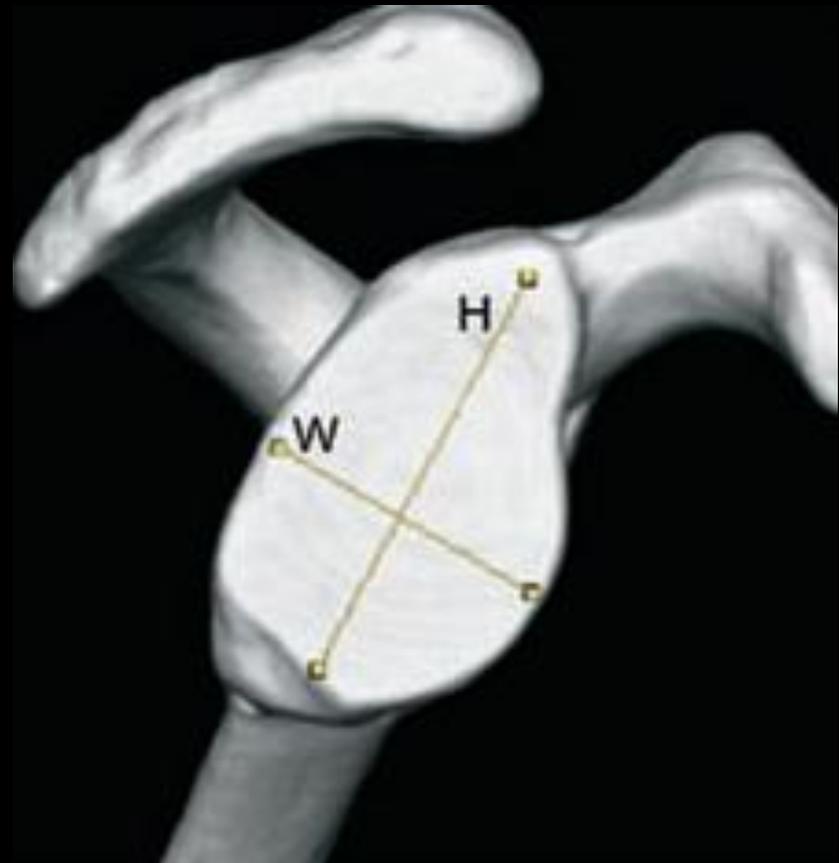
Extrémité proximale de l'humérus

- Tête humérale
- 1/3 de sphère
- Angles
 - Cervicodiaphysaire
 - Rétroversion 20°



Scapula

- Glène
- Faible concavité
- Piriforme
- Valeur angulaire
– 65° (vs 155°
TH)

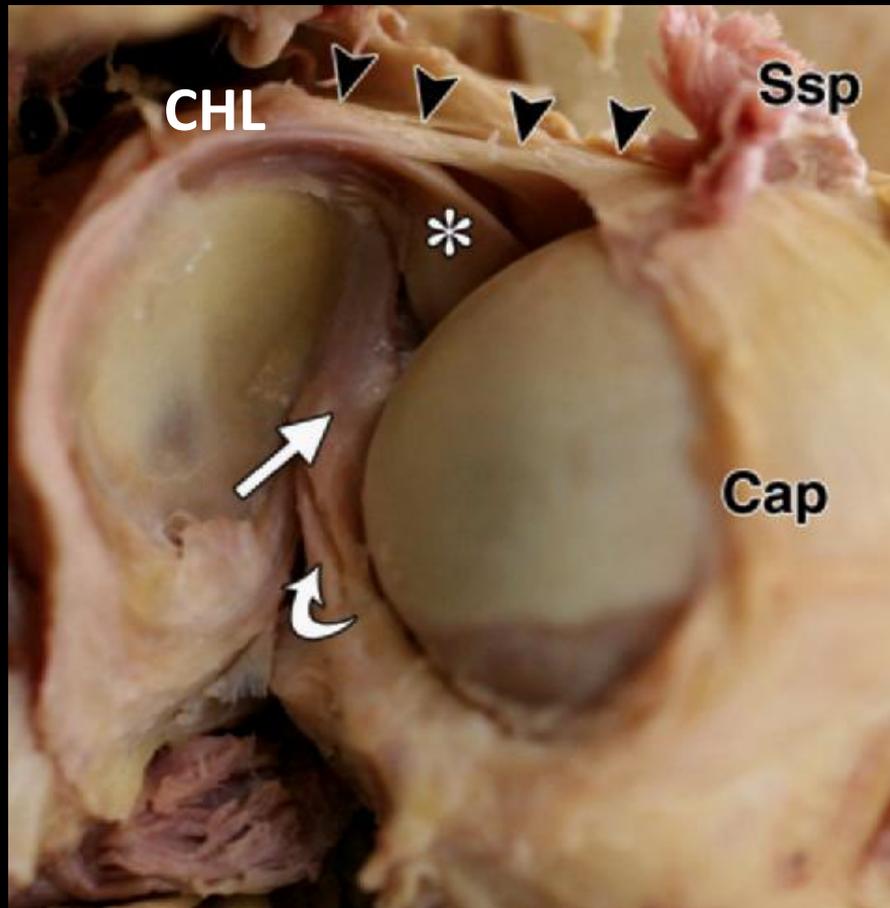


Articulation scapulohumérale



- Non encastrée
- Disproportion des surfaces articulaires
- Mobilité >> Stabilité

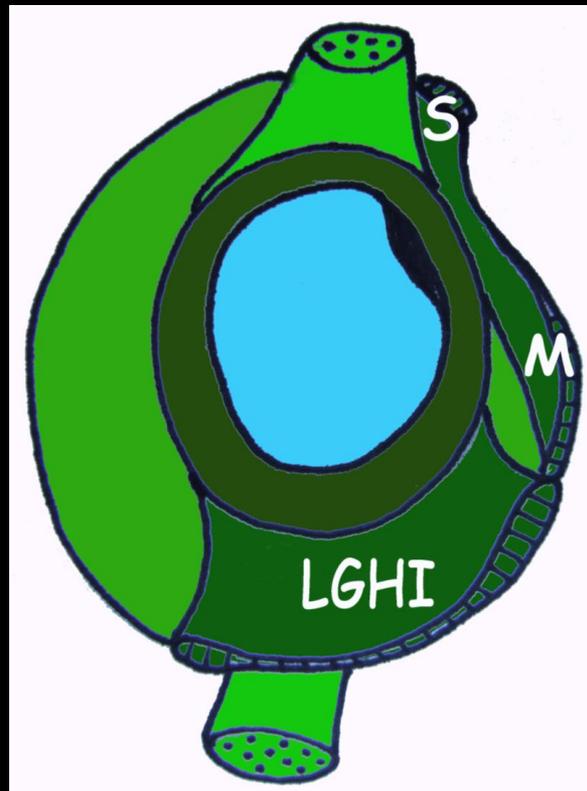
Articulation scapulohumérale



- Non encastrée
- Disproportion des surfaces articulaires
- Mobilité » Stabilité
- Éléments de stabilité
 - Passifs

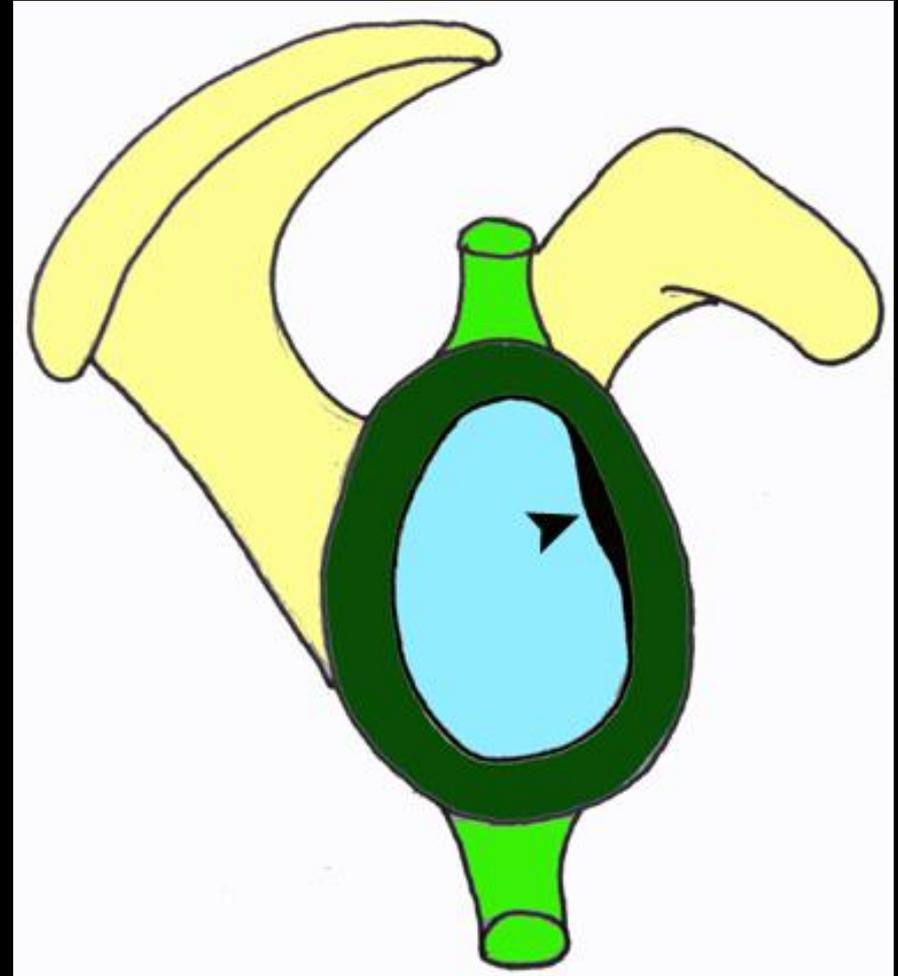
Actifs

Eléments de stabilité passifs

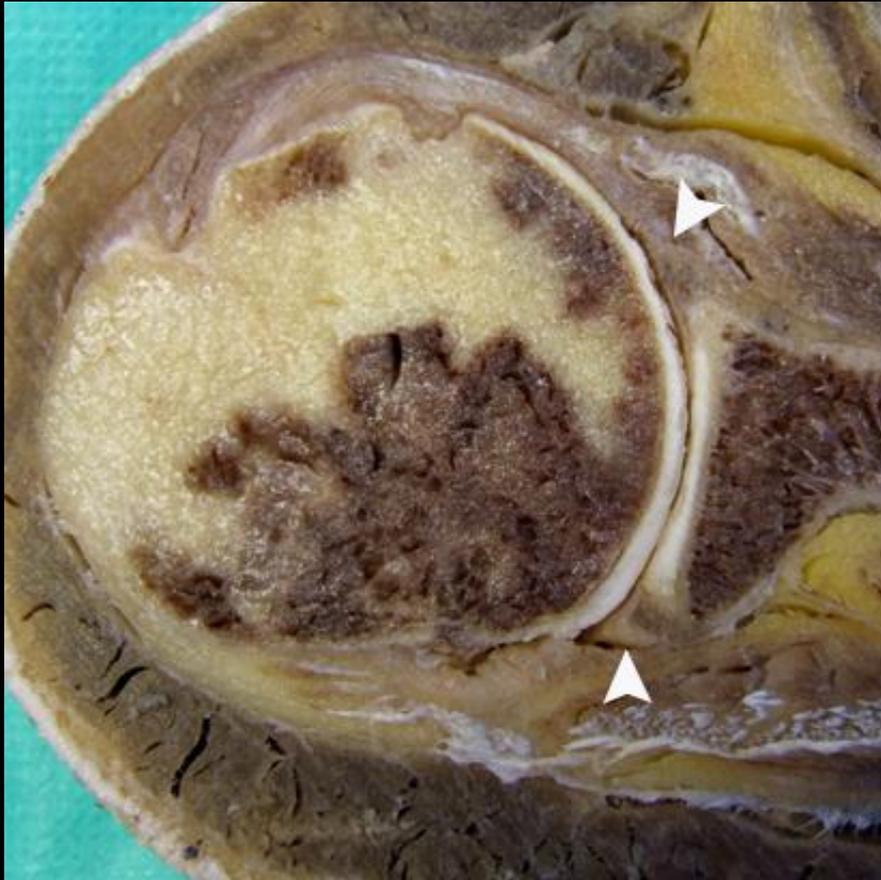


Labrum glénoïdien

- Fibrocartilage
- 4 mm large
- Inséré sur le pourtour de la cavité glénoïdale
- Augmente sa surface et sa profondeur



Labrum glénoïdien

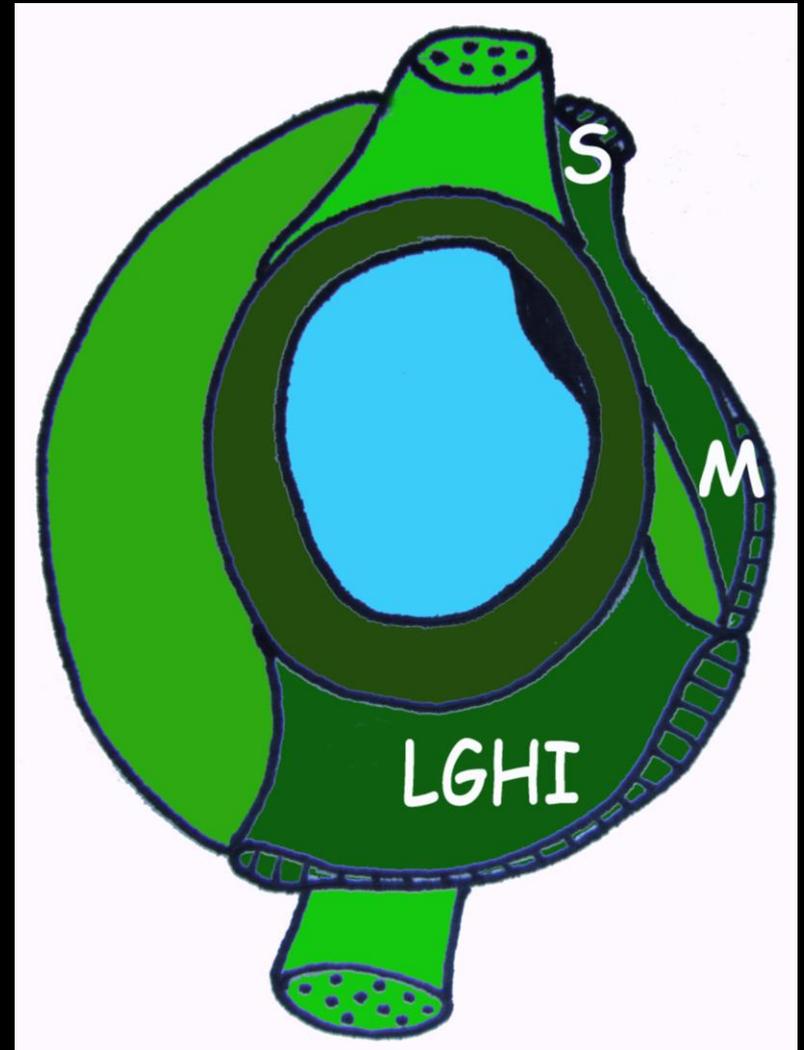


- Section triangulaire ou arrondie
- Face périphérique/capsulaire
- Face axiale/articulaire
- Face basale/adhérente

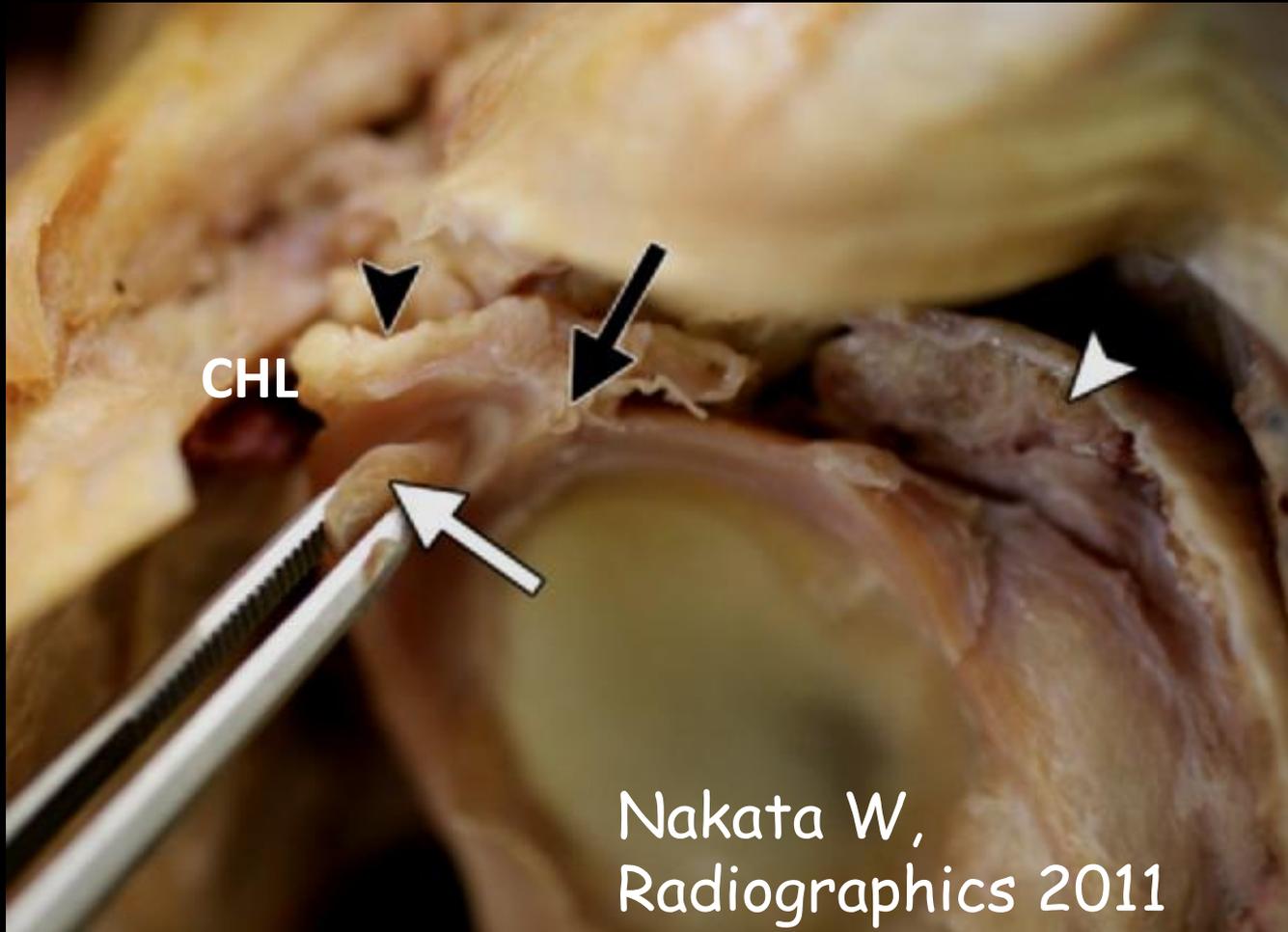


Analyse par quadrants

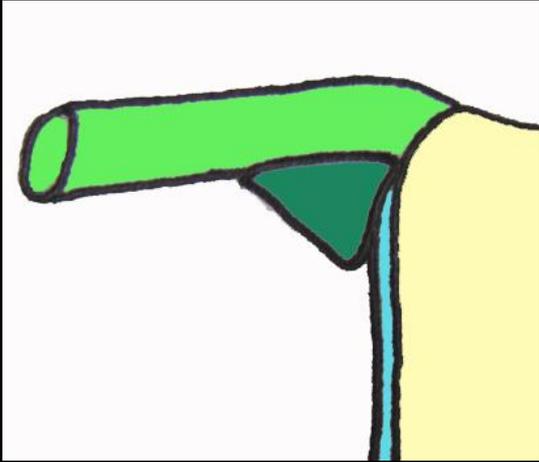
- Labrum supérieur (LB, LGHS)
- Labrum antérieur (LGHM, LGHI)
- Labrum inférieur (LT, LGHI)
- Labrum postérieur



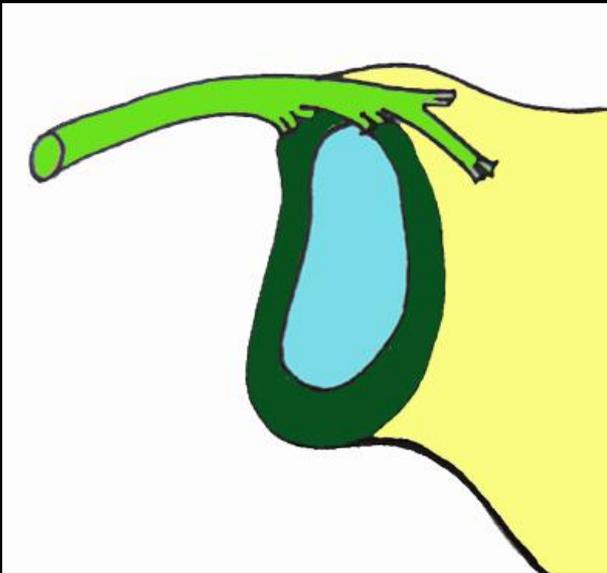
Complexe labro-bicipital supérieur



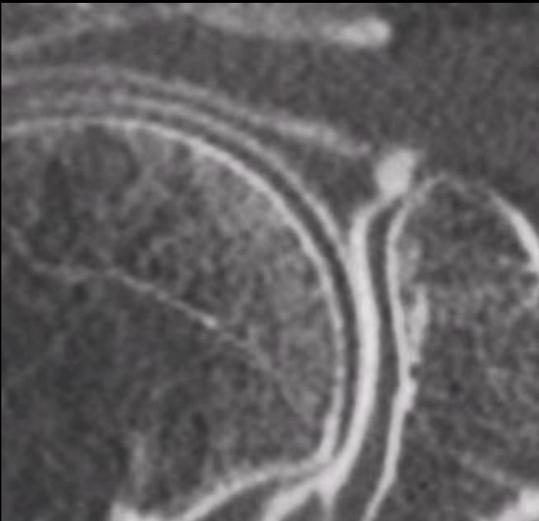
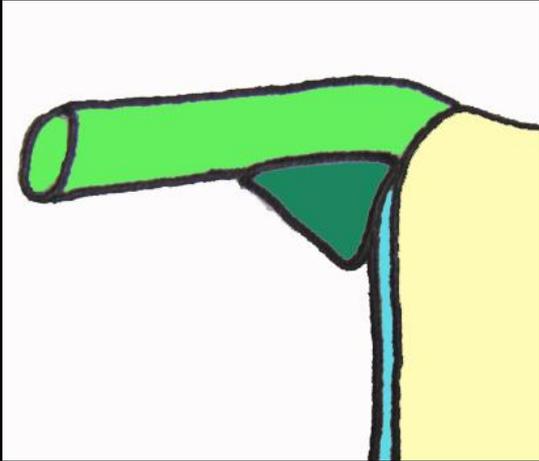
Complexe labro-bicipital supérieur



- Insertion proximale long biceps:
 - Labrum 48%
 - Labrum et tubercule supra-glénoïdal 32%
 - Tubercule supra-glénoïdal 20%



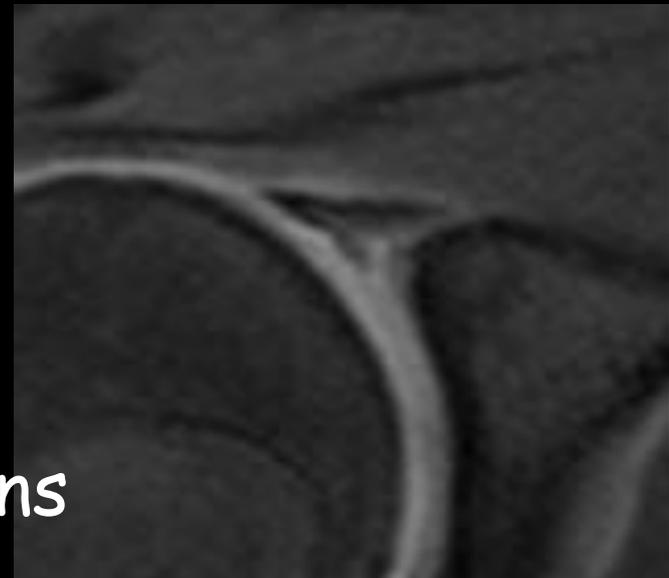
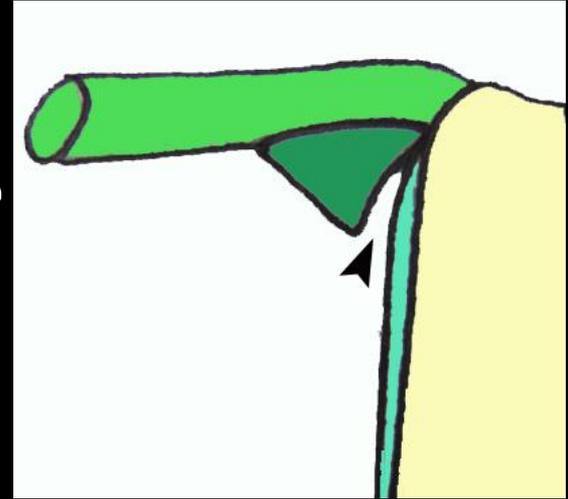
Complexe labro-bicipital supérieur



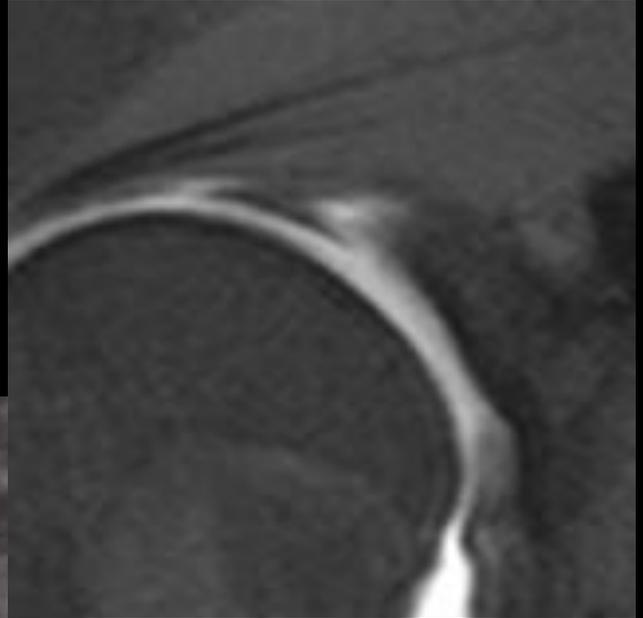
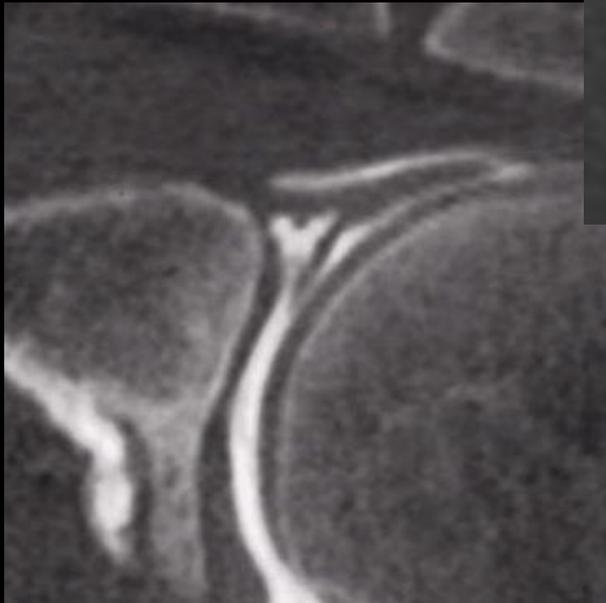
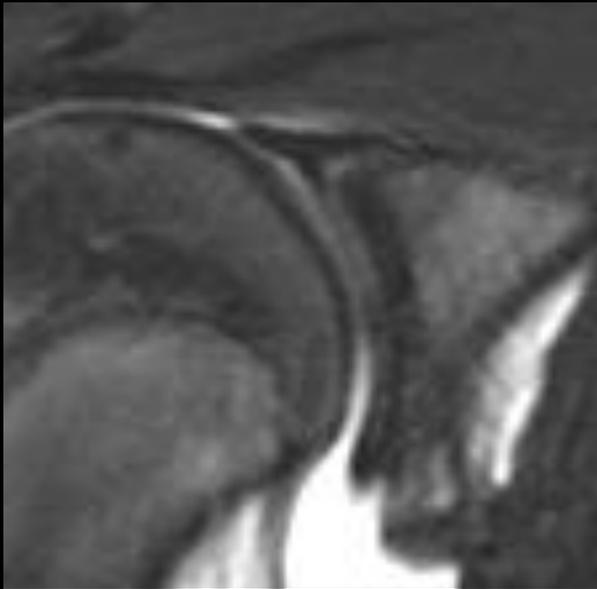
- Insertion proximale long biceps:
 - Labrum 48%
 - Labrum et tubercule supra-glénoïdal 32%
 - Tubercule supra-glénoïdal 20%
- Reconstructions coronales
- Rotation latérale

Récessus (sulcus) sous-labral

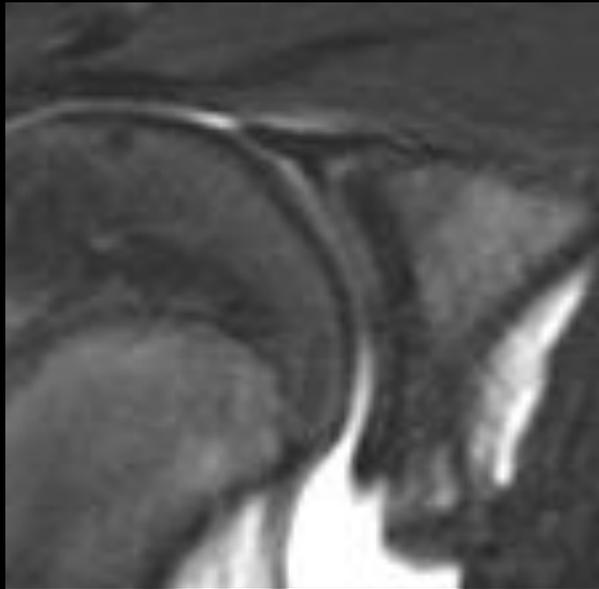
- Position 12 heures
- Récessus entre labrum supérieur et cartilage hyalin
- 75% de la population
- Critères imagerie:
 - Fin < 2mm
 - Régulier
 - Ne dépasse pas le bord supérieur de la glène
 - Orienté en haut et en dedans



Récessus sous-labral ou SLAP lésion ?

