

Échographie et pathologie de l'épaule

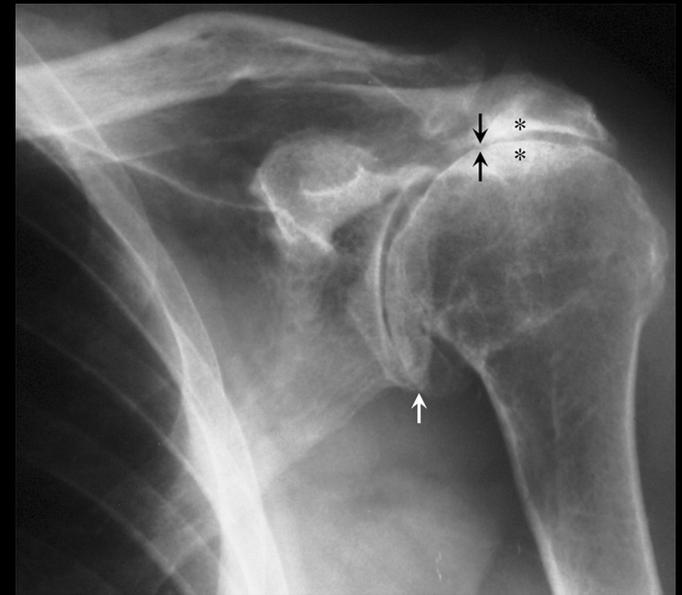


**Centre d'imagerie ostéo-articulaire
Clinique du sport de Mérignac**

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AVANT L'ECHOGRAPHIE

- Clichés radiologiques systématiques
 - 3 faces +/- Lamy
 - Clichés comparatifs AC
- Interrogatoire
- Examen clinique

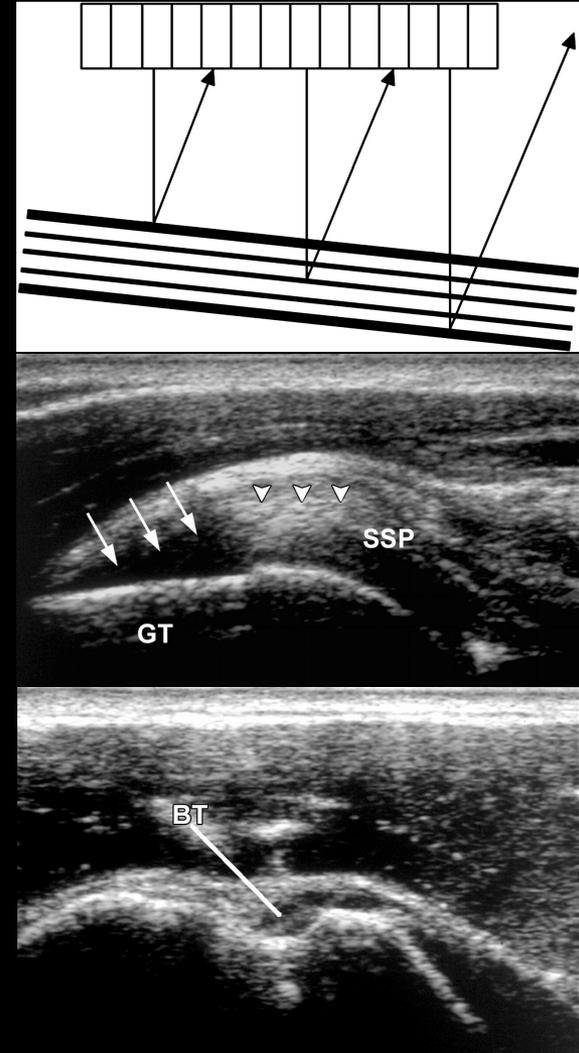
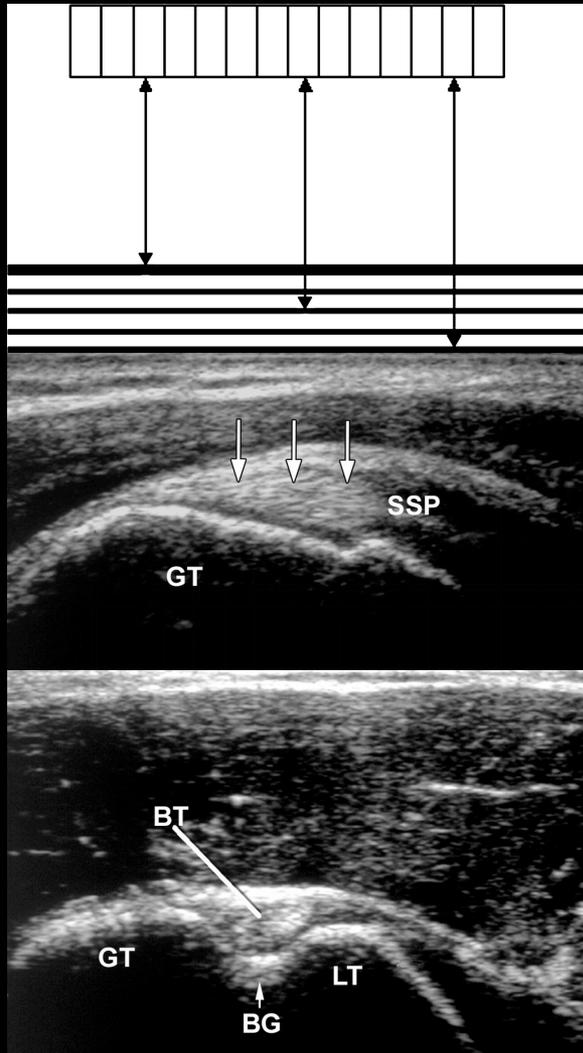


TECHNIQUE

- Après les RX, l'interrogatoire et l'examen clinique...
- Adapter la fréquence de la sonde
- Bien positionner la focale
- Bilatéral au moindre doute
- Ne pas trop appuyer sur la sonde
- Utiliser les harmoniques
- Toujours réaliser des manœuvres dynamiques
- Attention: obèses, épaules bloquées ou opérées...