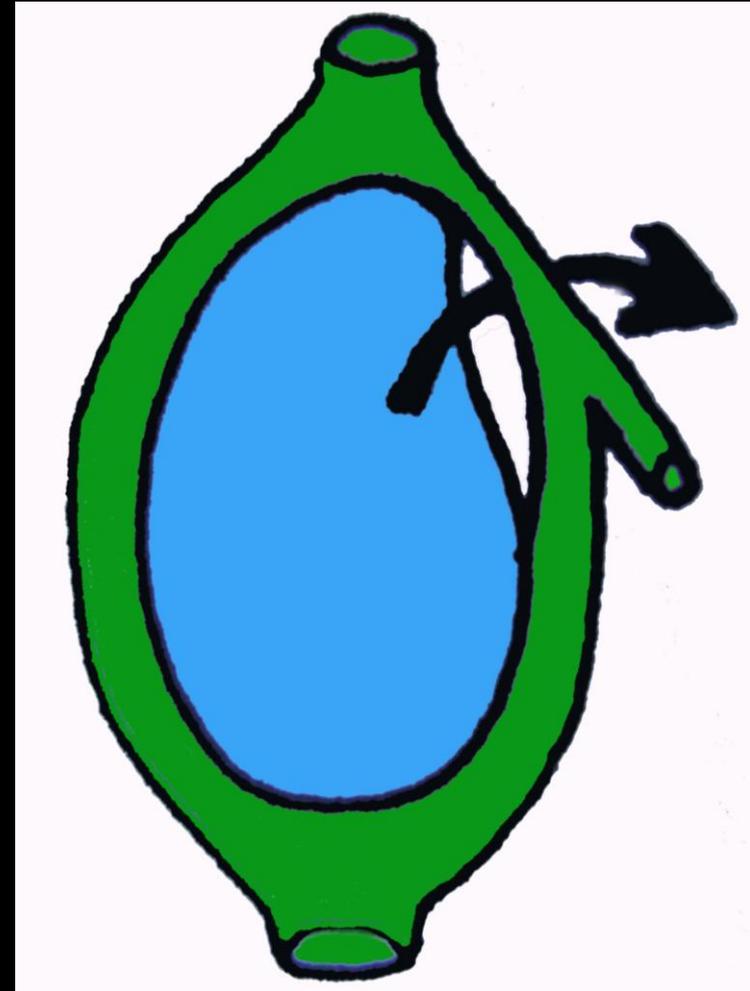


Récessus sous-labral ou SLAP lésion ?

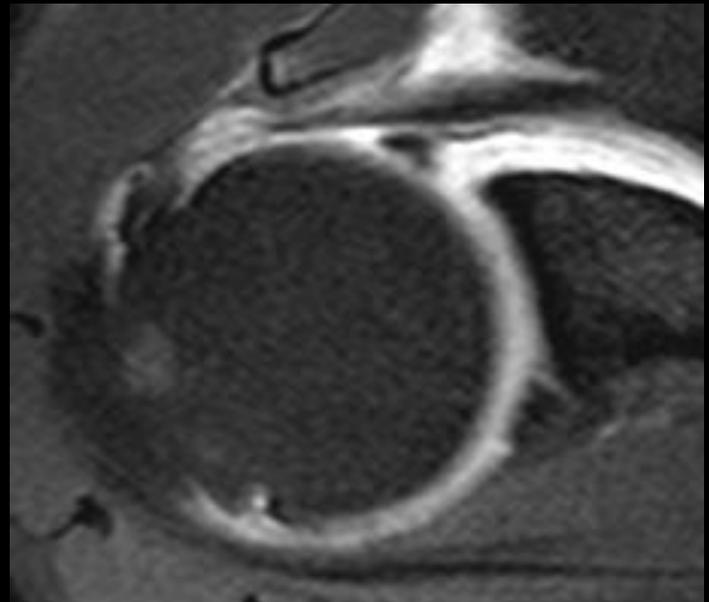
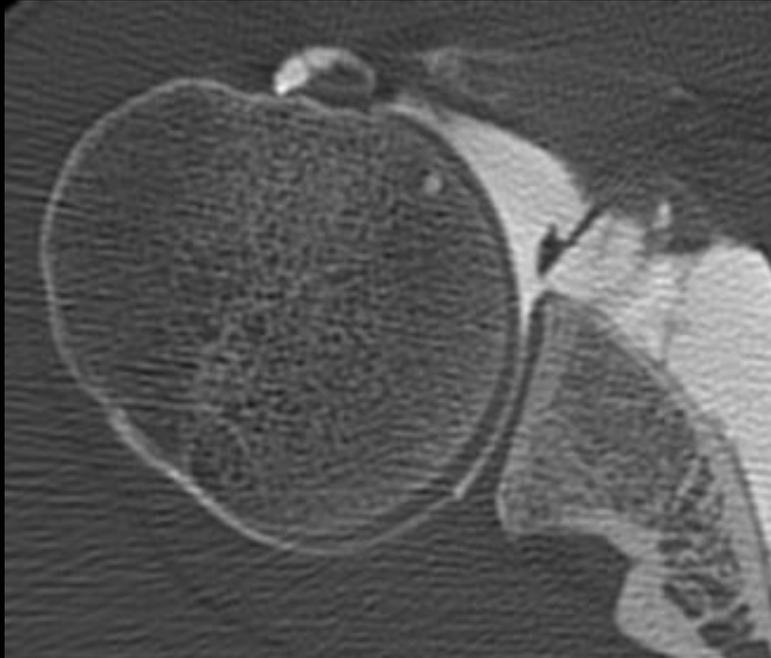
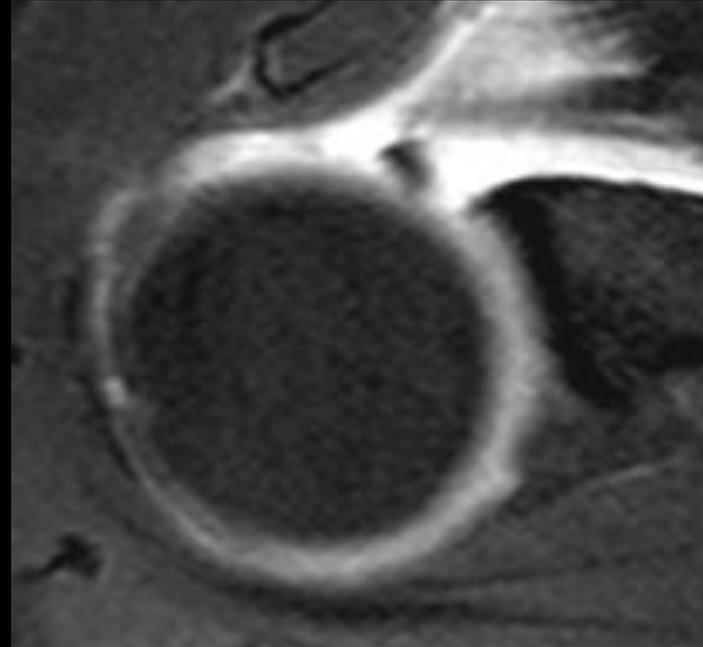


Foramen sous-labral

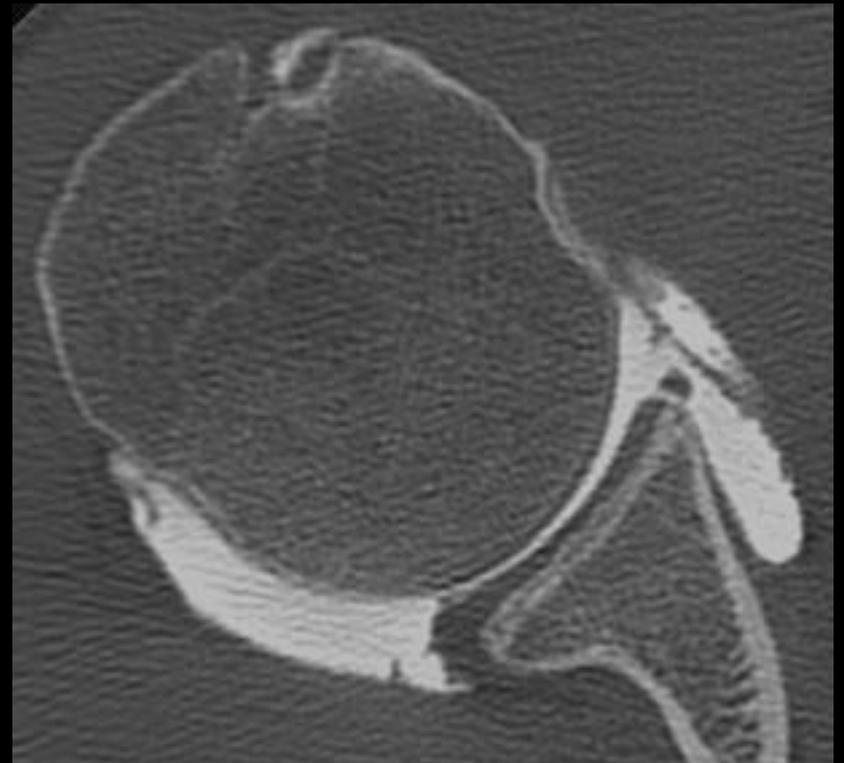
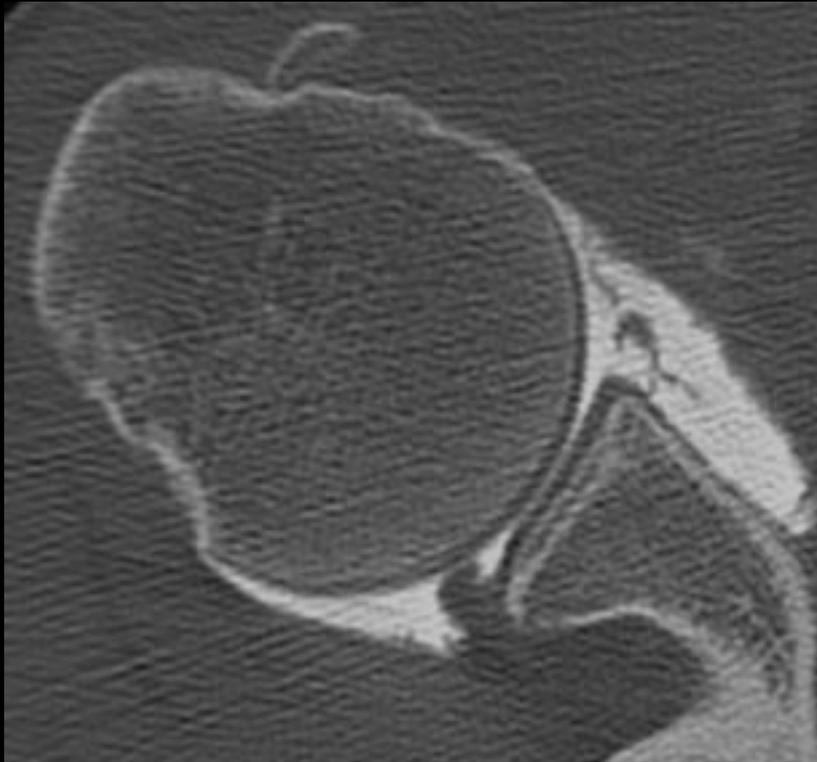
- Position 2 heures
- Non accollement du labrum antérosupérieur
- LGHM naissant uniquement du labrum supérieur
- 15% population
- Parfois associé à un récessus sous-labral



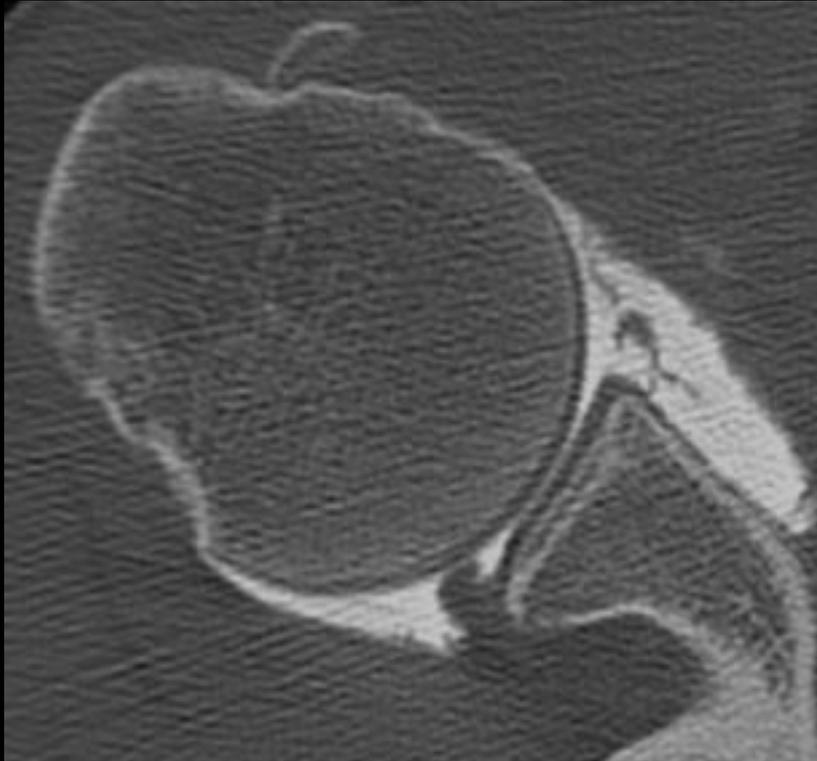
Foramen sous-labral



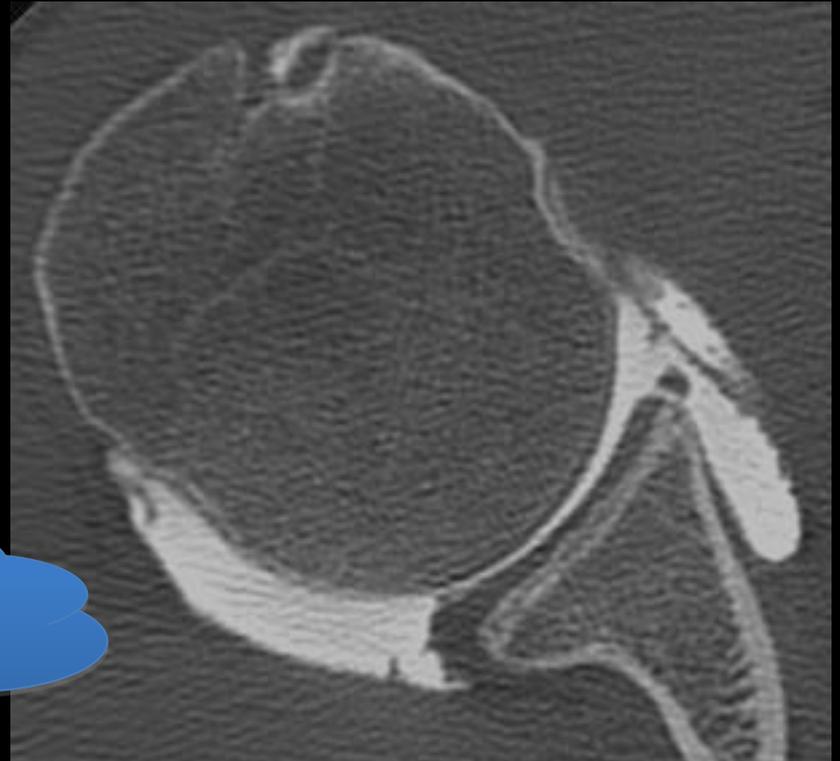
Foramen sous-labral ?



Foramen sous-labral ?



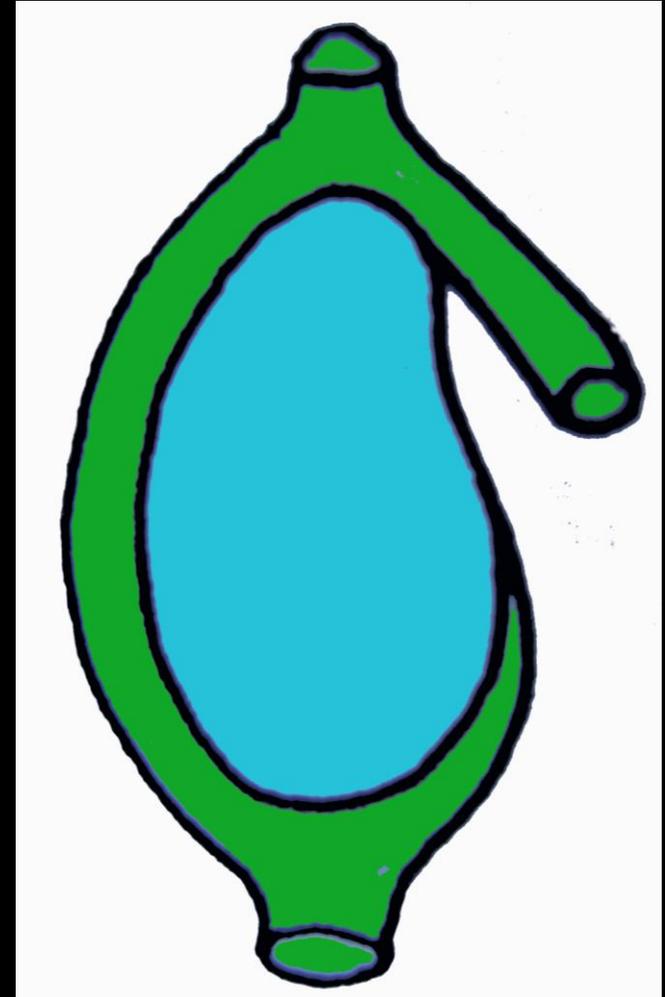
Avulsion traumatique du
labrum antérieur



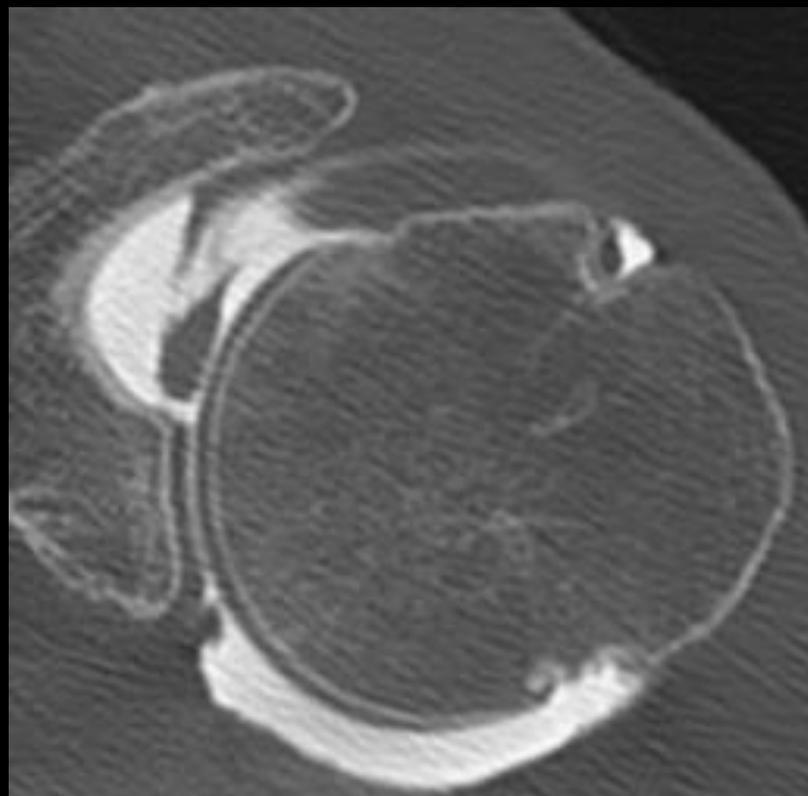
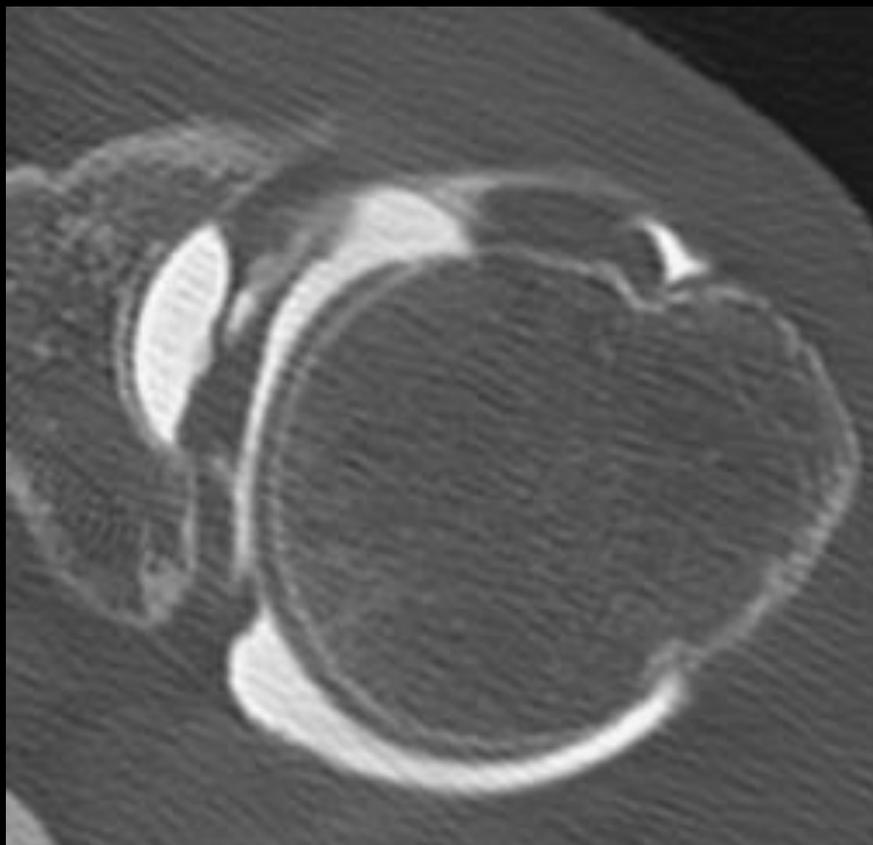
Complexe de Buford

- Absence de labrum antérosupérieur et hypertrophie du LGHM
- 1,5 % population

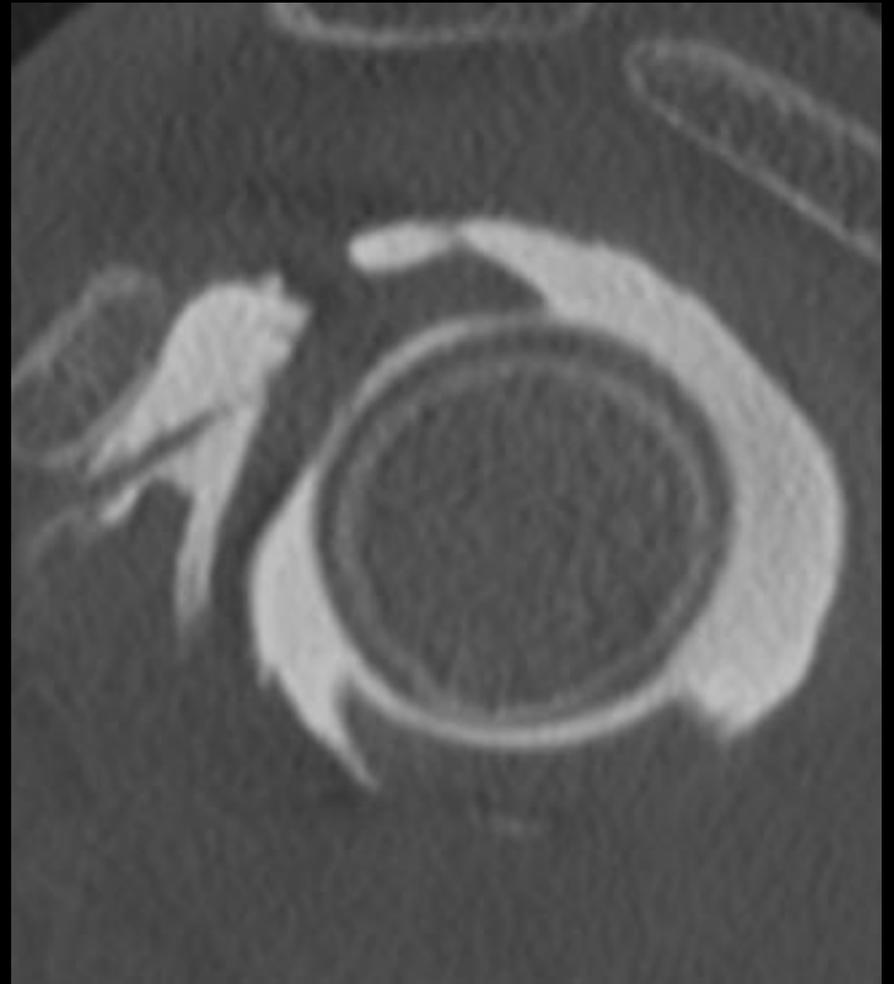
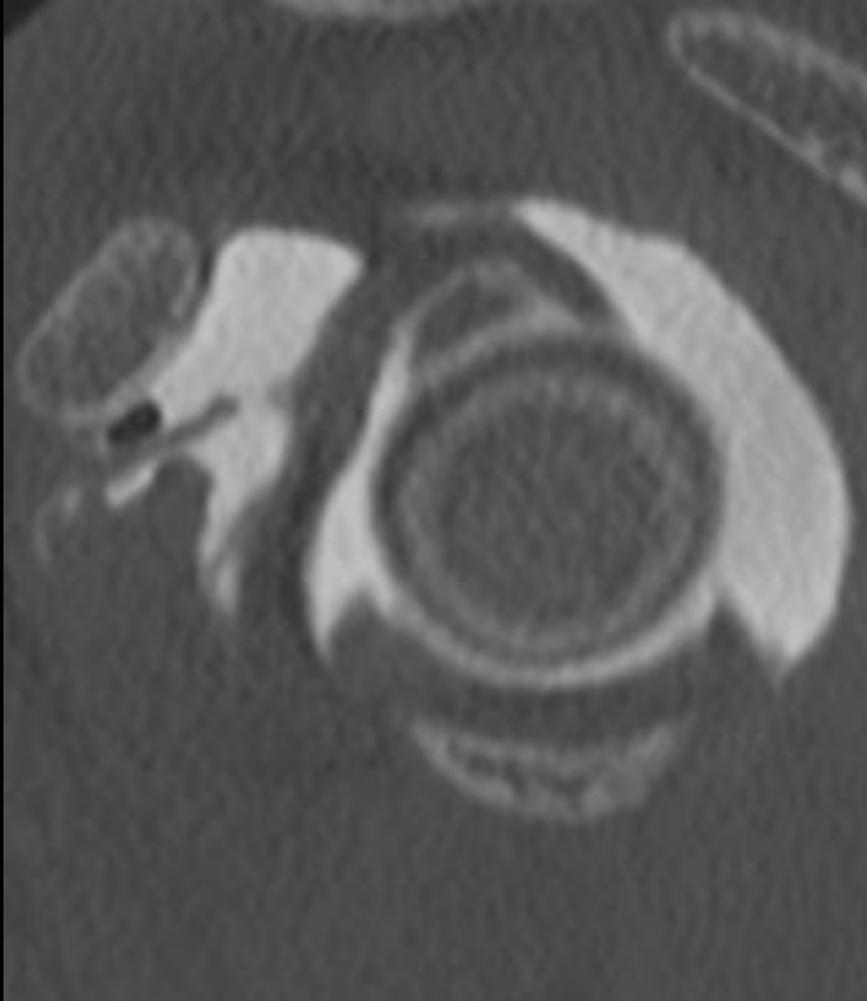
≠ Anse de seau labrale



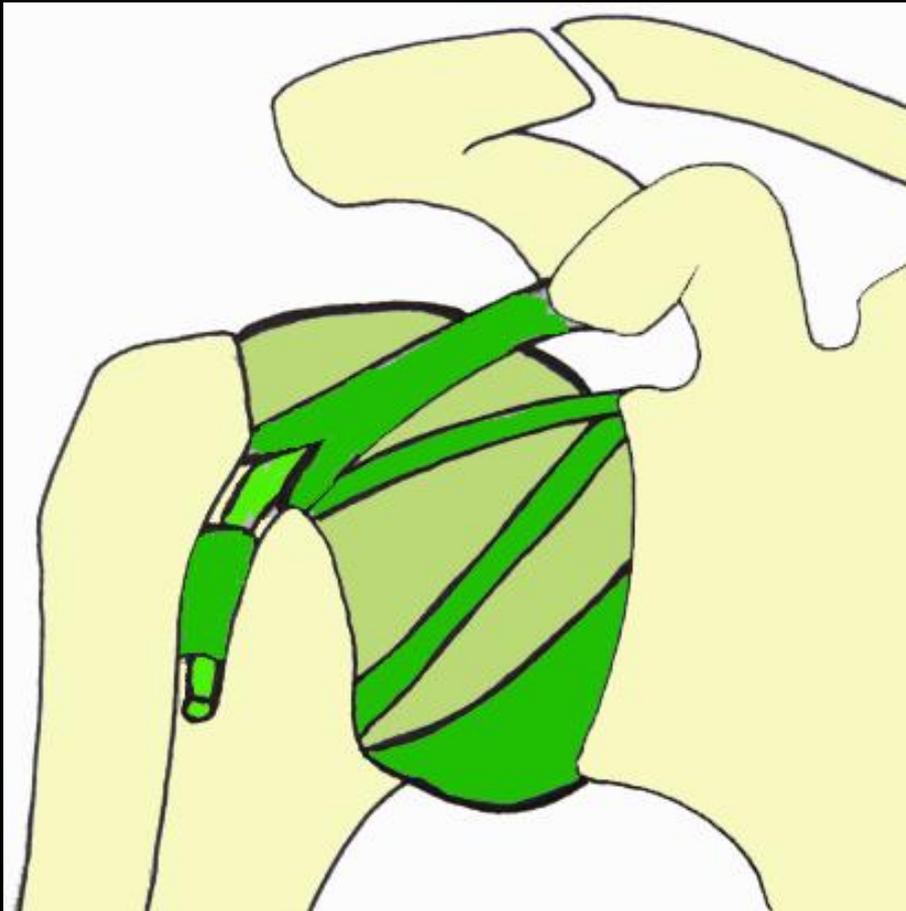
Complexe de Buford



Complexe de Buford

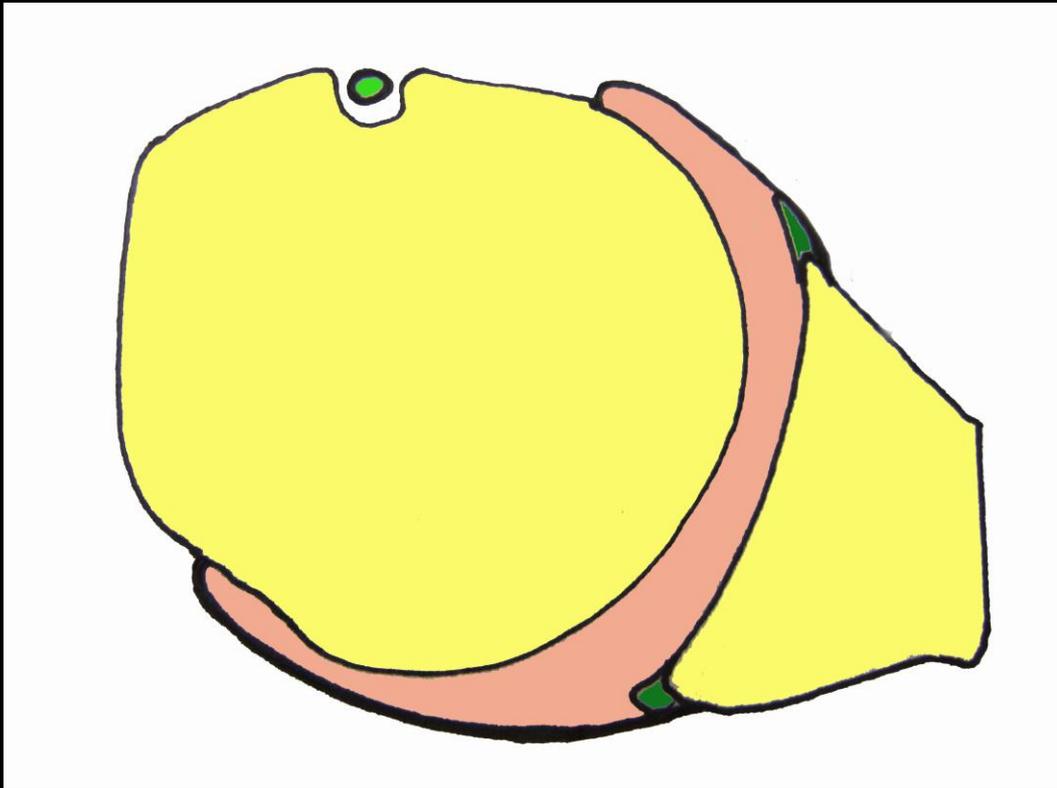


Capsule articulaire et ligaments



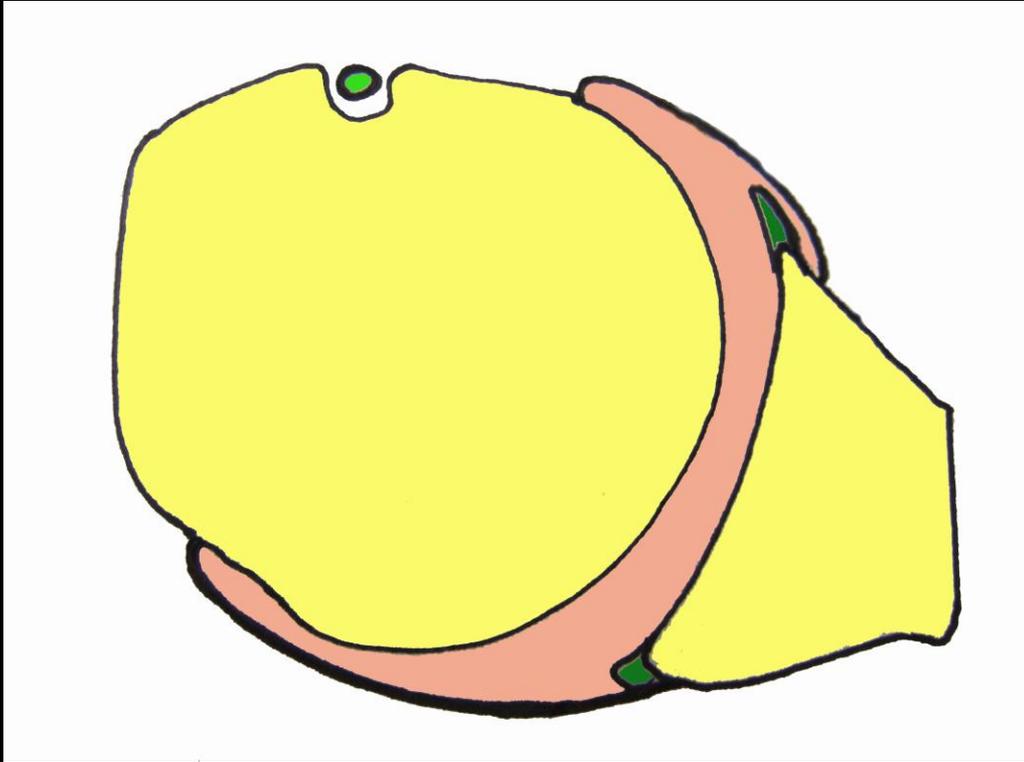
- Ligament coraco-huméral
- Ligaments gléno-huméraux
 - LGHS
 - LGHM
 - LGHI
- Ligament huméral transverse

Insertion de la capsule antérieure



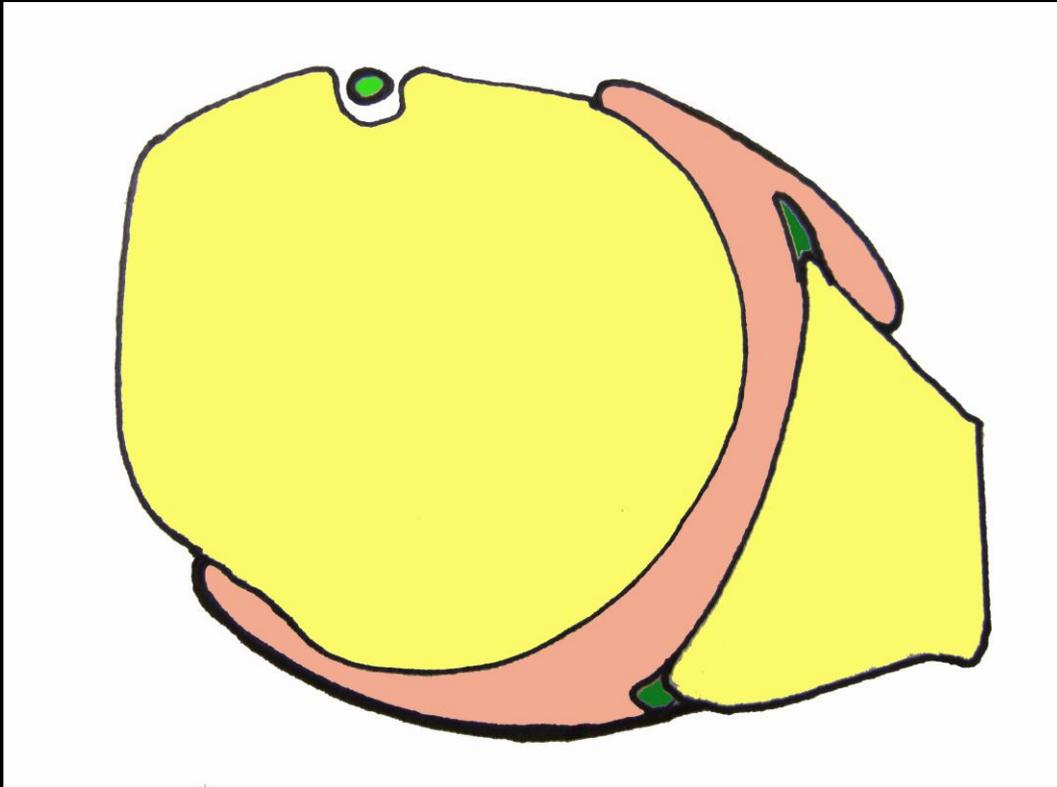
- Type 1 Turkel:
 - Insertion face périphérique labrum

Insertion de la capsule antérieure



- Type 2 Turkel:
 - Insertion sur le col de la scapula légèrement en dedans du labrum

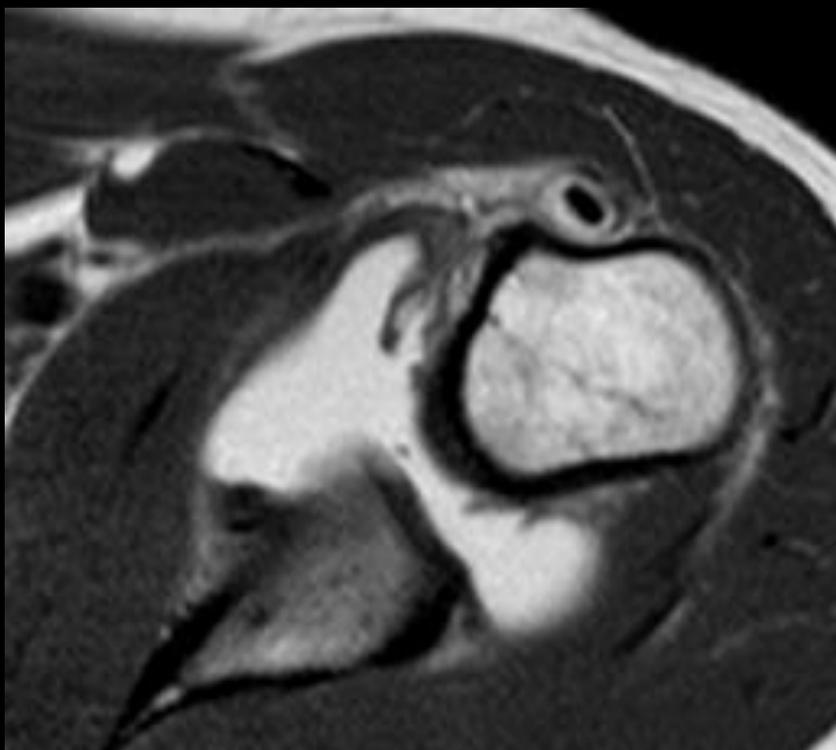
Insertion de la capsule antérieure



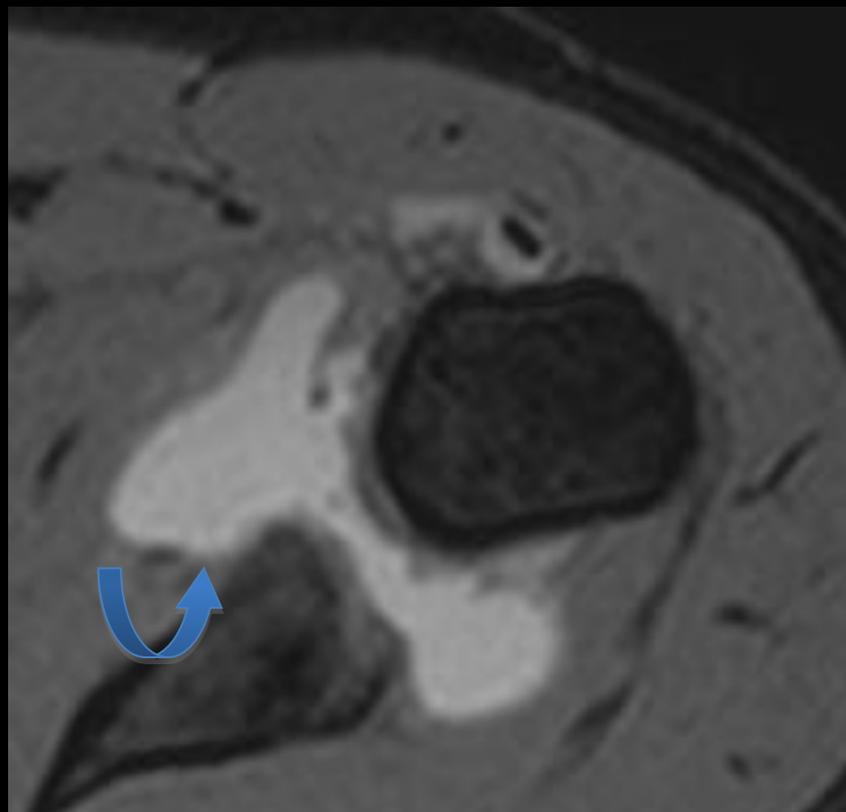
- Type 3 Turkel:
 - Moins fréquent
 - Insertion sur le col de la scapula largement en dedans du labrum



Poche de décollement capsulo-périostée

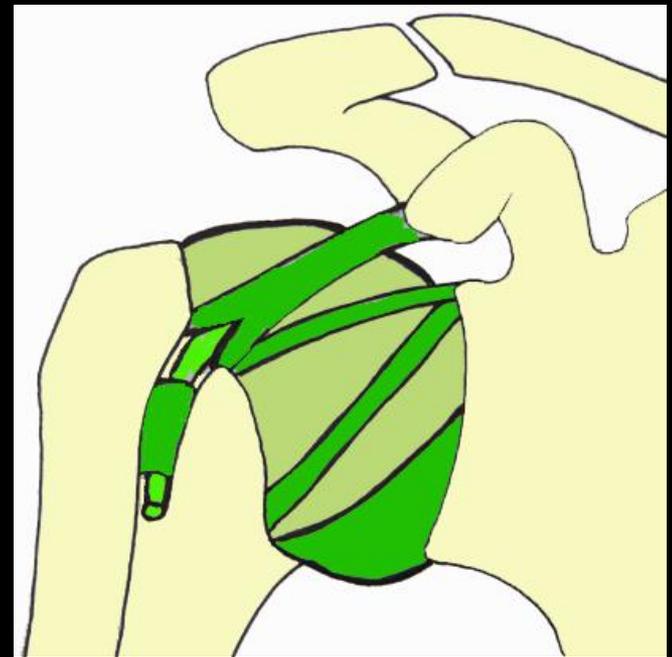


ALPSA lésion



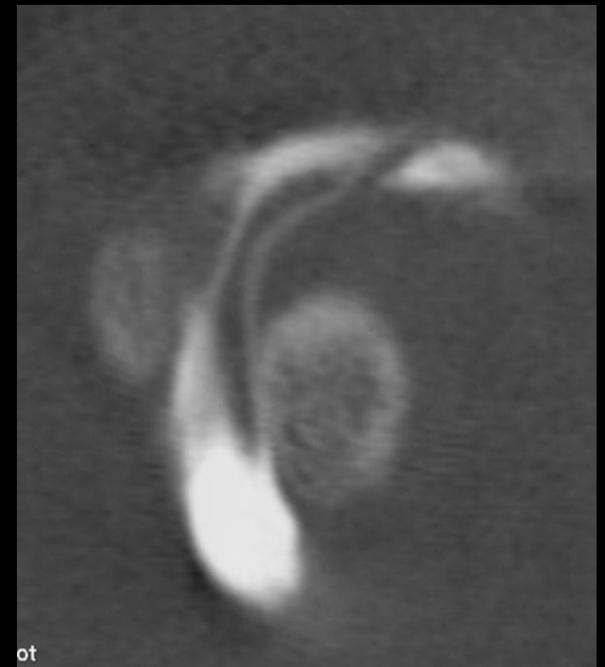
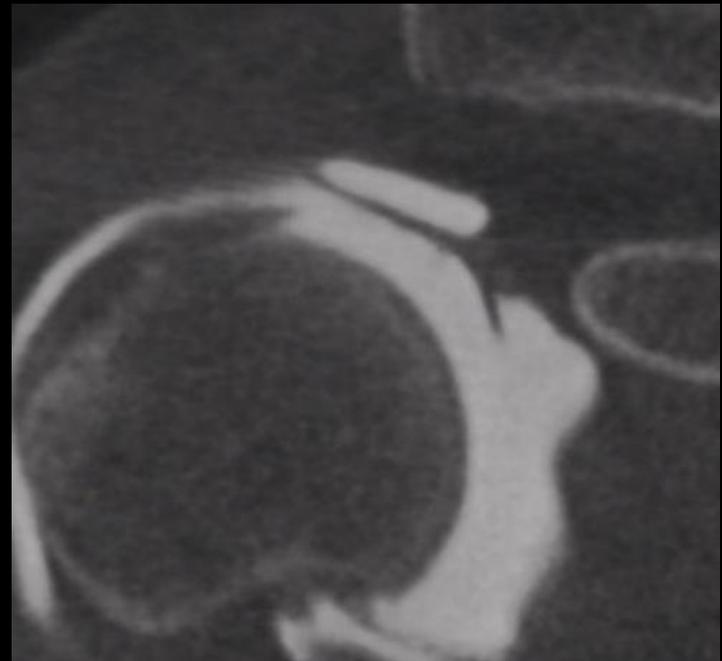
LGHS

- Présent 90% population
- Insertions possibles:
 - labrum antérosupérieur
 - attache du LB
 - LGHM

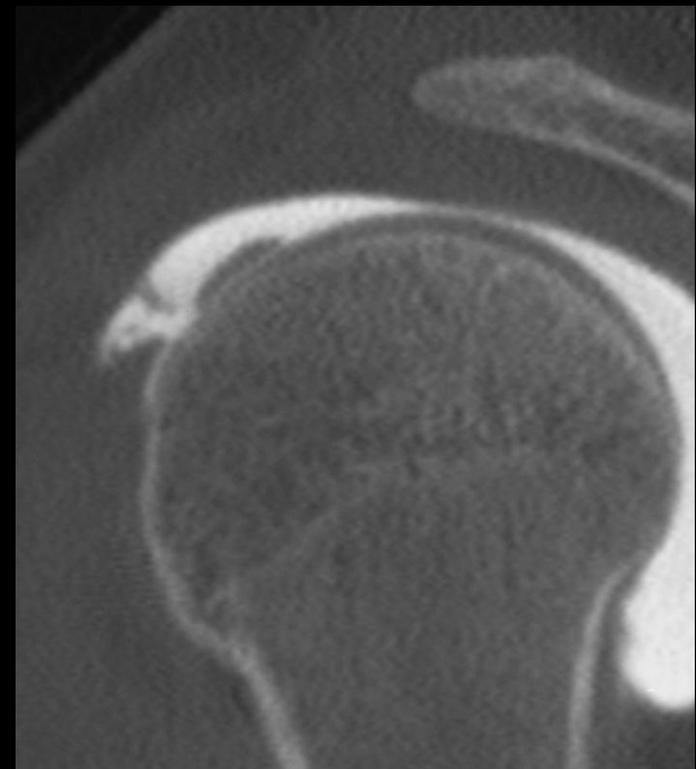
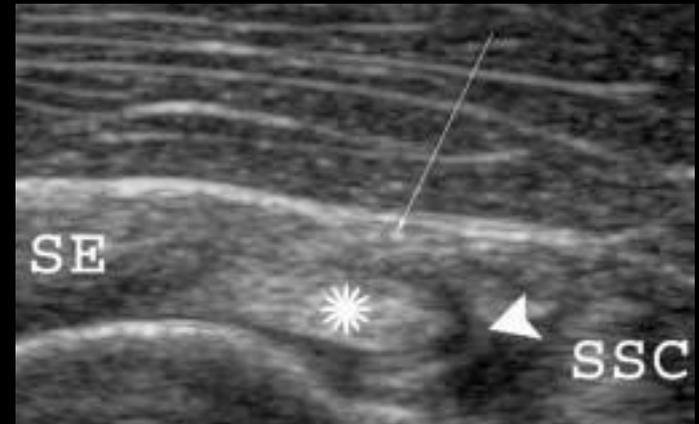
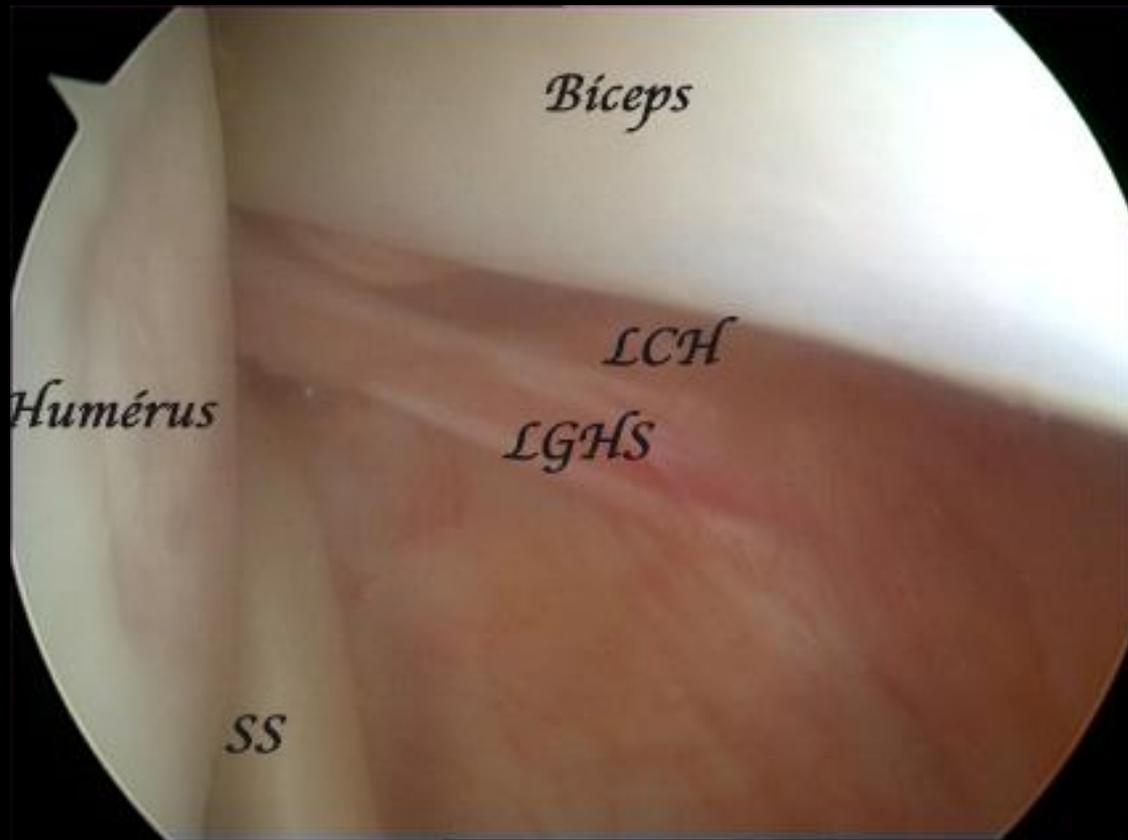


LGHS

- Présent 90% population
- Insertions possibles:
 - labrum antérosupérieur
 - attache du LB
 - LGHM
- Trajet:
 - parallèle au processus coracoïde et perpendiculaire au LGHM
- Terminaison:
 - poulie ligamentaire du LB avec faisceau médial du ligament coraco-huméral

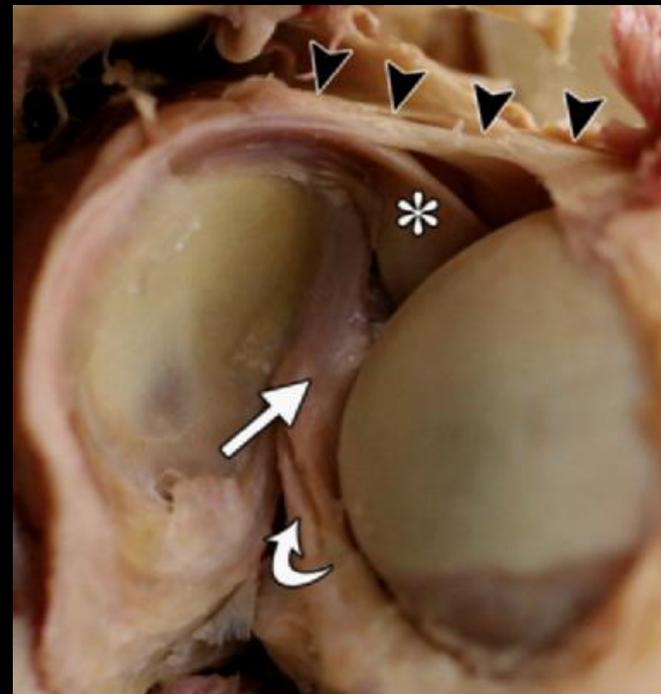
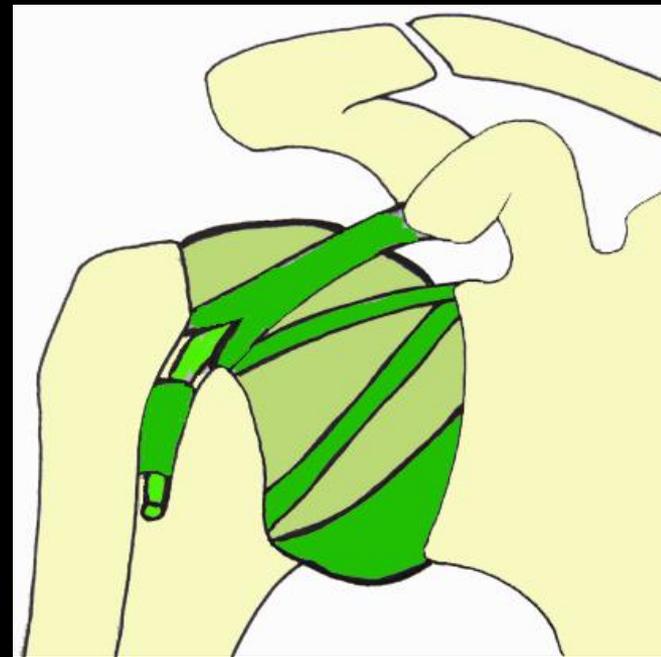


LGHS



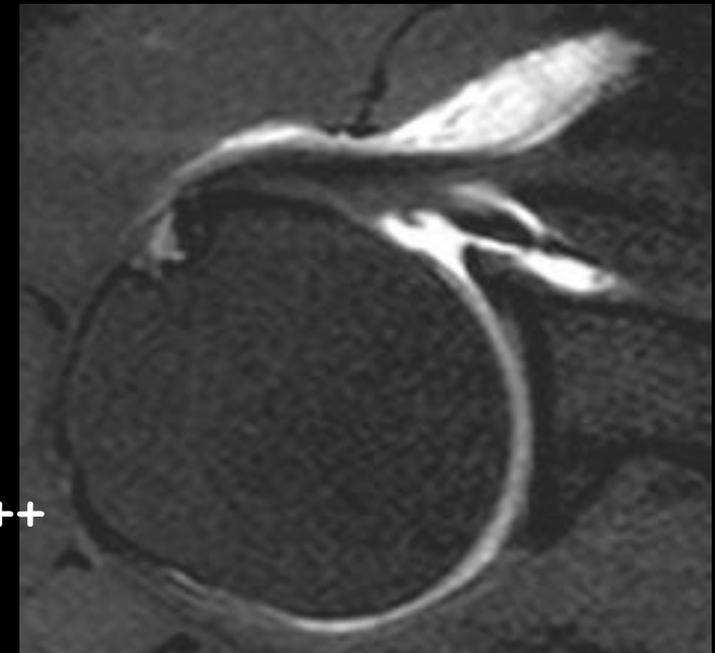
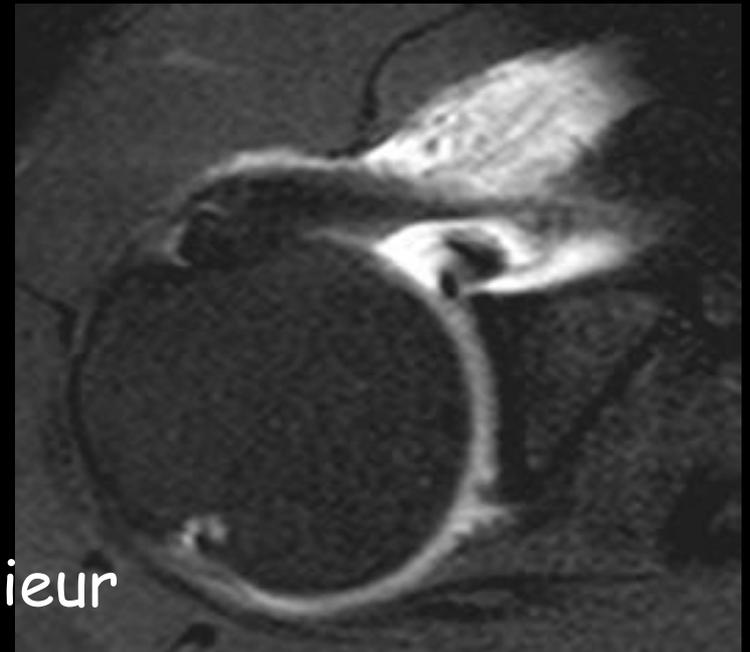
LGHM

- Le plus variable...
 - Hypoplasique/absent 30%
 - Insertion labrum antérosupérieur ou col de la scapula
 - Naissance isolée / naissance commune avec LGHS ou LGHI
 - Fin ou épais (cord-like)
 - Bifide (rare)

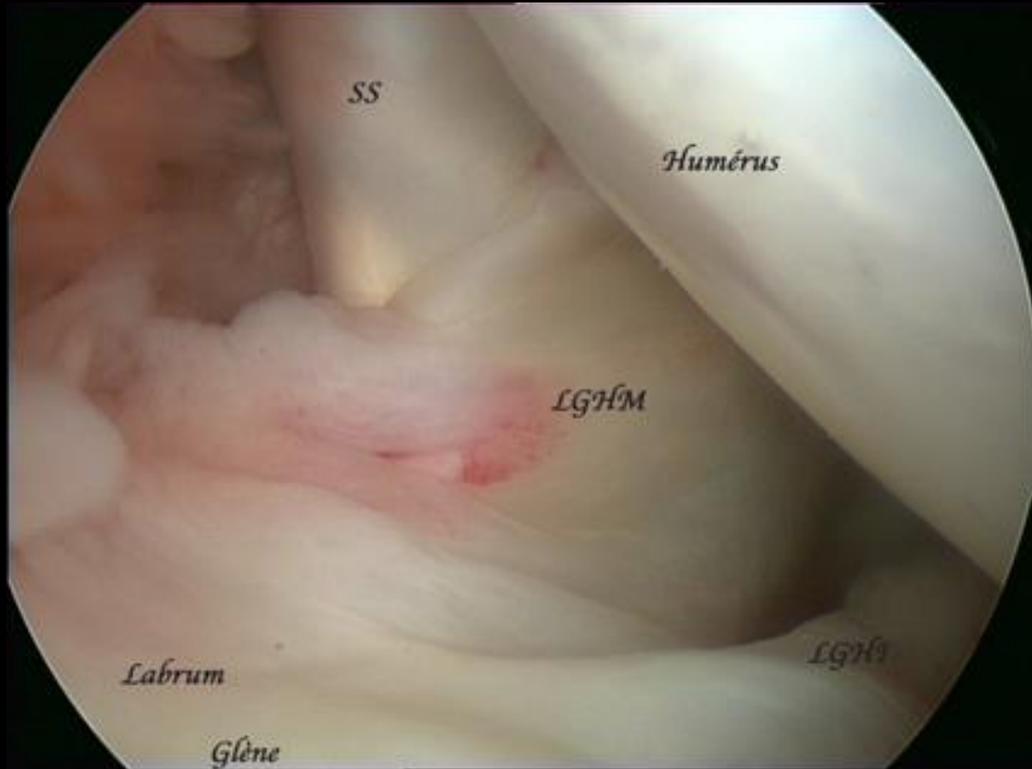


LGHM

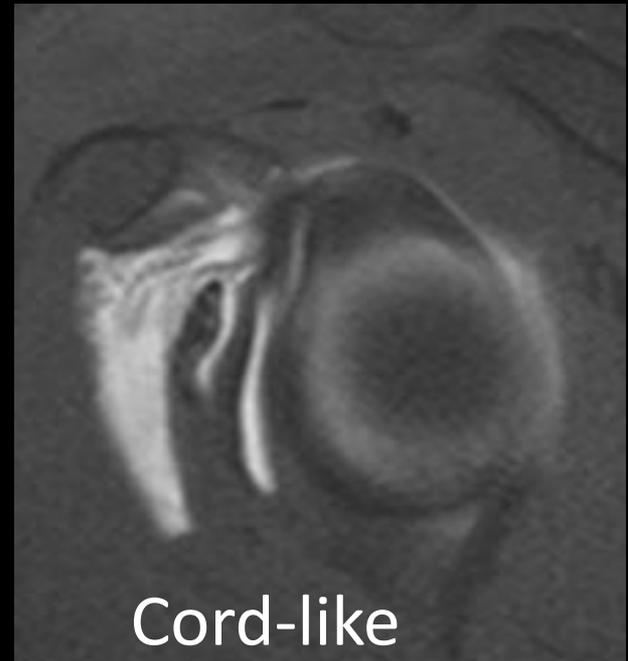
- Le plus variable...
 - Hypoplasique/absent 30%
 - Insertion labrum antérosupérieur ou col de la scapula
 - Naissance isolée / naissance commune avec LGHS ou LGHI
 - Fin ou épais (cord-like)
 - Bifide (rare)
- Trajet oblique inféro-latéral
- Aspect dépendant de la rotation +++



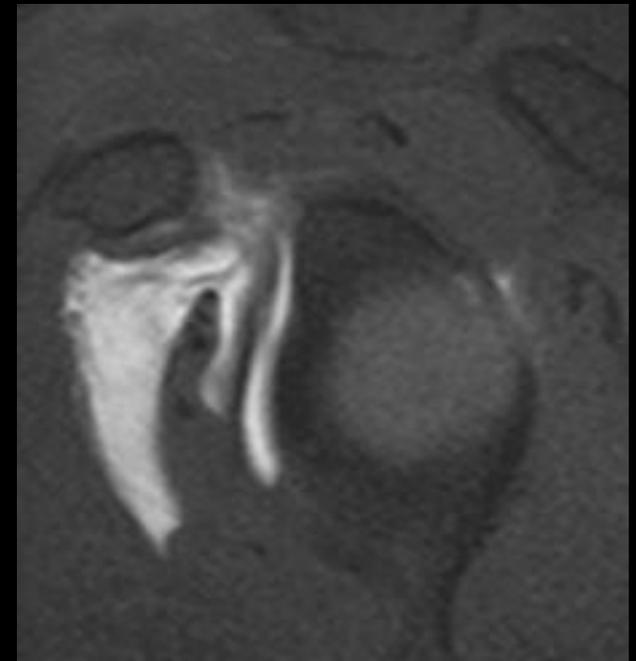
LGHM



Foramen de Rouvière

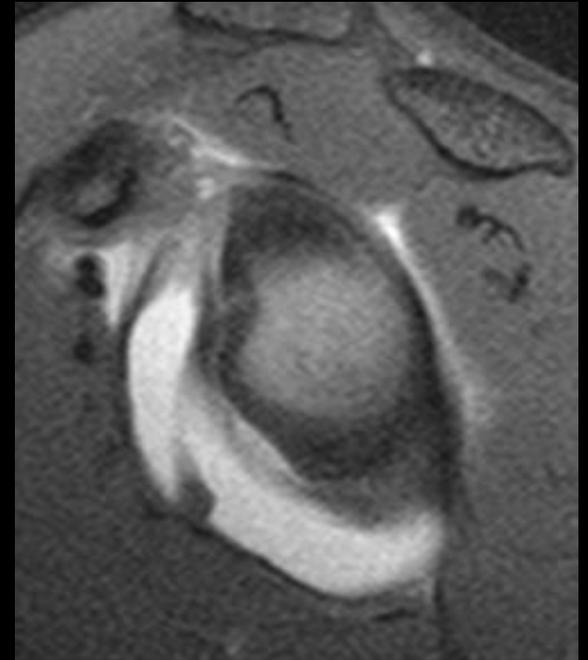
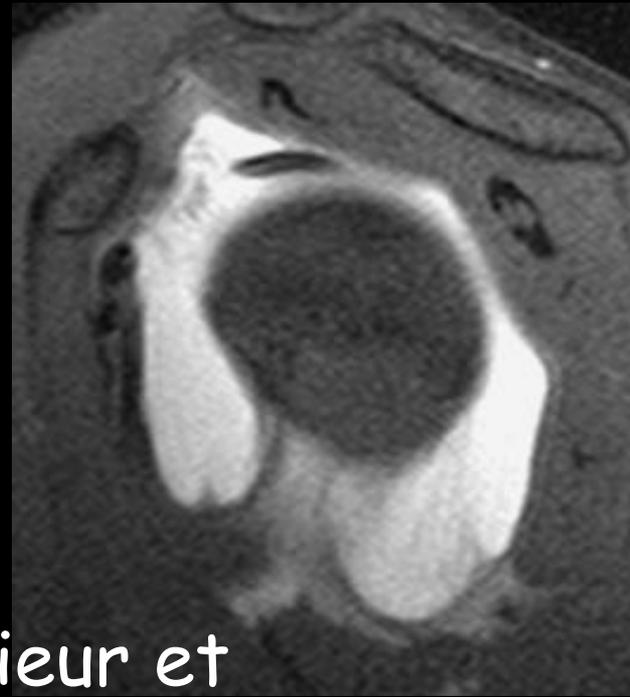


Cord-like

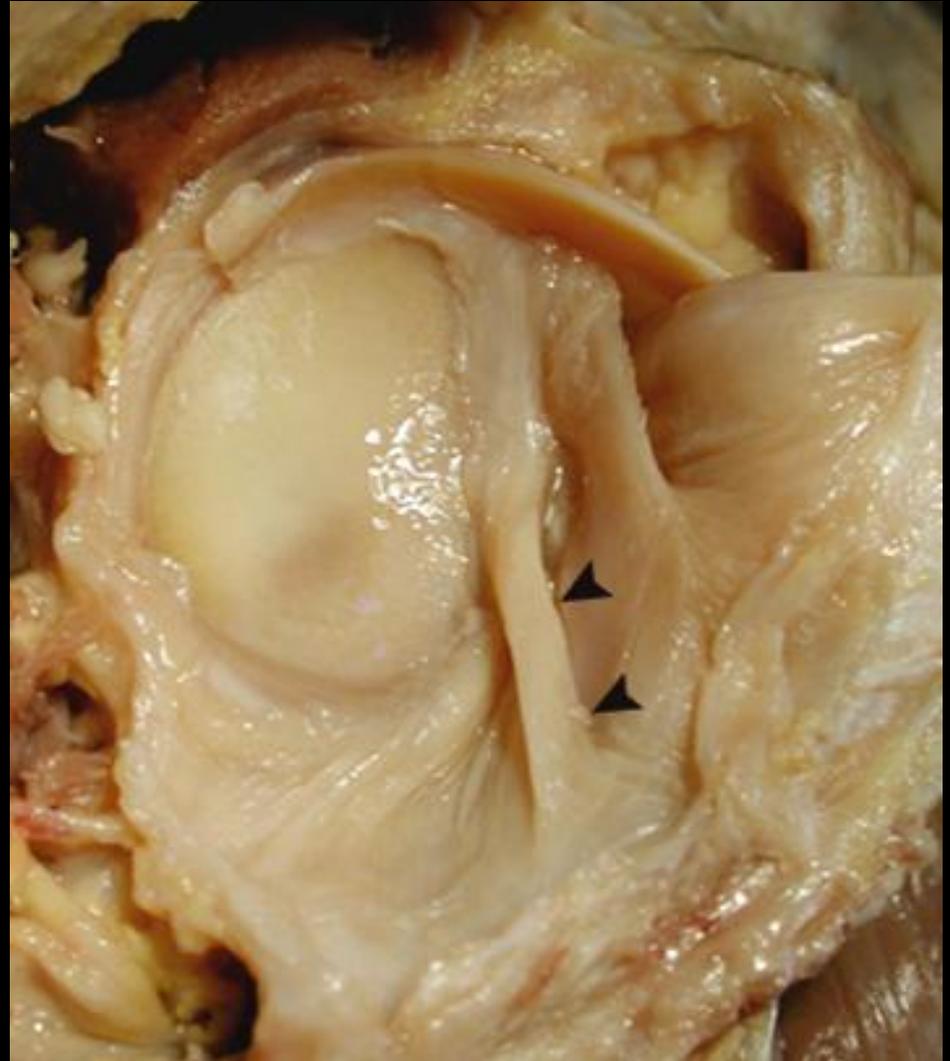
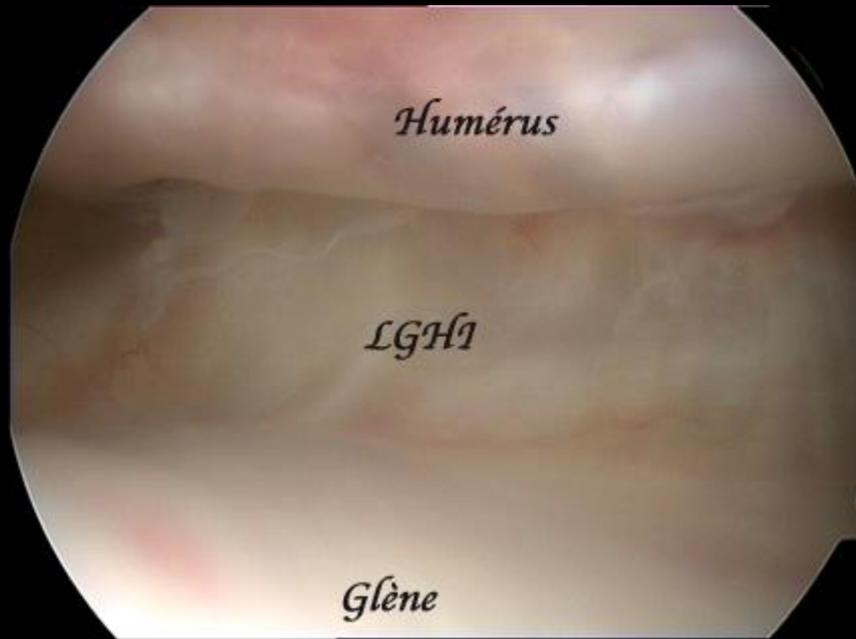


LGHI

- « Hamac » avec deux renforcements antérieur et postérieur
- Faisceau antérieur le plus épais, s'insérant sur les 2/3 tiers inférieurs du labrum antérieur



LGHI



Cord-like



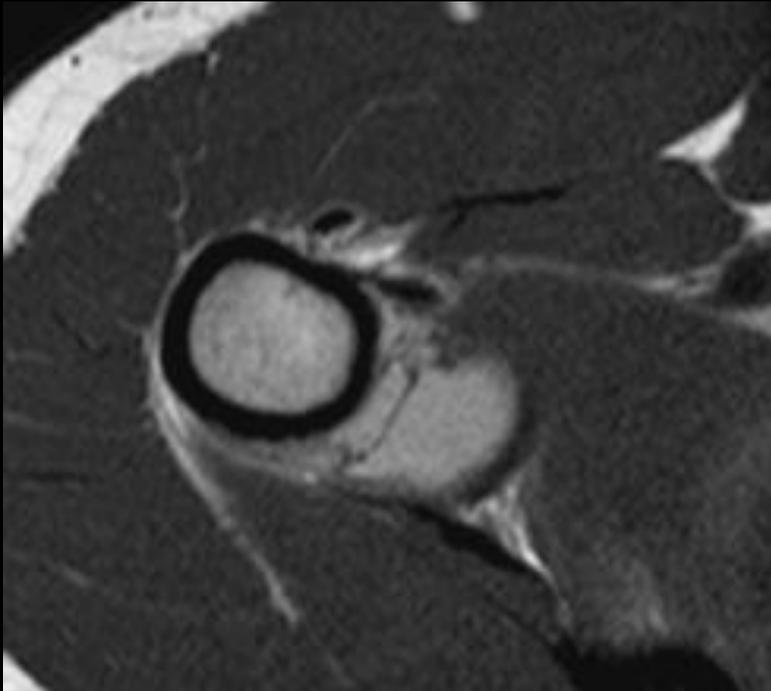
HAGL lésion

- Avulsion humérale du LGHI
- Ligamentaire ou osseuse
- Réparation chirurgicale +++

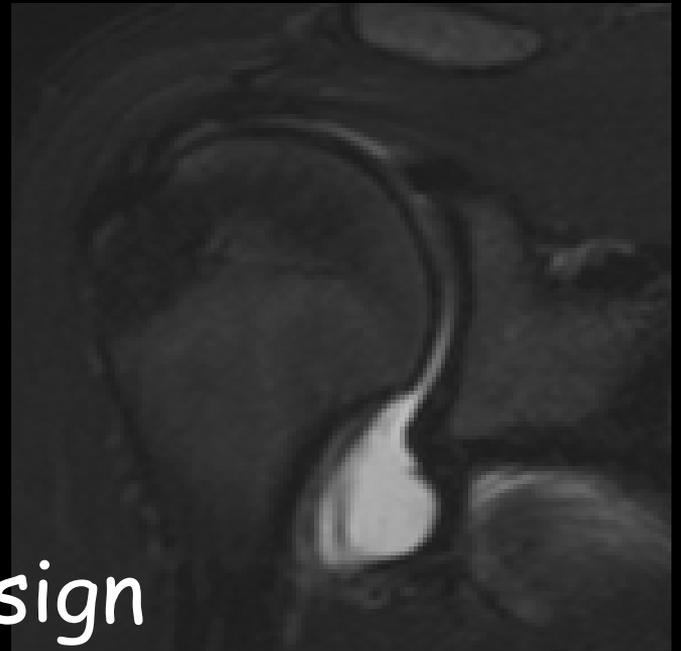




HAGL

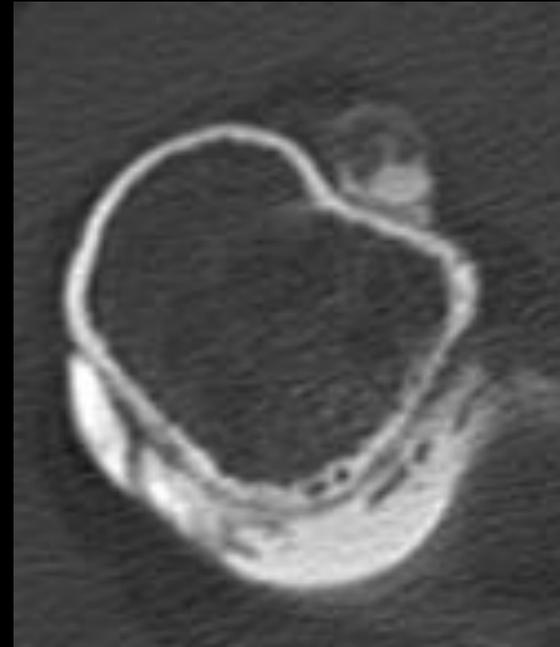
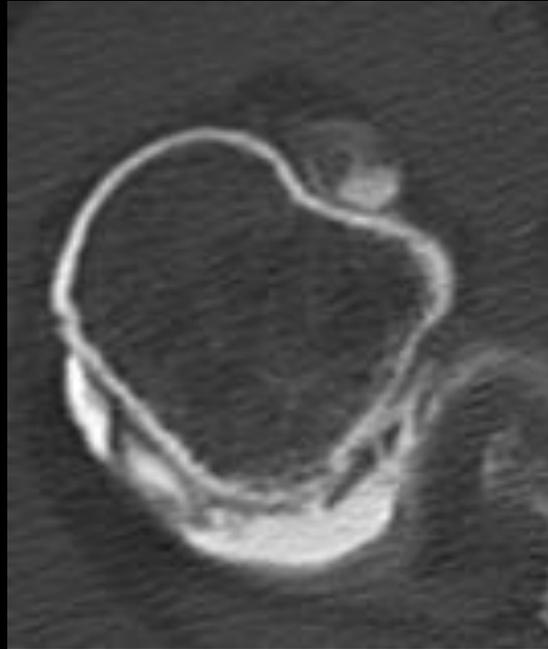


J sign



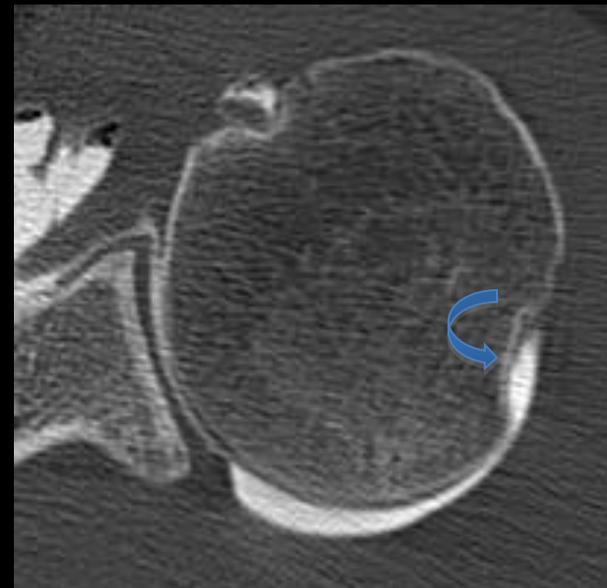
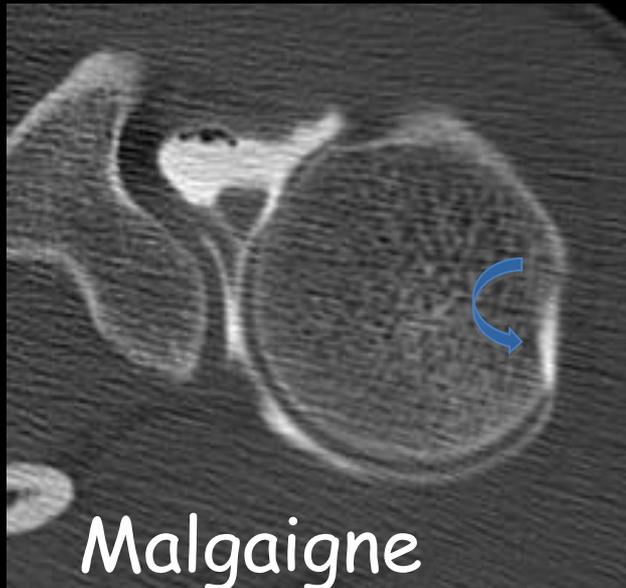
Variantes anatomiques et images pièges

Franges synoviales



- Récessus axillaire ou bicipital
- Peuvent mimer corps étrangers
- Nombre élevé et petite taille

Pseudo-encoche de Malgaigne



- Topographie postérieure (et non postéro-supérieure)
- Repère processus coracoïde

Eléments de stabilité actifs

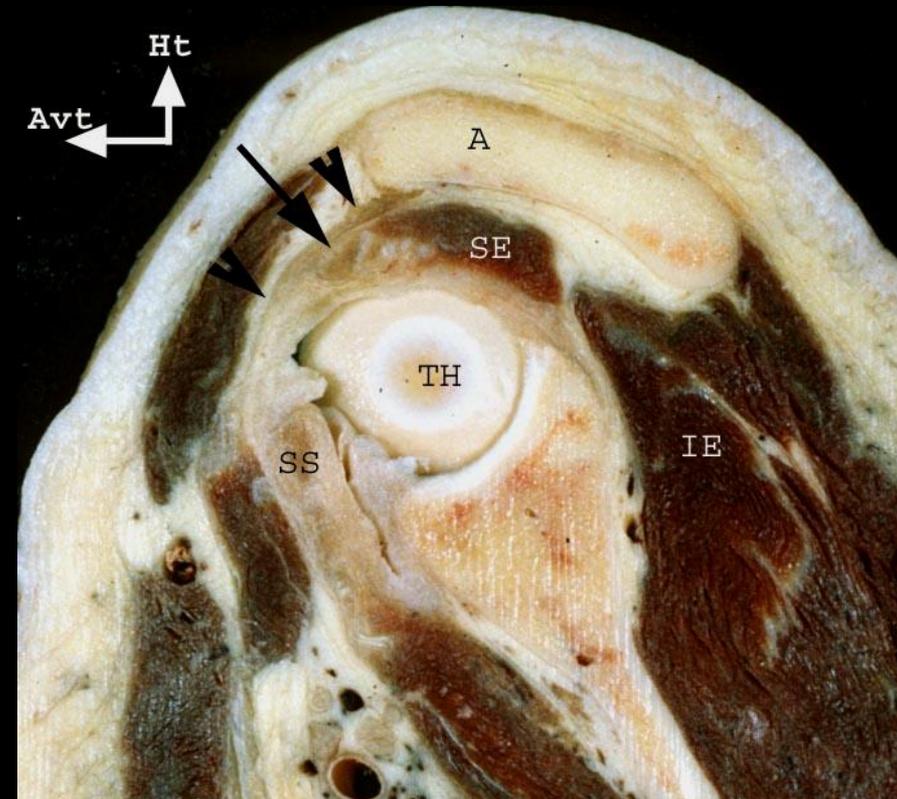


Muscles

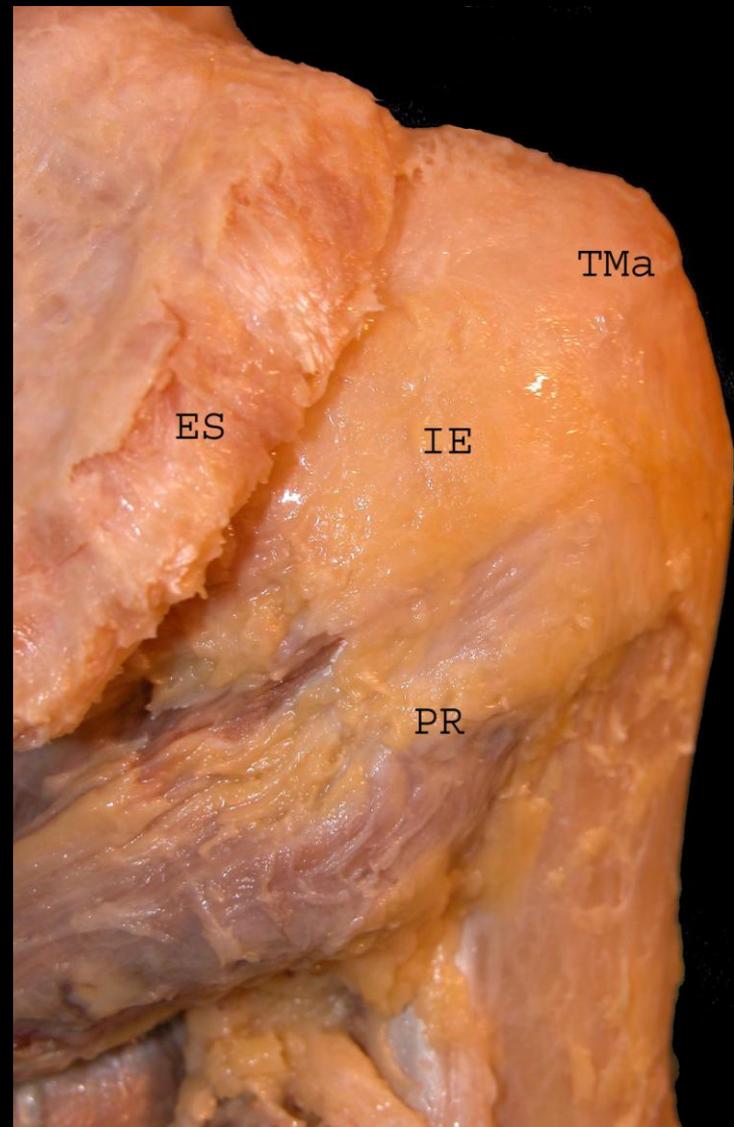
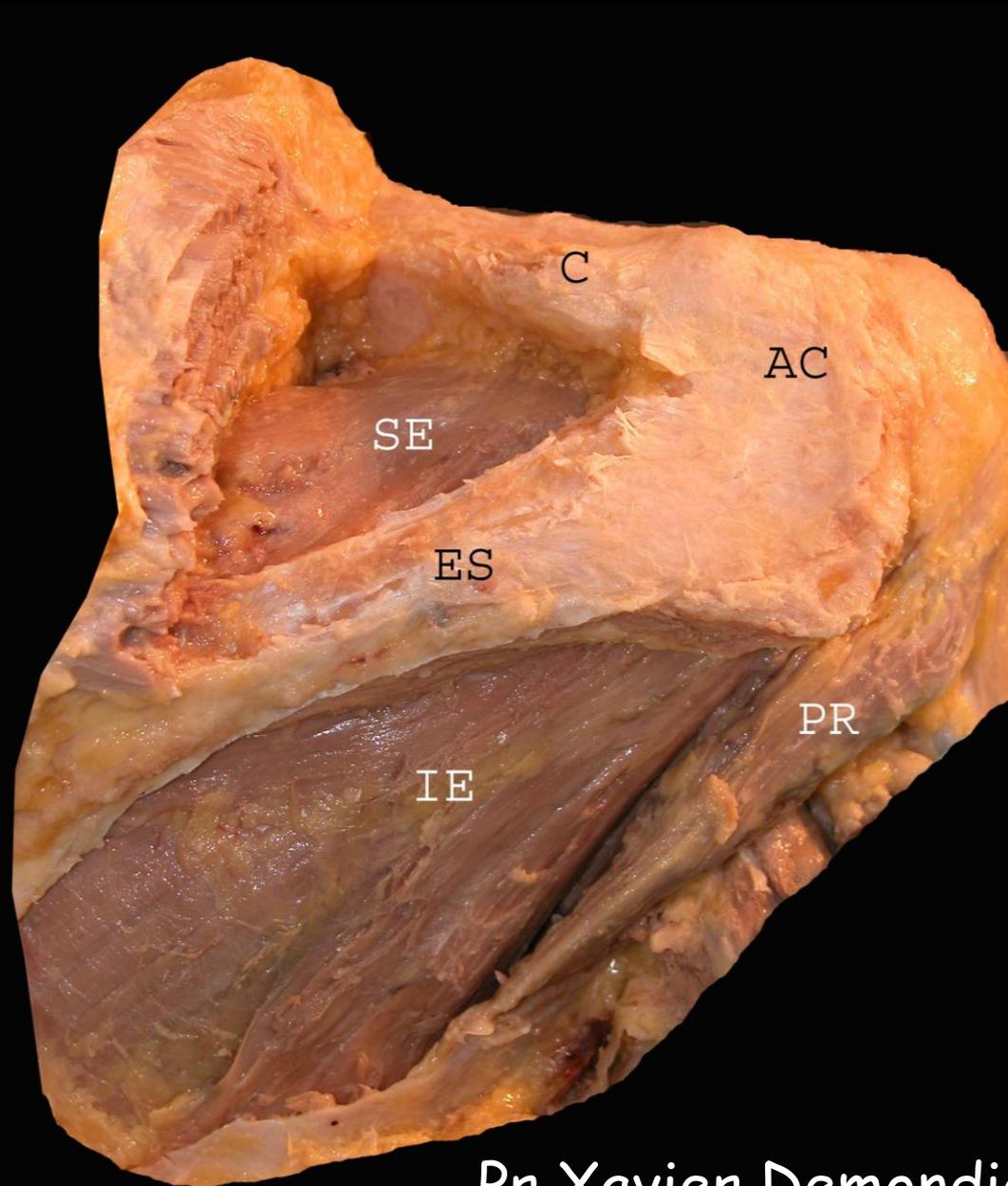
- Coiffe des rotateurs +++
- Long biceps
- Ceinture scapulaire
 - Antérieurs (gd et petit pectoral, coraco-brachial, court biceps)
 - Postérieurs (gd rond, gd dorsal, dentelé antérieur, rhomboïdes)
 - Latéral (deltoïde)
 - Supérieurs (trapèze, élévateur scapula...)

La coiffe des rotateurs

- Capsule articulaire + Ligaments GH
- Tendons des muscles rotateurs:
 - Supra-épineux
 - Subscapulaire
 - Infra-épineux
 - Teres minor
 - + Long biceps

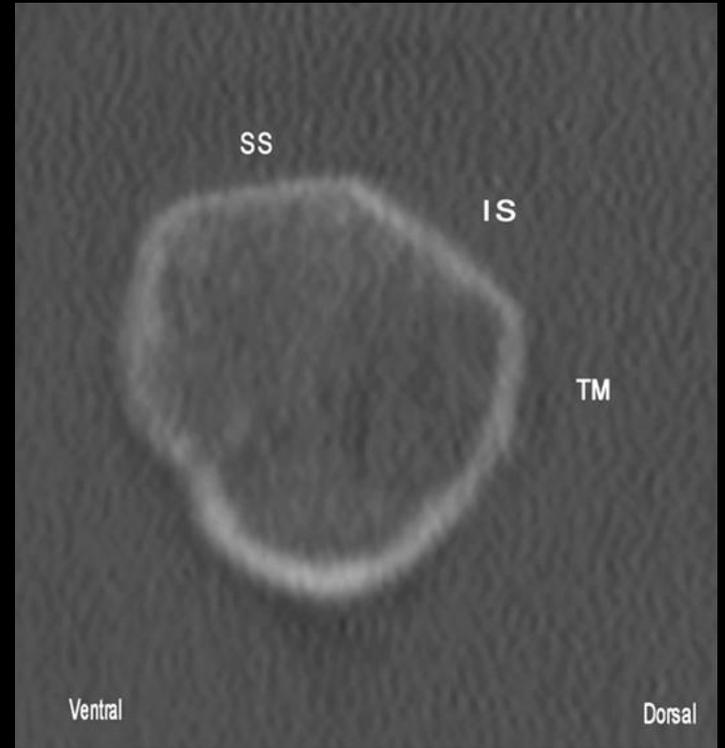
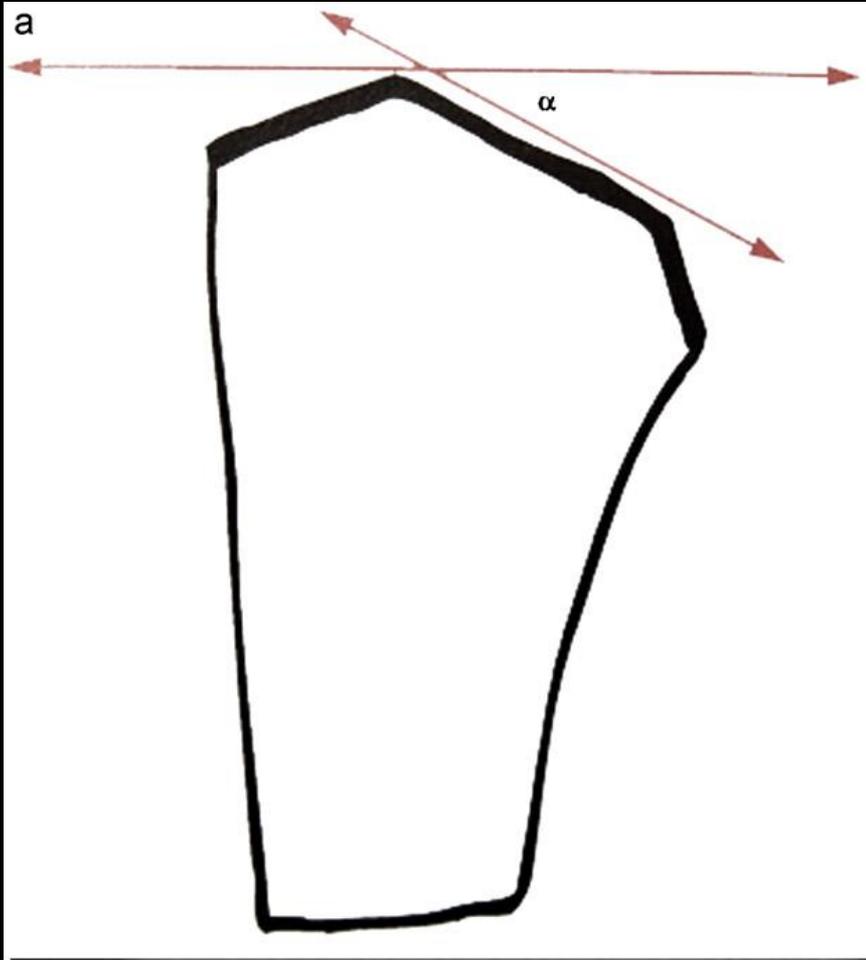


Pr Xavier Demondion

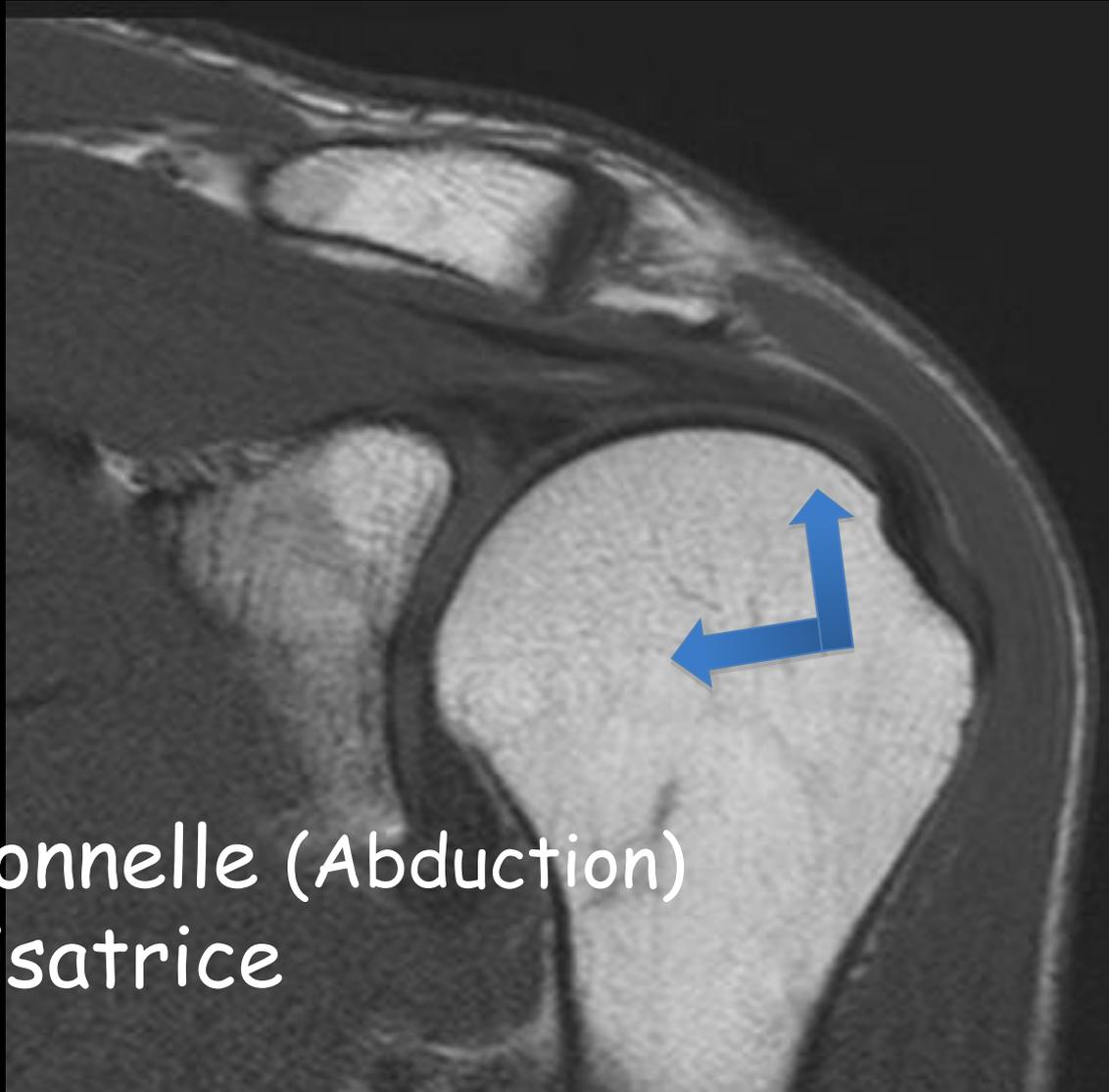


Pr Xavier Demondion

Facettes d'insertion



Supraspinatus

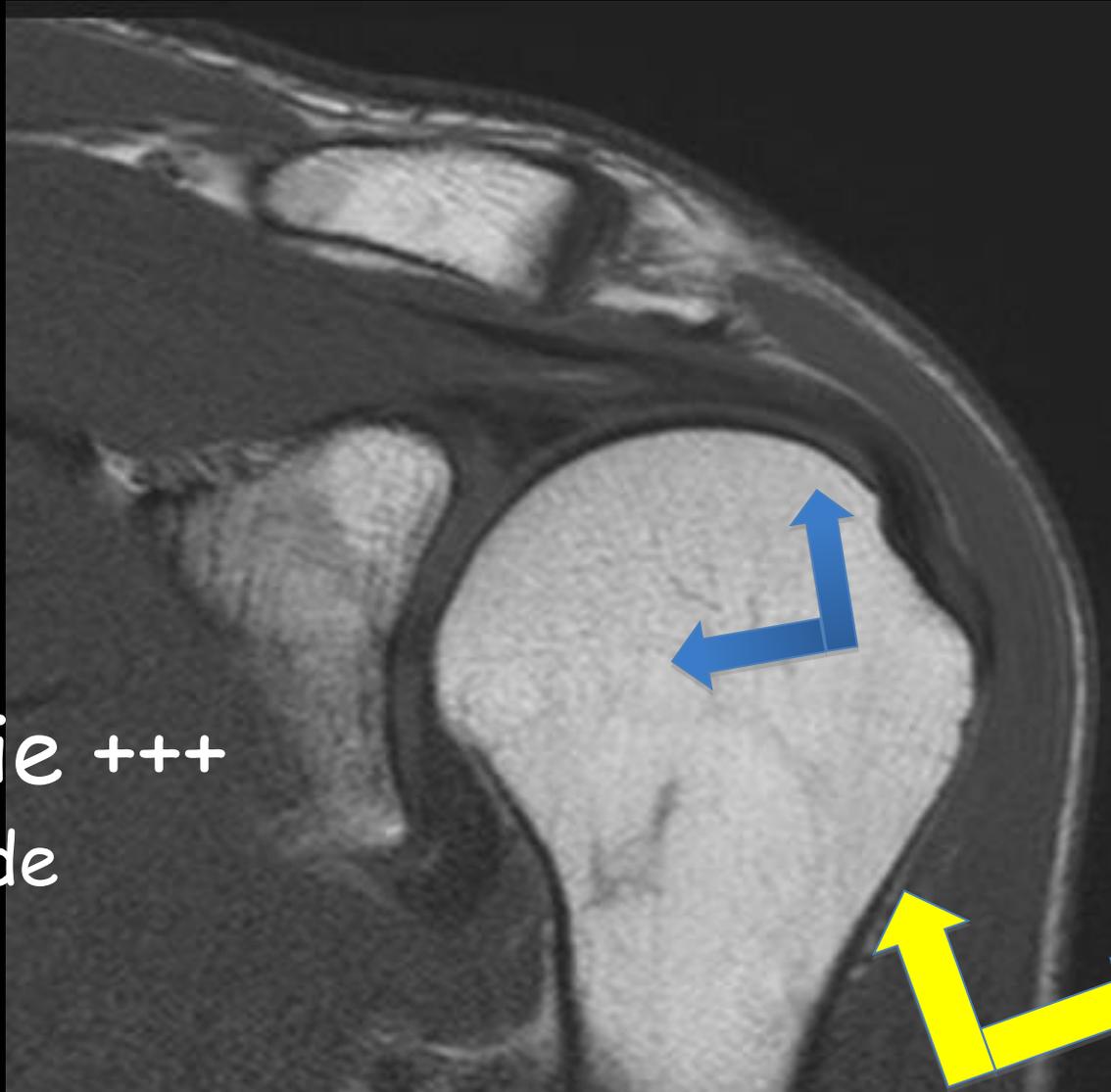


Actions

Rotationnelle (Abduction)

Stabilisatrice

Supraspinatus

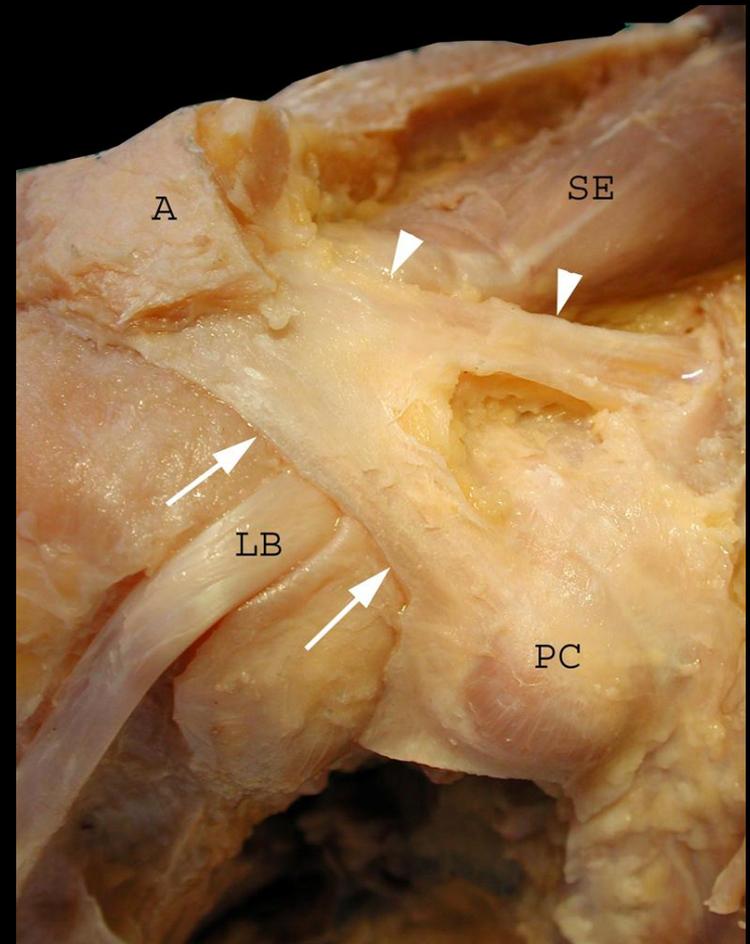
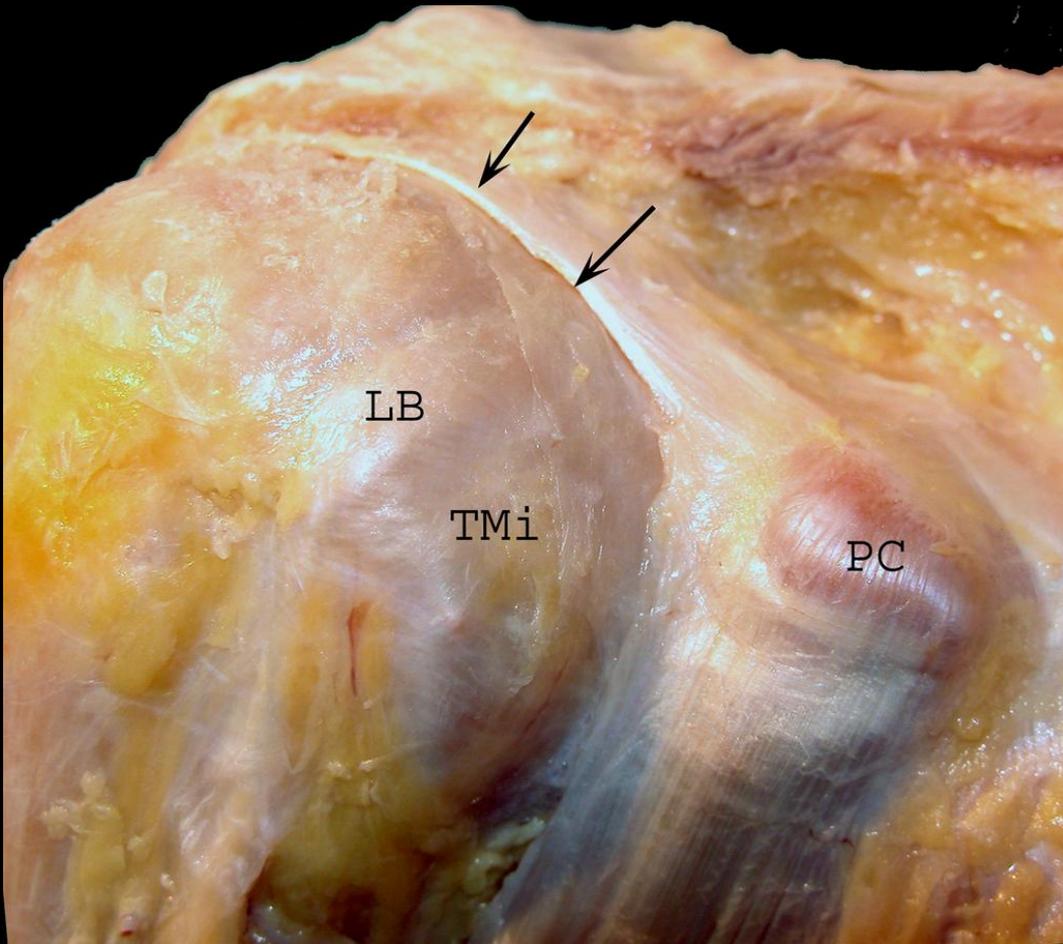


Synergie +++

Deltoïde

BSAD

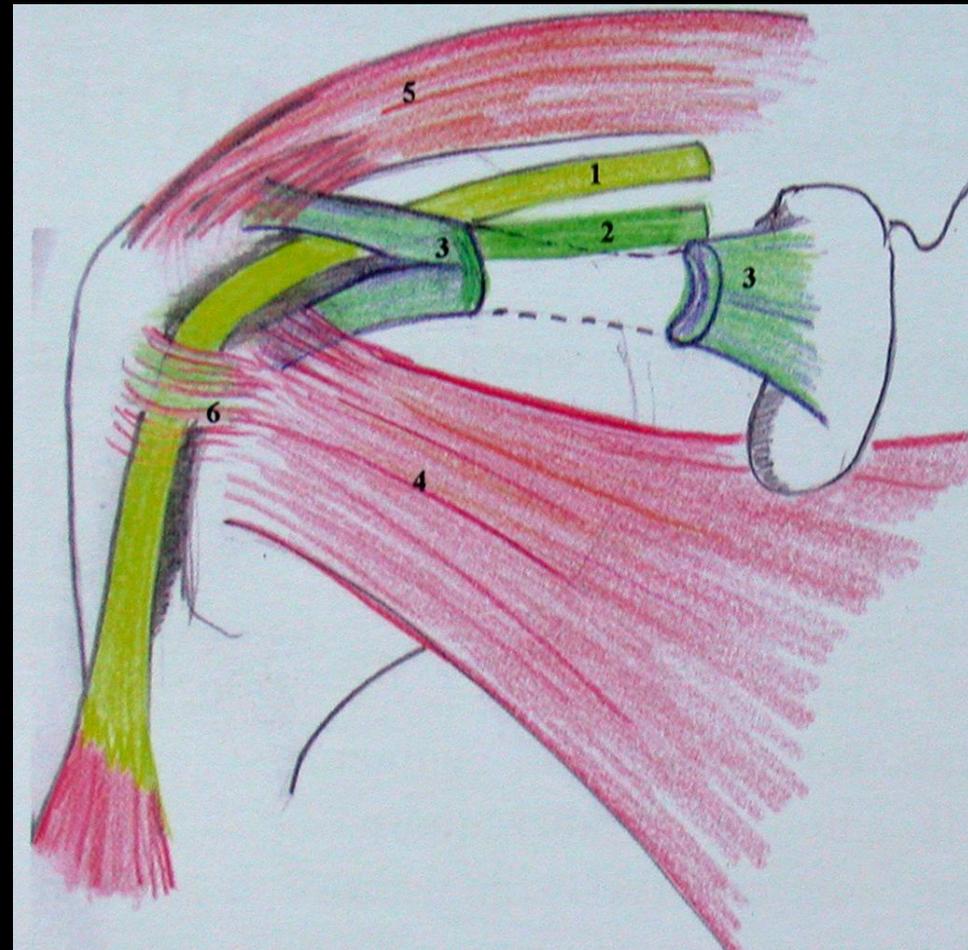
Ligament coraco-acromial



Pr Xavier Demondion

L'intervalle des rotateurs

- Espace triangulaire
- Plan superficiel :
LCH
- Traversé par Long
Biceps, LGHS



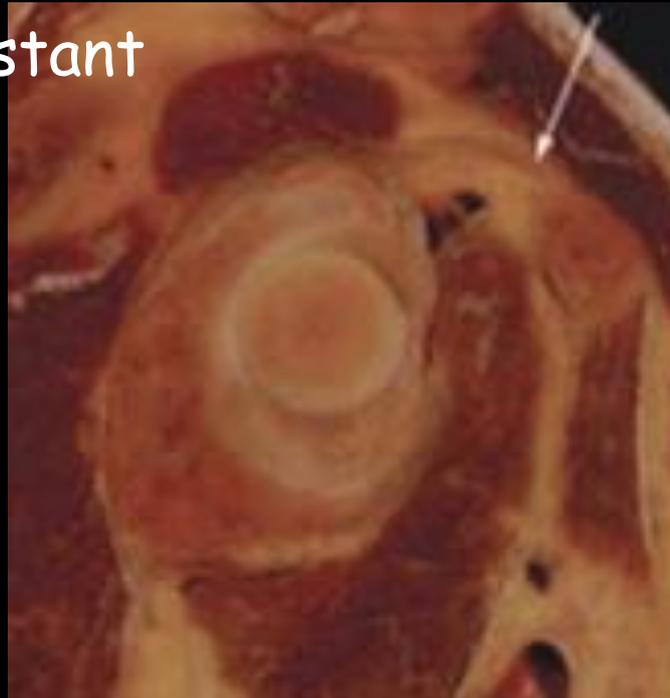
Ligament coraco-huméral

LCH :

reliquat prolongement

petit pectoral

quasiment constant



Ligament coraco-huméral

LCH :

reliquat prolongement

petit pectoral

quasiment constant

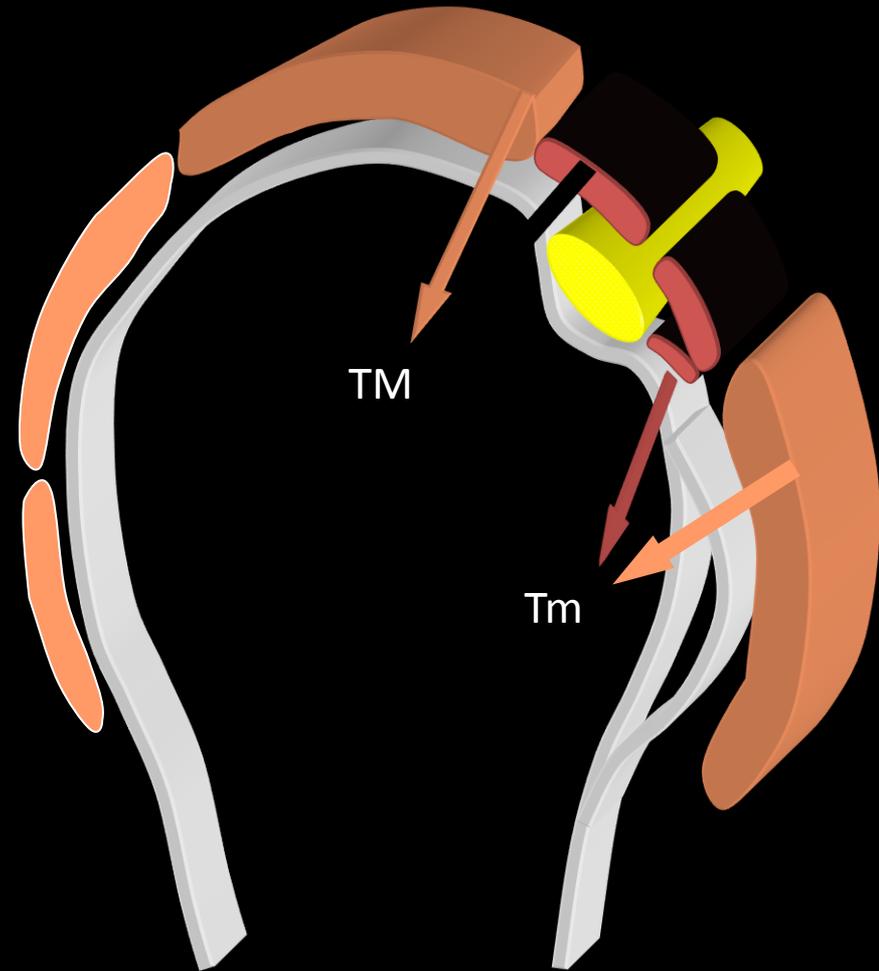
latéralement 2 faisceaux

latéral : TM + SE

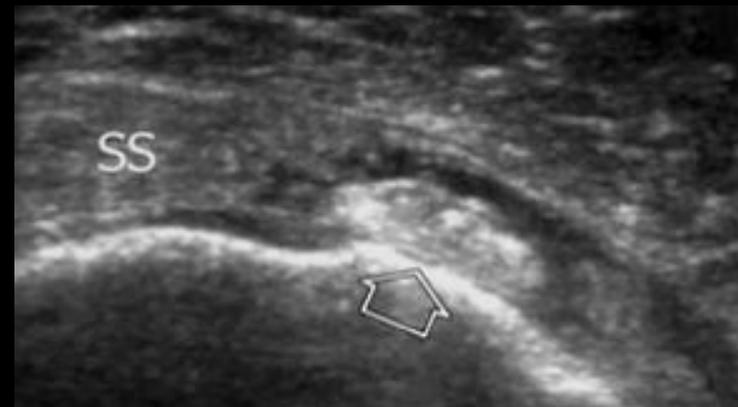
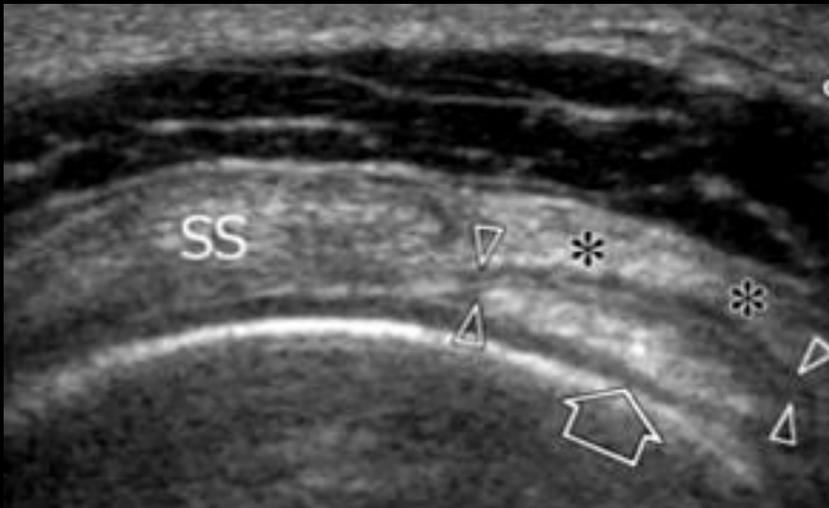
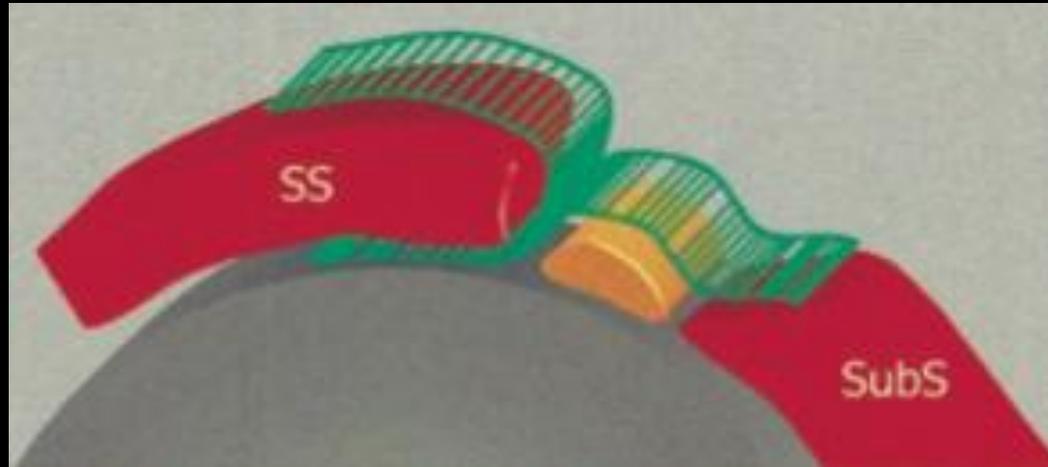
médial : Tm + Sscap

LGHS :

fusionne avec LCH , insertion Tm

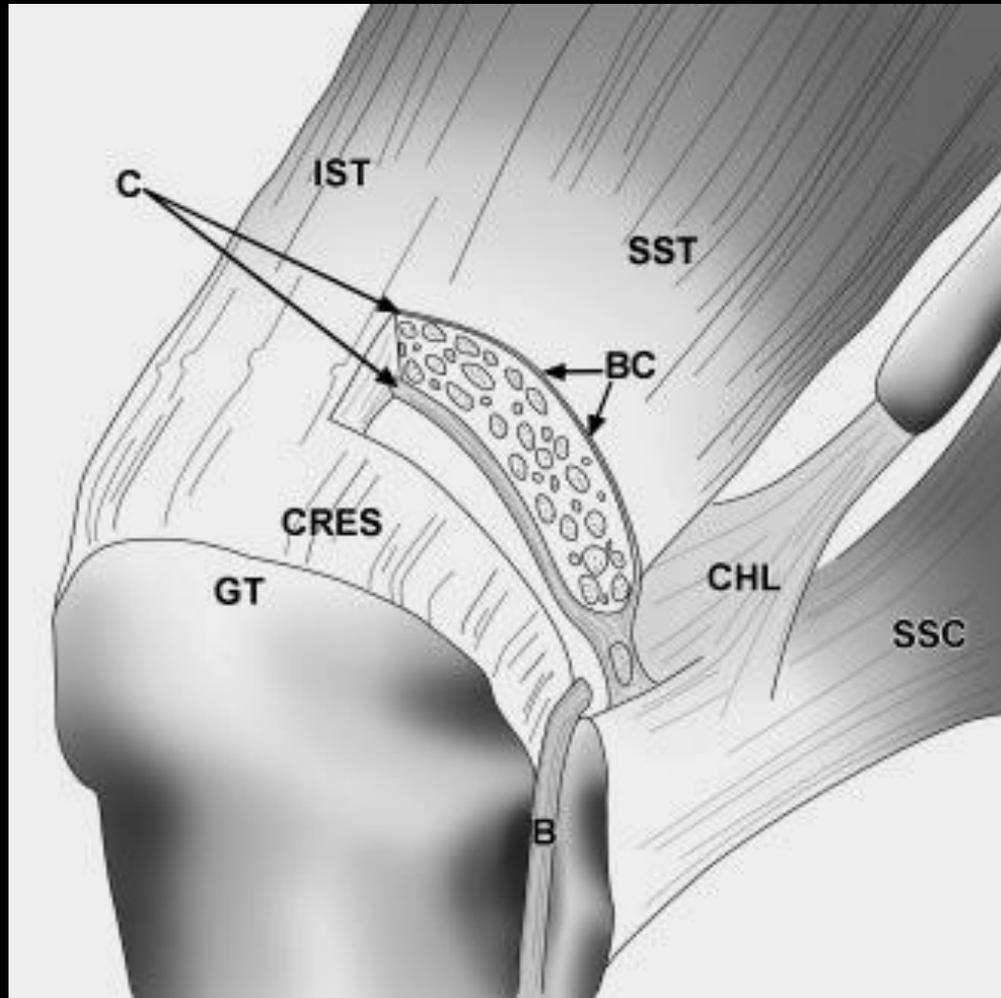


Ligament coraco-huméral



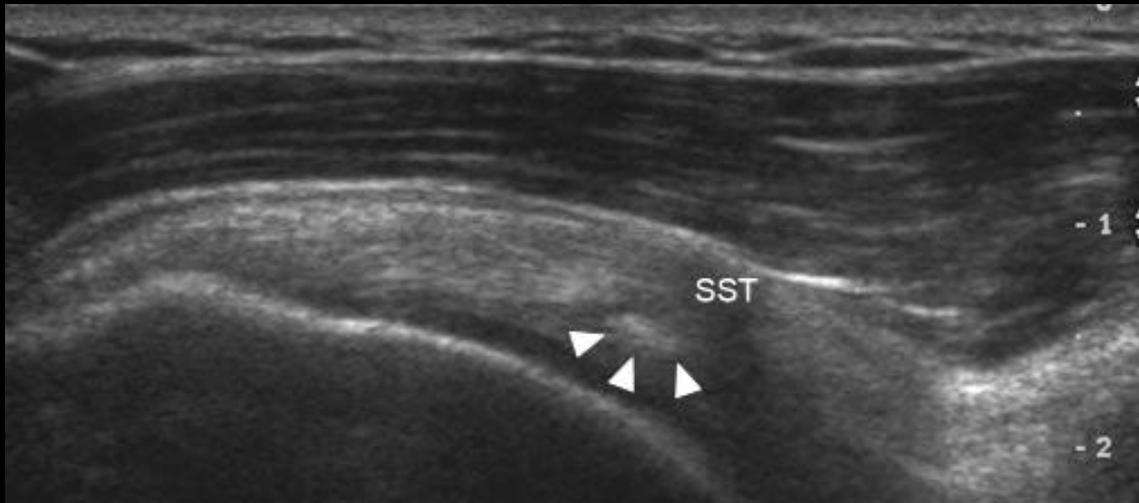
Martinoli, Radiographics 2003

Câble des rotateurs



Morag Y
AJR 2012

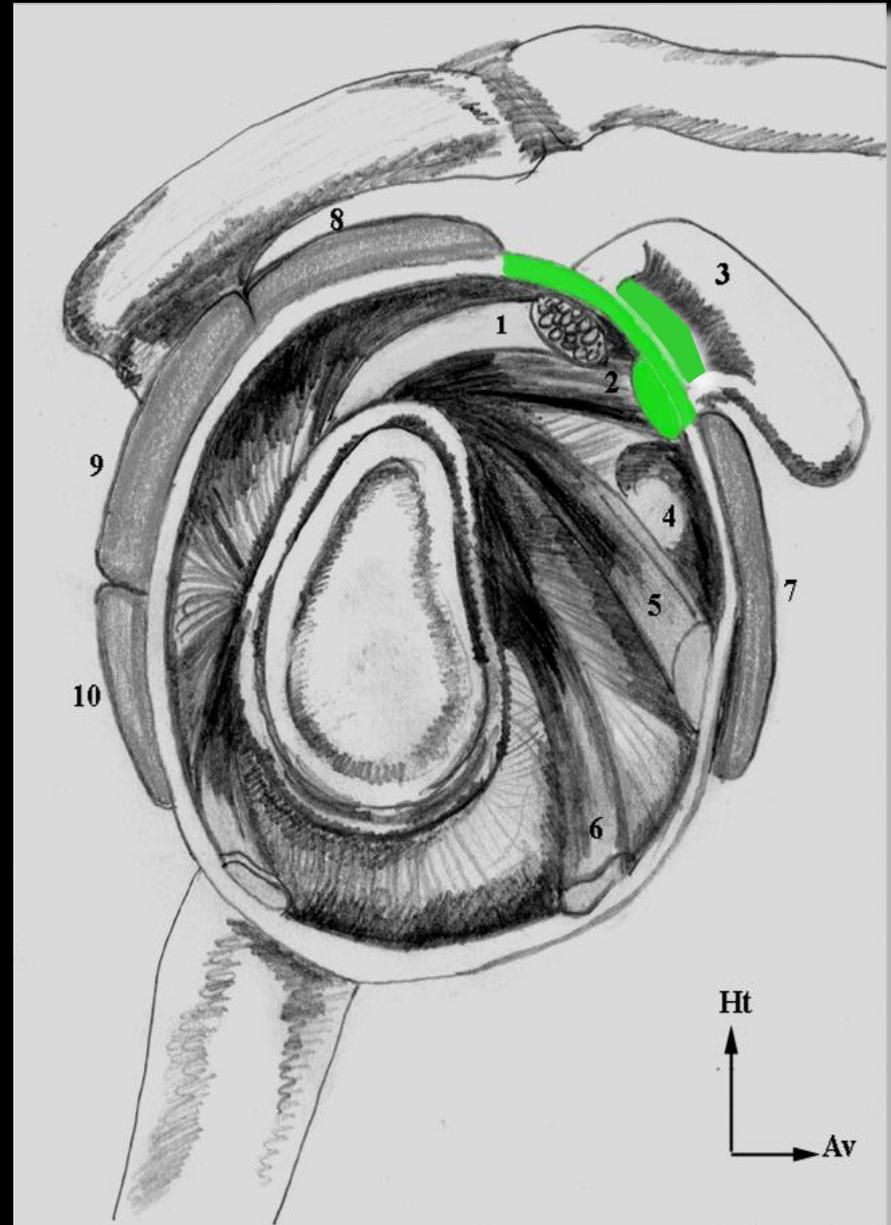
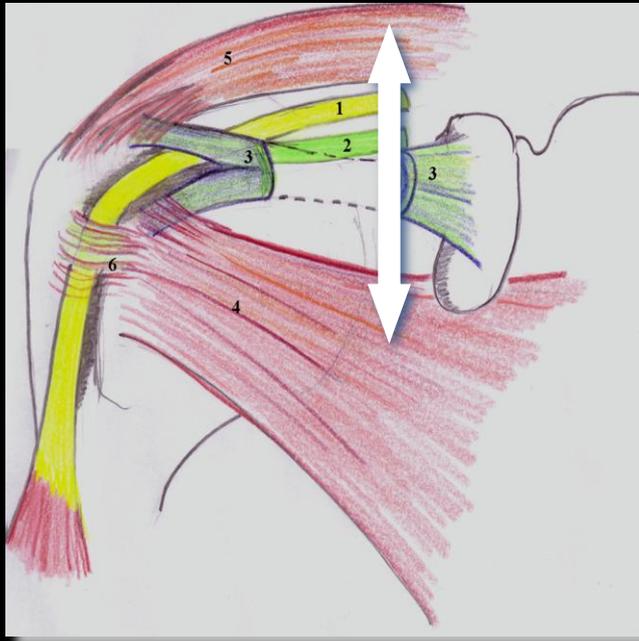
Câble des rotateurs



Morag Y AJR 2012

IR médial

- 2 couches
 - capsule + LGHS
 - LCH



IR latéral

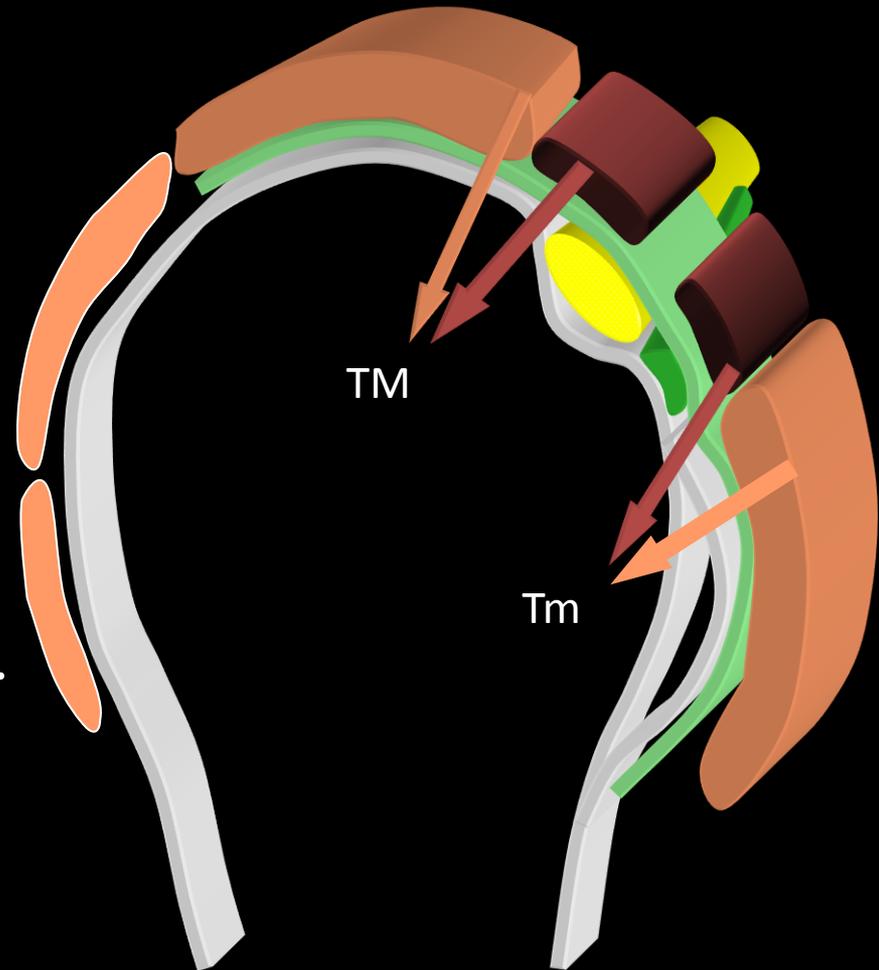
• 4 couches

capsule + LGHS

fibres profondes LCH

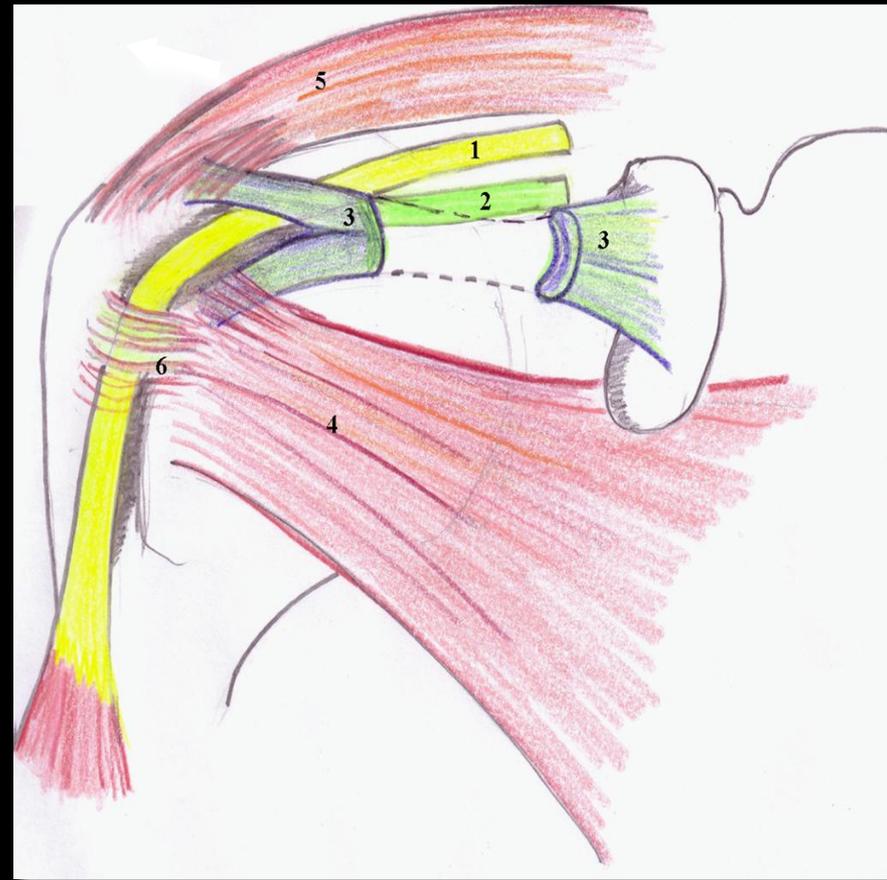
fibres distales SEp et
Sscap

fibres superficielles
LCH



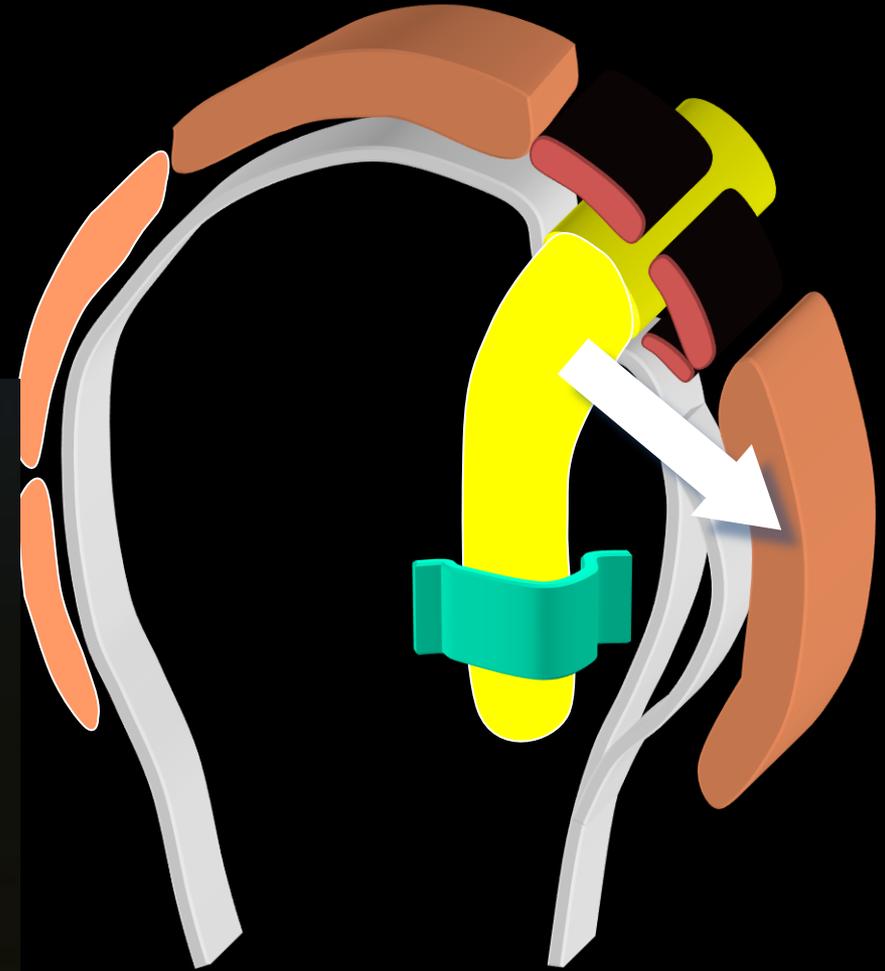
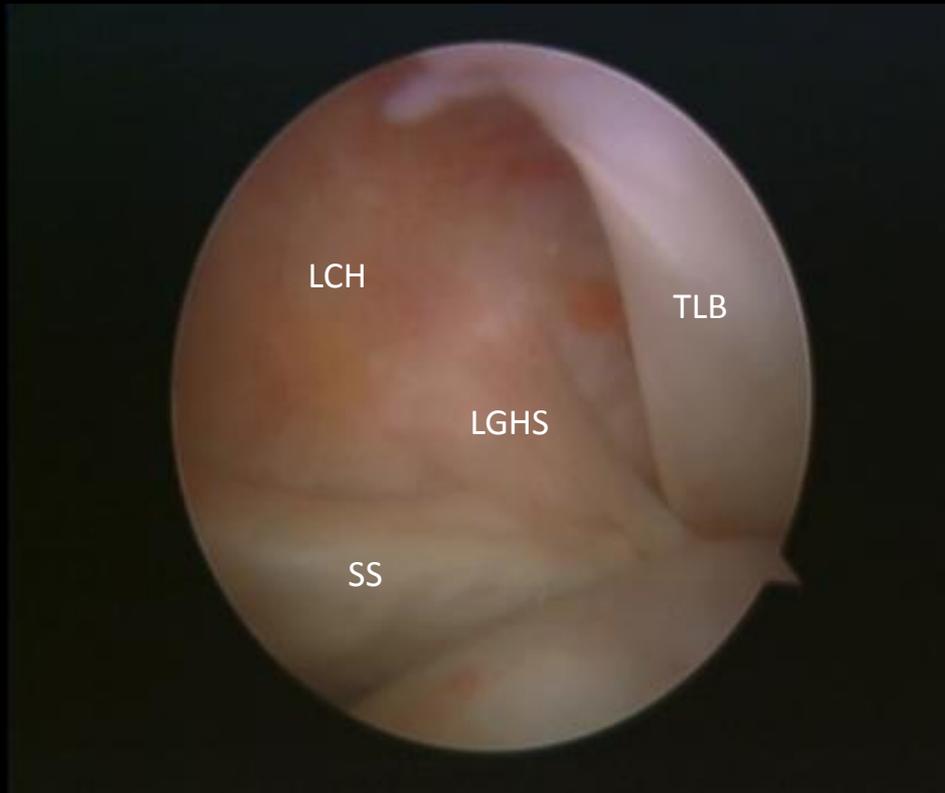
L'intervalle des rotateurs

- **INTRICATION** fibres tendineuses et ligamentaires du LCH peut expliquer que des lésions de la coiffe s'étendent à l'IR et vice versa



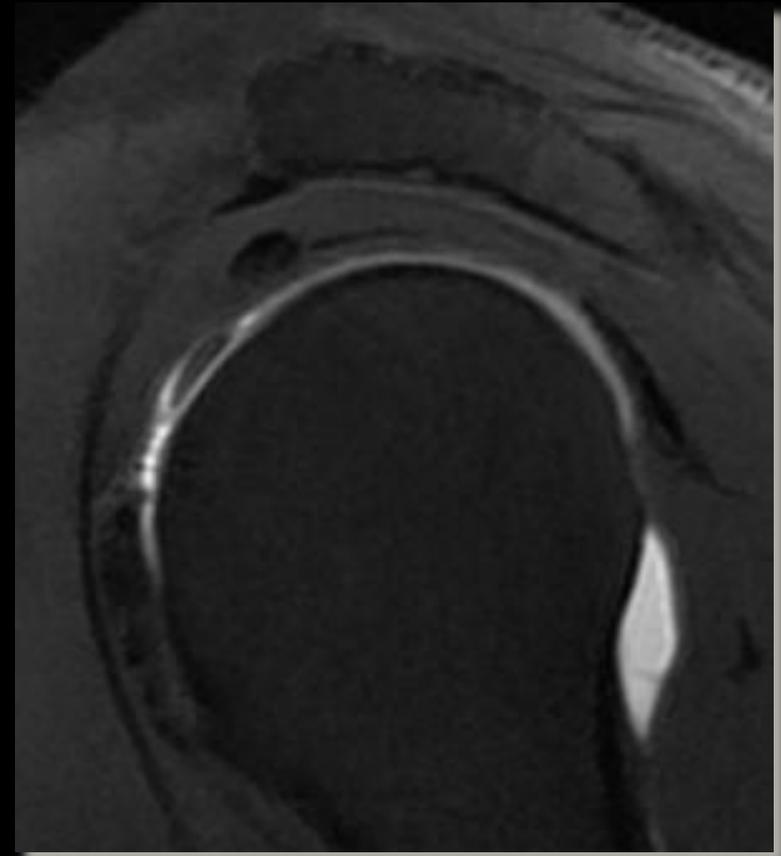
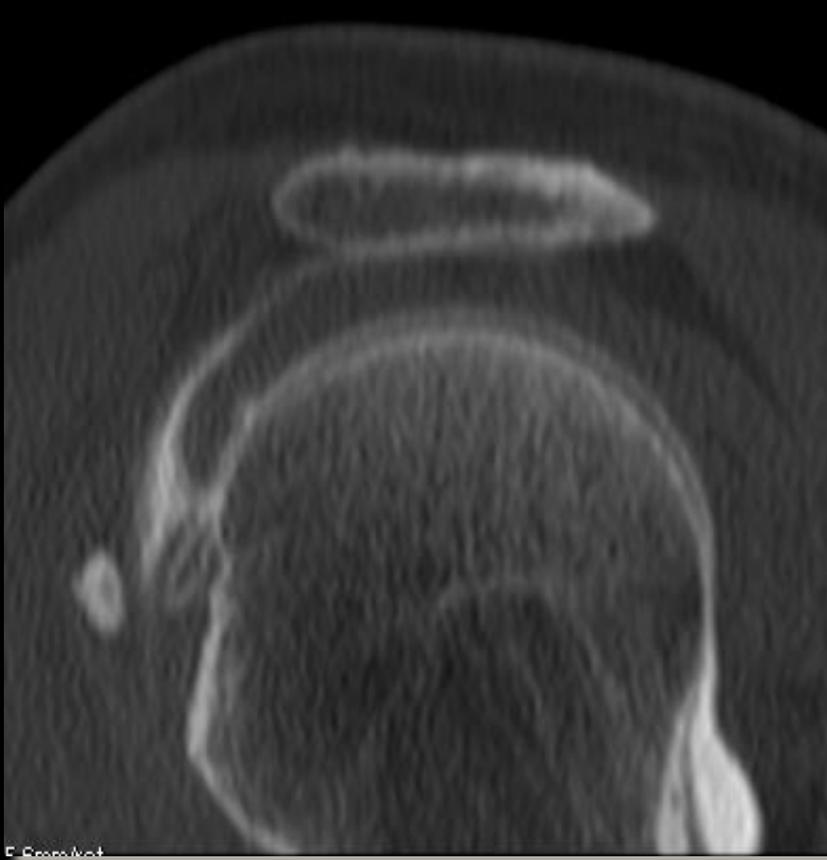
Poulie du biceps

- Faisceau médial LCH + LGHS
- Rôle de stabilité pour le TLB supérieur au rôle LHT



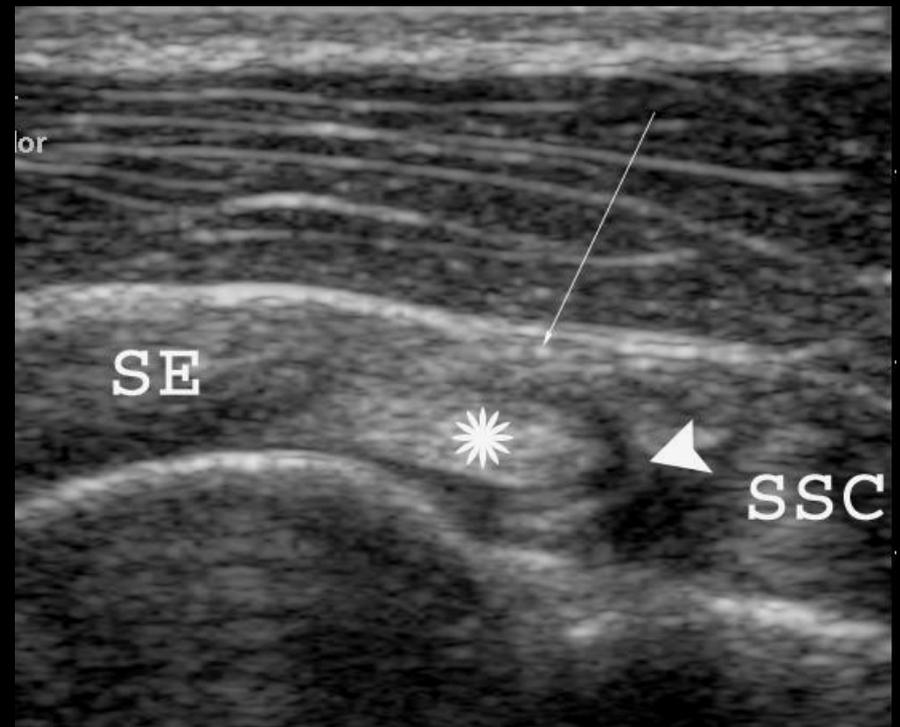
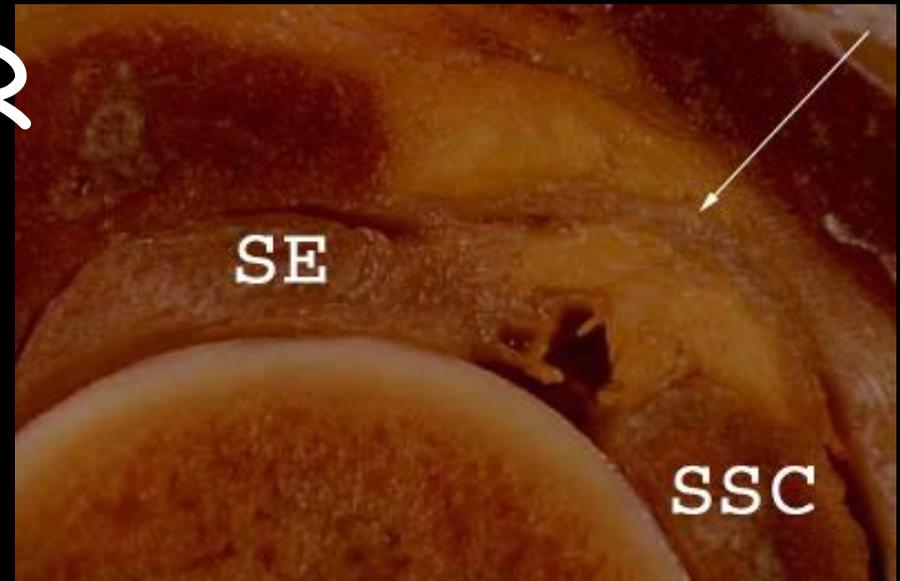
Imagerie IR

- Arthroscanner/IRM **IR Médial et Latéral +++**
- Coupes sagittales

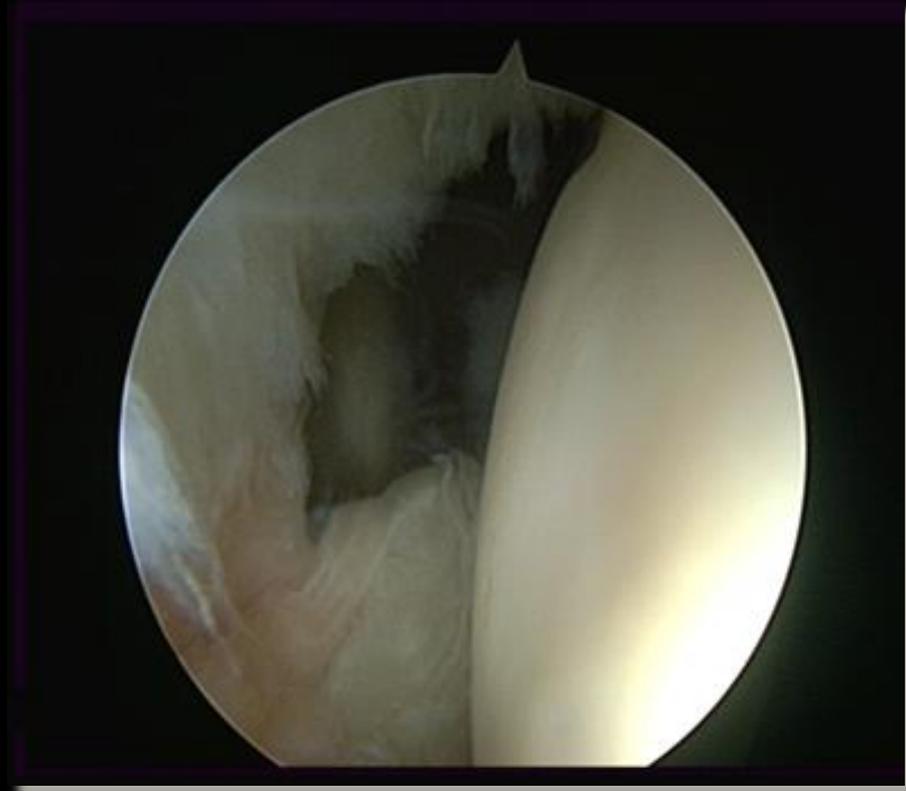


Echographie IR

- Position main sur la hanche homolatérale
- Coupe sagittale oblique
- TLB:
 - Ovale
 - < 3 mm
- Poulie ligamentaire:
 - LGHS
 - LCH

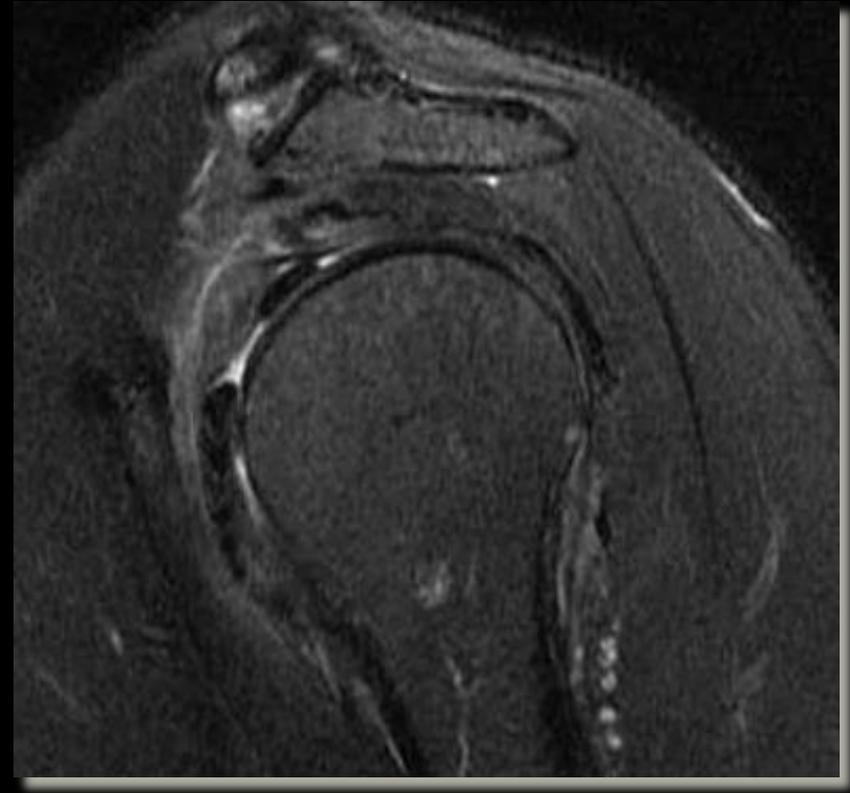
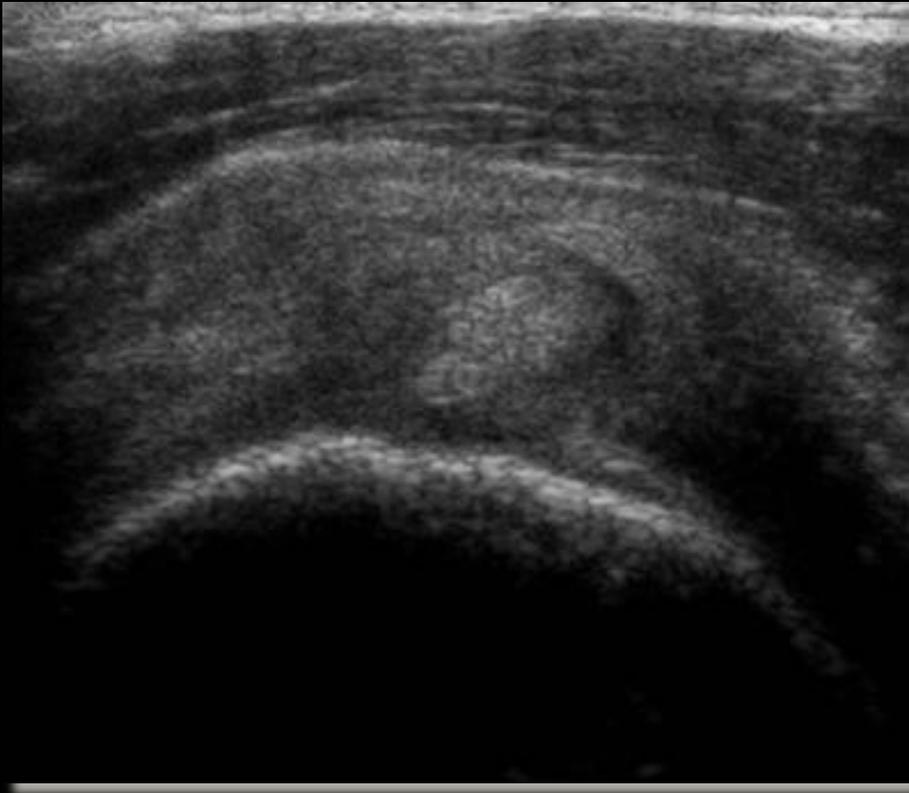


Rupture isolée IR



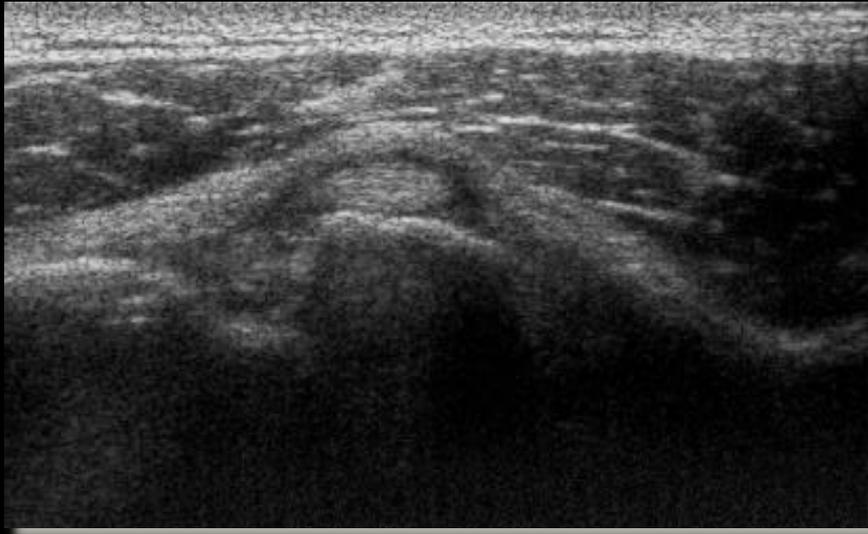
Capsulite rétractile

- Diagnostic CLINIQUE

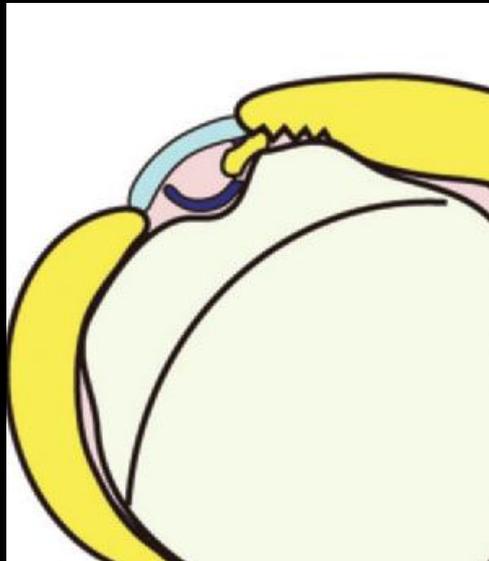


IRM T1 gado FatSat

Lésion poulie

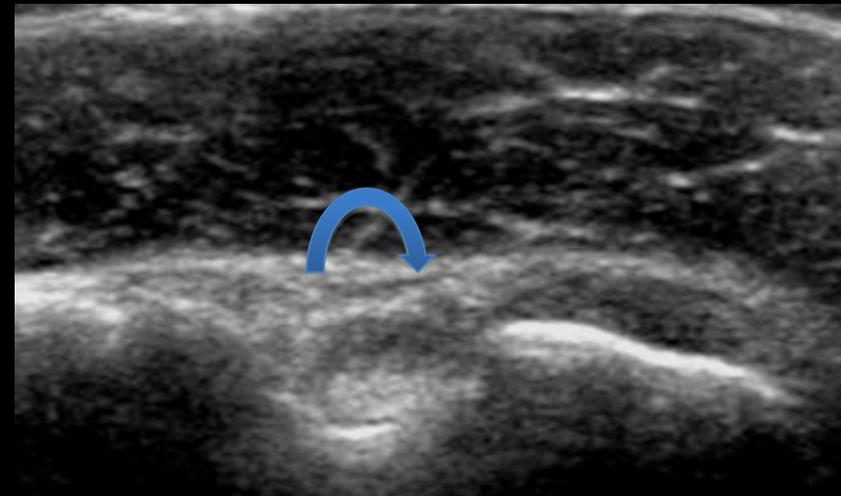
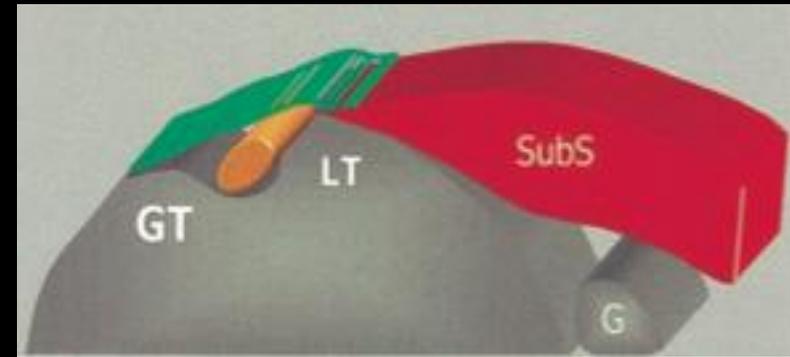


Instabilité long
biceps



Sillon intertuberculaire

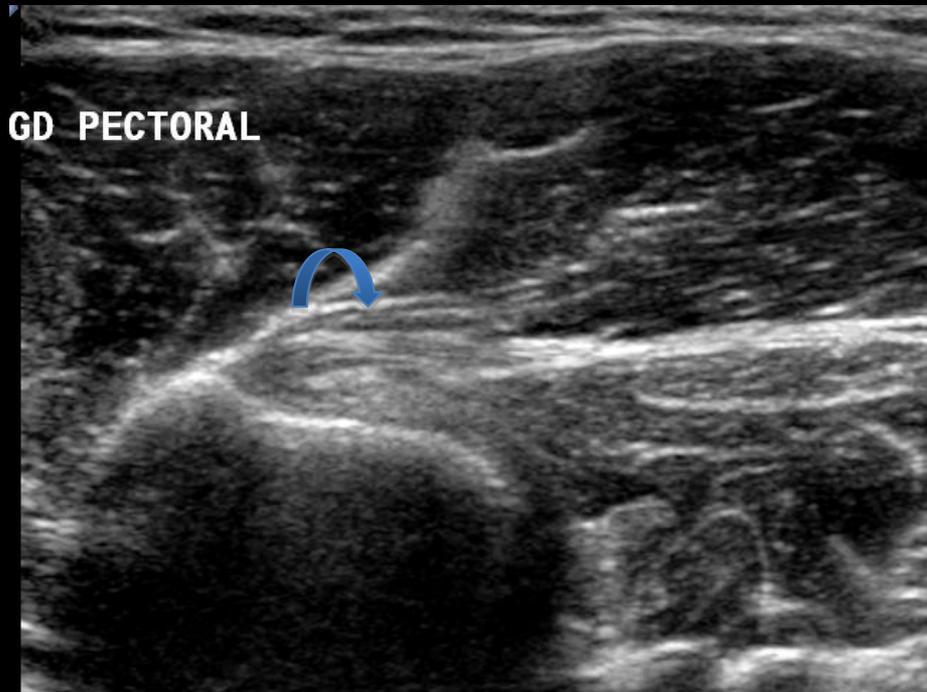
- Portion verticale du TLB:
 - Intra-synoviale
 - Extra-capsulaire
- TLB initialement accolé à la berge médiale
- Repère caudal: tendon grand pectoral
- Ligament huméral transverse



Tendon du grand pectoral

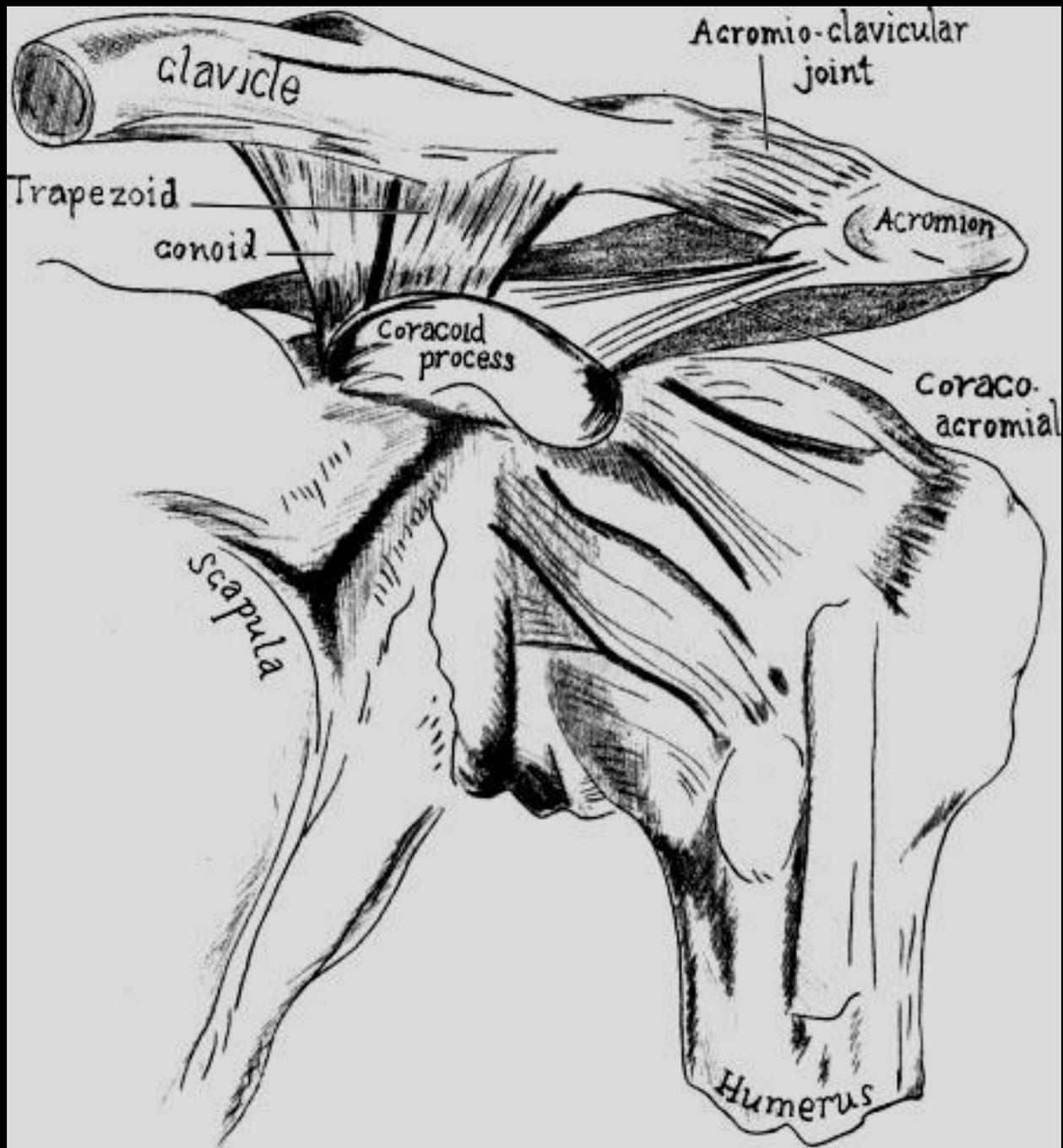


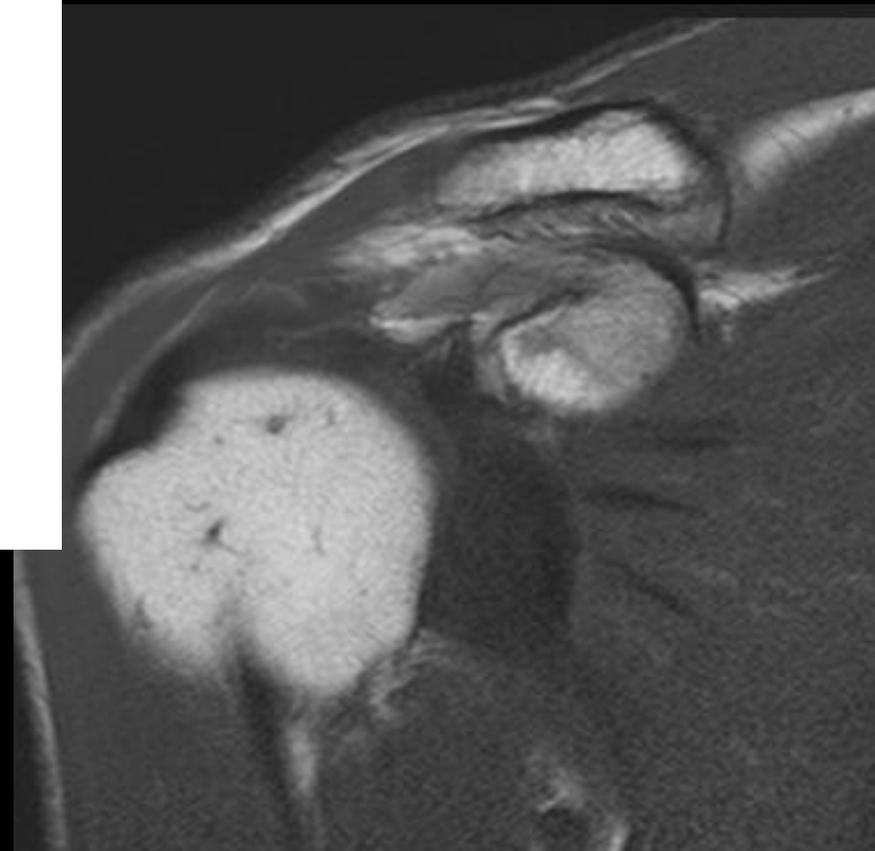
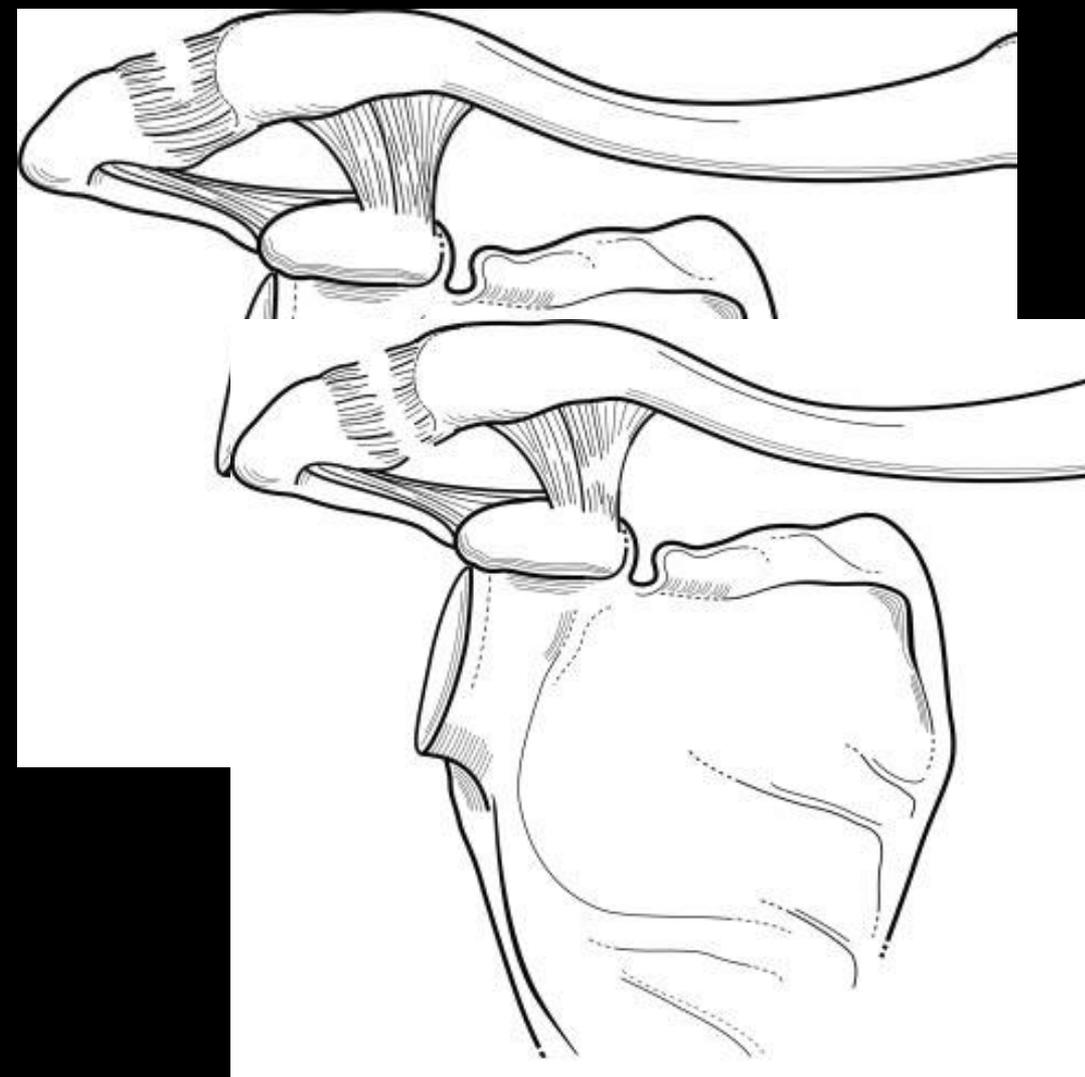
- Berge latérale du sillon inter-tuberculaire



- Jonction myotendineuse du long biceps: recherche d'une rupture du TLB +++

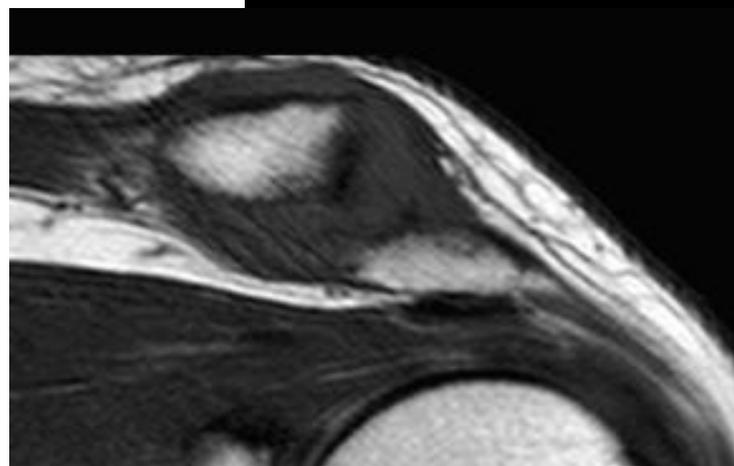
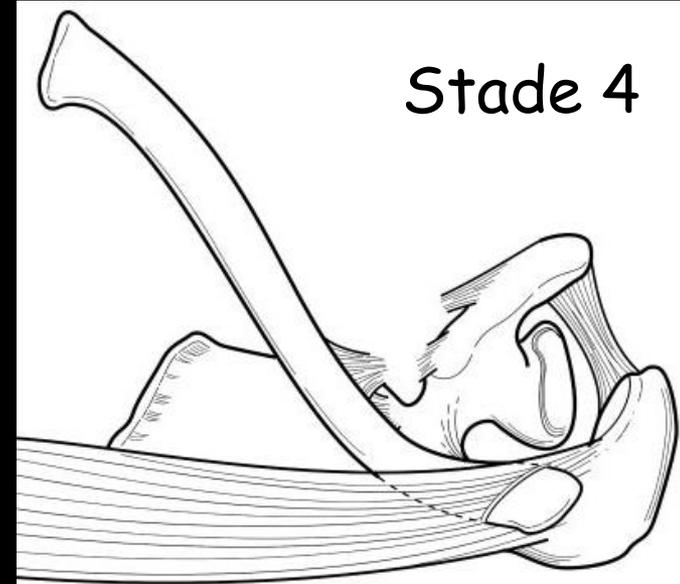
Articulation acromio- claviculaire



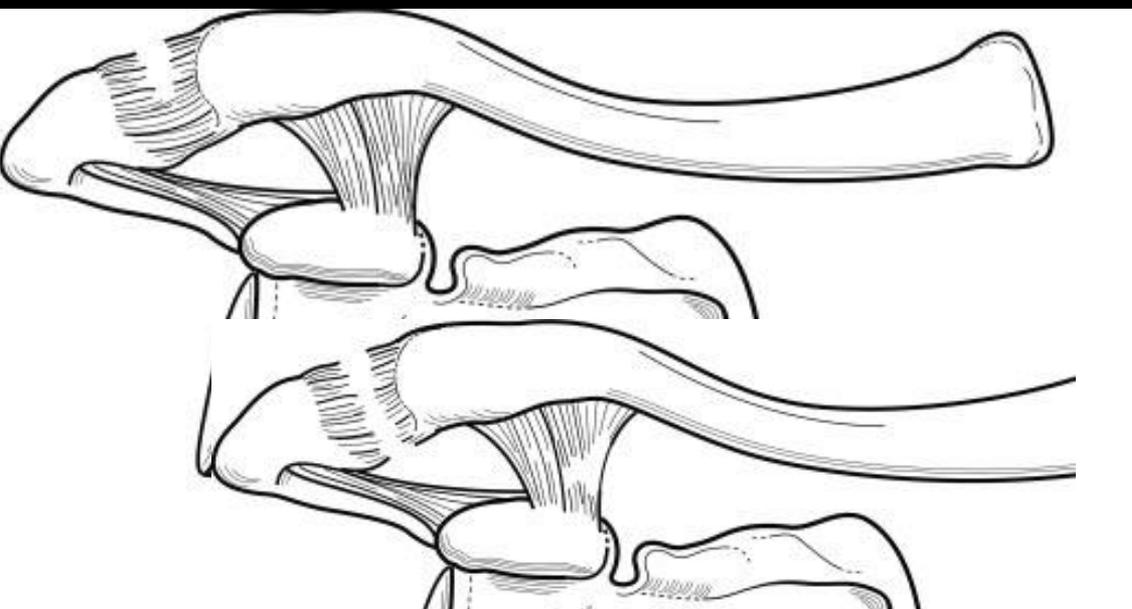
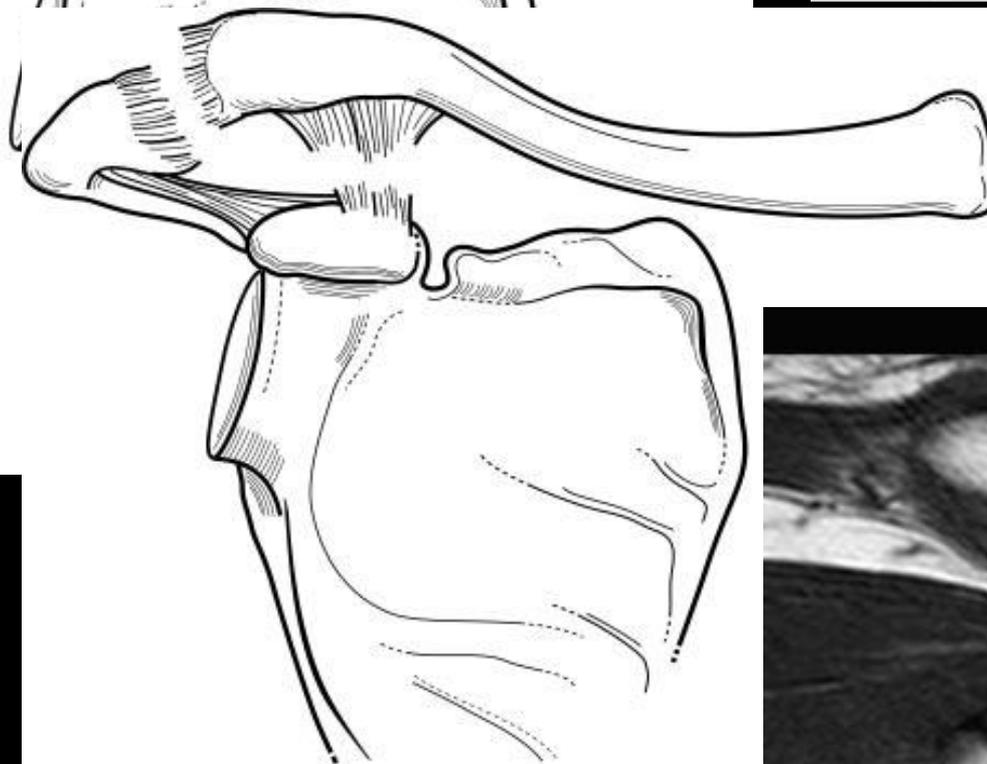


Stades 1 et 2

Stade 4

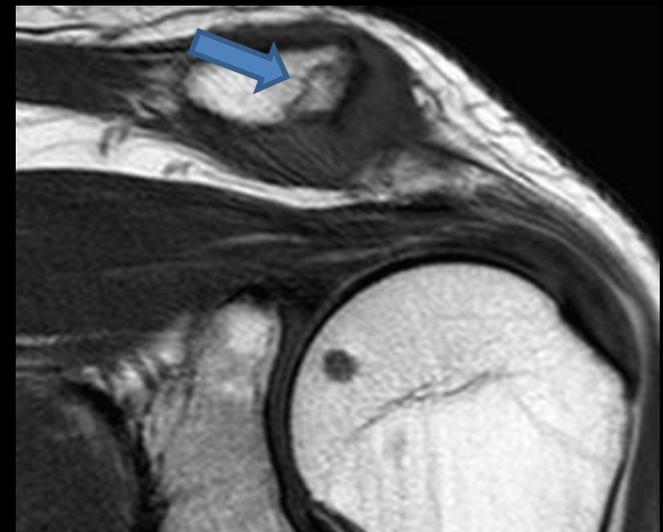
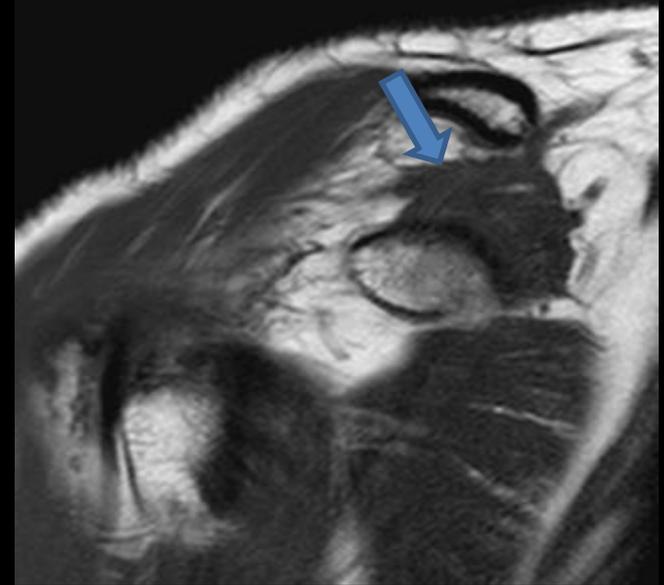


Stade 3



Entorse acromio-claviculaire

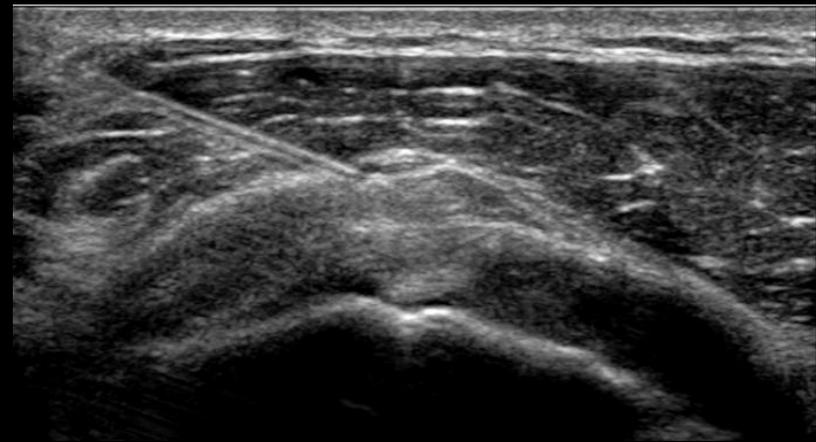
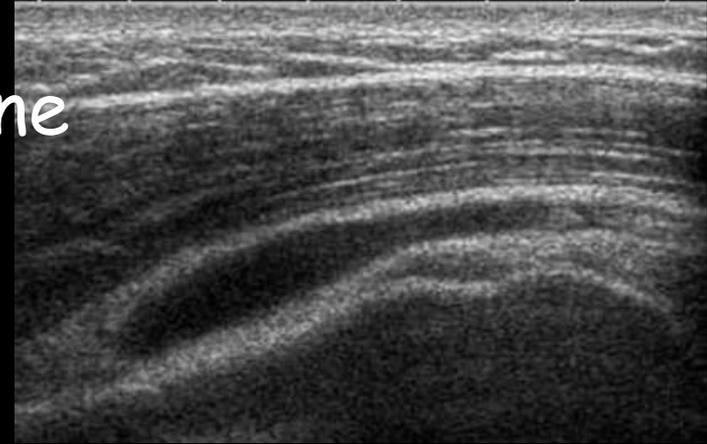
- Lésions anatomiques:
 - Entorses de bas grade
 - Se US > Se RX
 - Comparatif
 - Tuméfaction capsulaire
 - Ligaments coraco-claviculaires: gravité
 - Ostéolyse distale



Bourses péri-articulaires

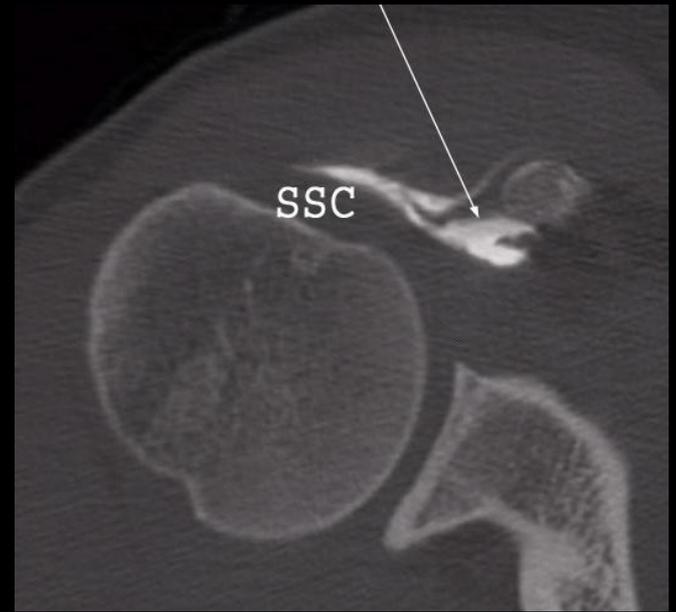
Bourse sous-acromio-deltoidienne

- Articulation sous-deltoidienne
- Epaisseur > 2mm
- Epanchement liquidien
- Infiltration échoguidée



Bourse sous-coracoïdienne

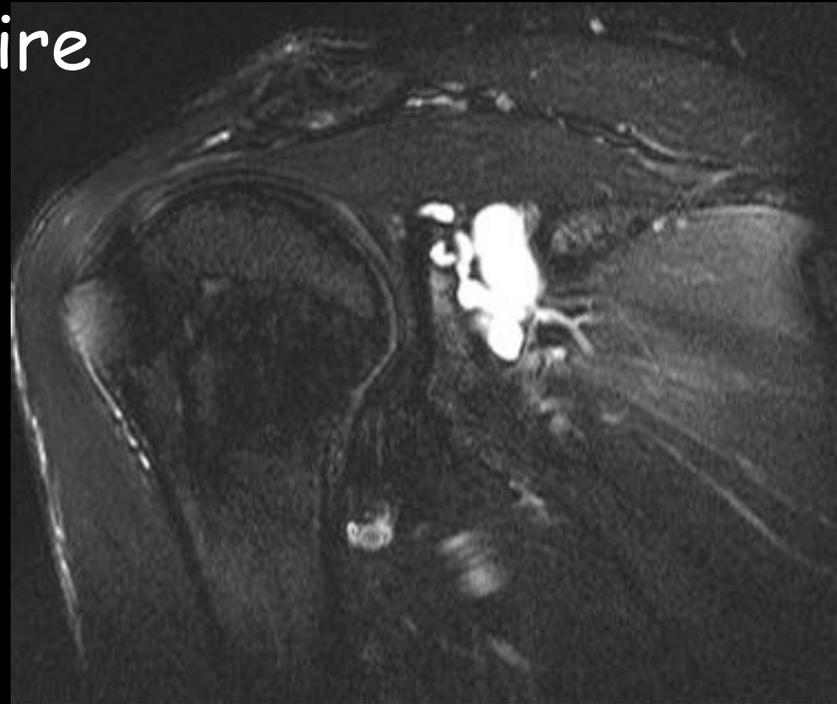
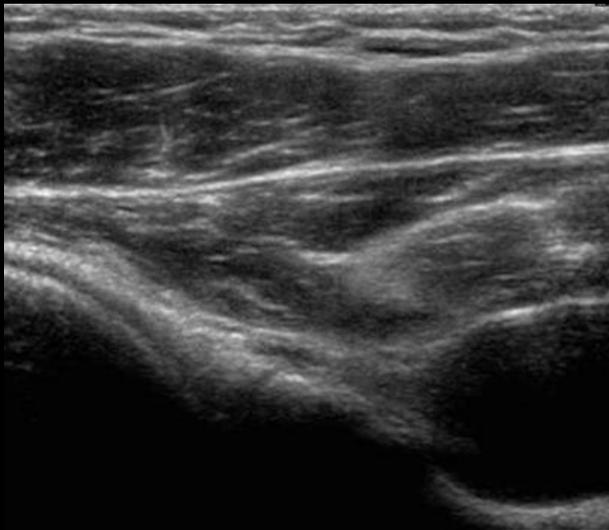
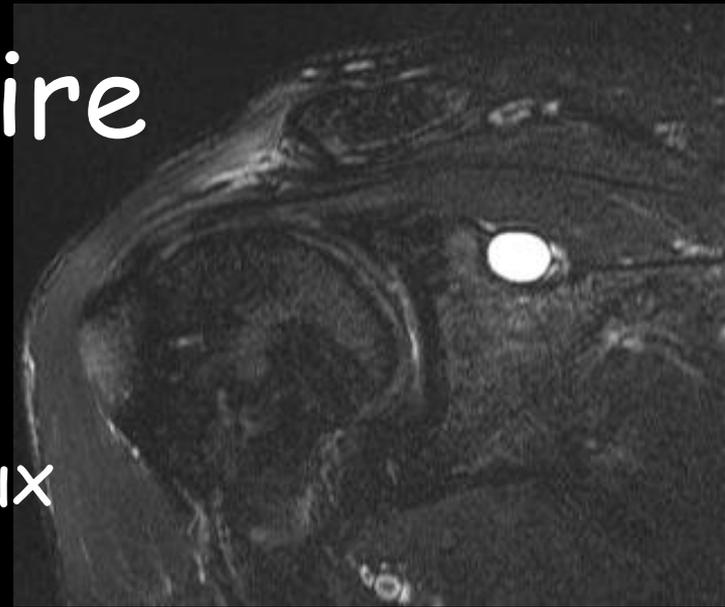
- Face profonde du tendon conjoint court biceps - coracobrachial
- Rôle de glissement
- Rupture de l'intervalle des rotateurs ou du subscapulaire
- Conflit antérieur ?



Syndromes canaux nerveux

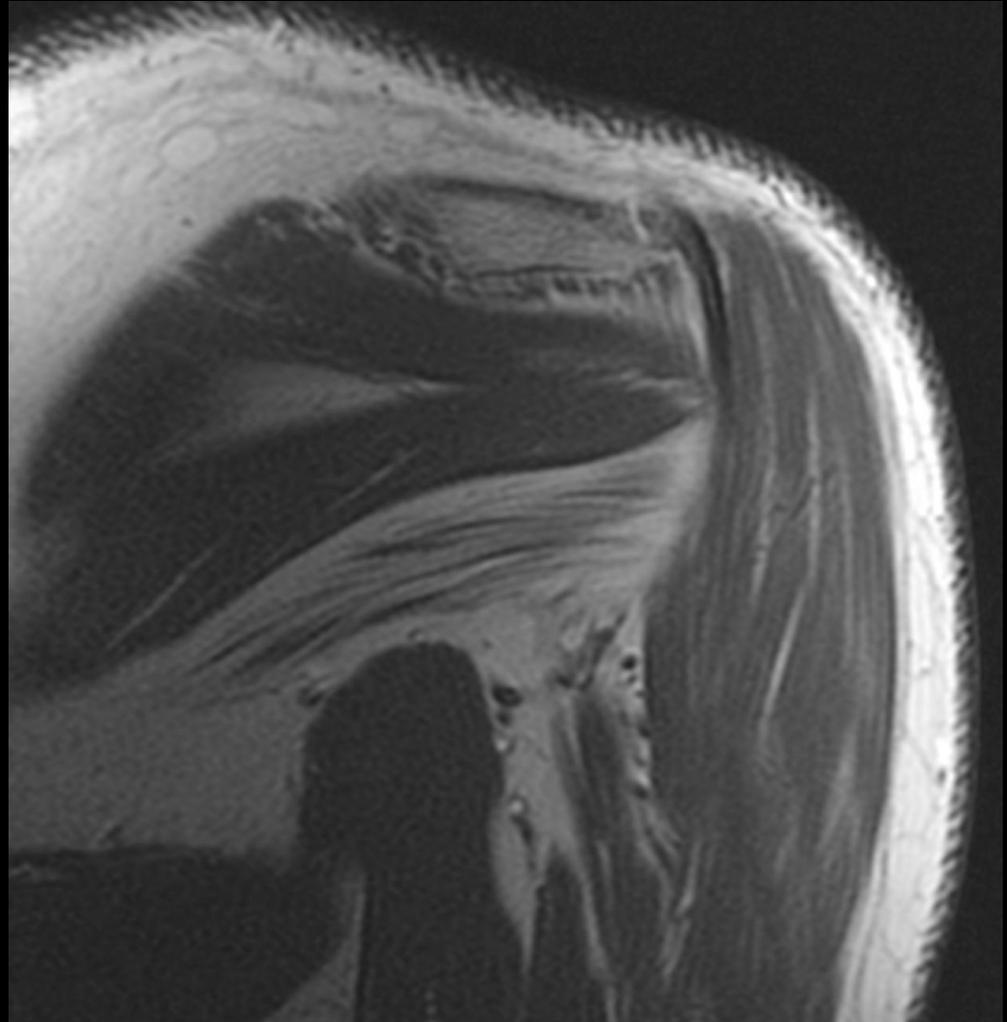
Nerf supra-scapulaire

- Muscles supra et infra-épineux
- Kyste de l'incisure scapulaire



Nerf axillaire

- Espace axillaire latéral
- Teres minor
- Deltoïde



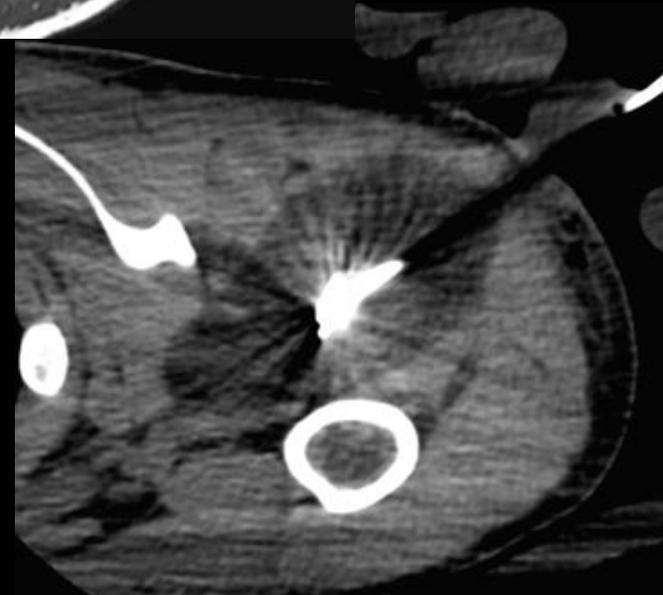
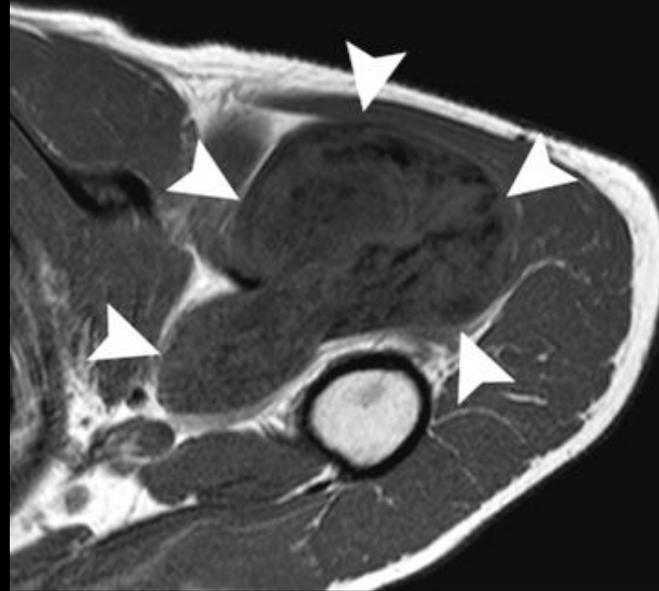
Nerf axillaire

- Espace axillaire latéral
- Teres minor
- Deltoïde
- Lésion iatrogène



Rapports nerveux

- Thermo-ablation percutanée +++



Points forts

- Éléments de stabilité passifs
 - Savoir identifier les structures capsulo-labiales en arthro-scanner et arthro-IRM
 - Connaître l'existence de variantes anatomiques et images-pièges

Récessus sous-labral



HAGL

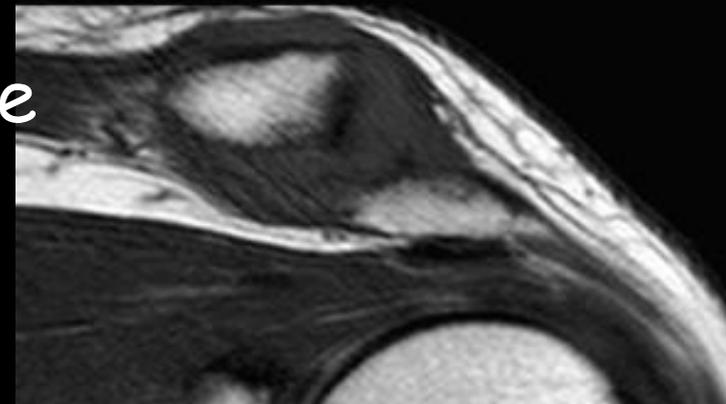
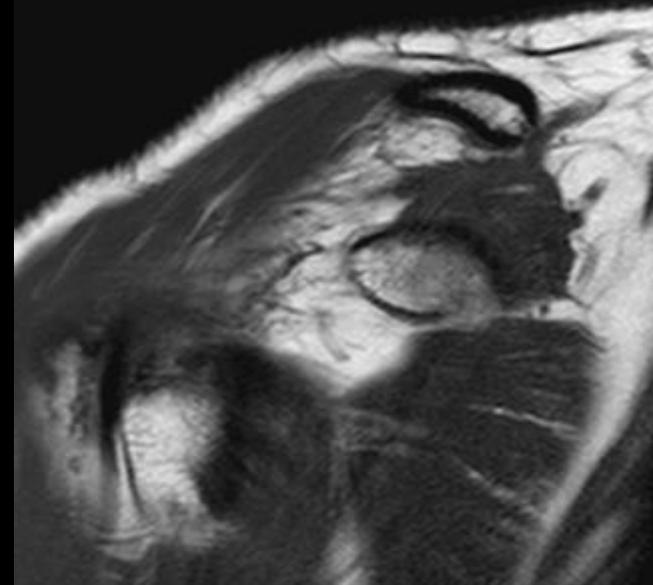
Points forts

- Éléments de stabilité +++
 - Savoir identifier les structures capsulo-labiales en arthro-scanner et arthro-IRM
 - Connaître l'existence de variantes anatomiques et images-pièges
- Coiffe des rotateurs +++



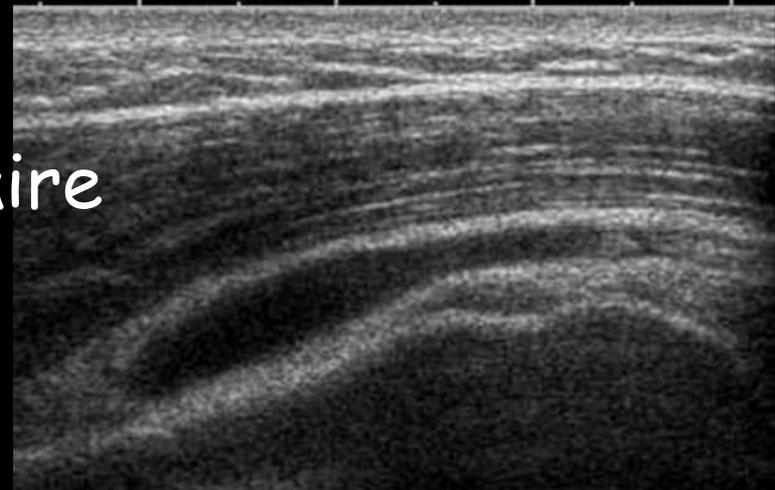
Points forts

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 - Connaître l'existence de variantes anatomiques et images-pièges
- Coiffe des rotateurs
- Articulation acromioclaviculaire



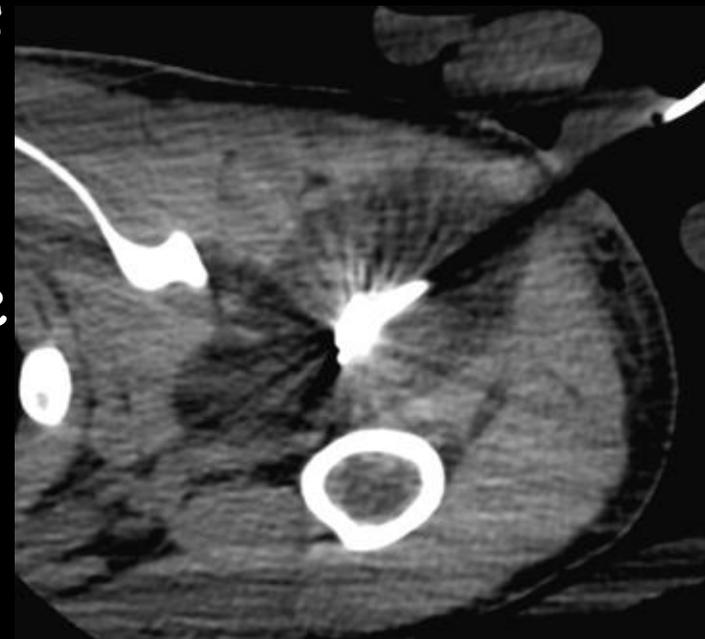
Points forts

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 - Savoir identifier les structures capsulo-labiales en arthro-scanner et arthro-IRM
 - Connaître l'existence de variantes anatomiques et images-pièges
- Coiffe des rotateurs
- Articulation acromioclaviculaire
- Bourses péri-articulaires



Points forts

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- Bourses péri-articulaires
- Rapports nerveux





Institut du Mouvement et de l'appareil Locomoteur



Soins
Enseignement
Recherche
Innovation



Assistance Publique
Hôpitaux de Marseille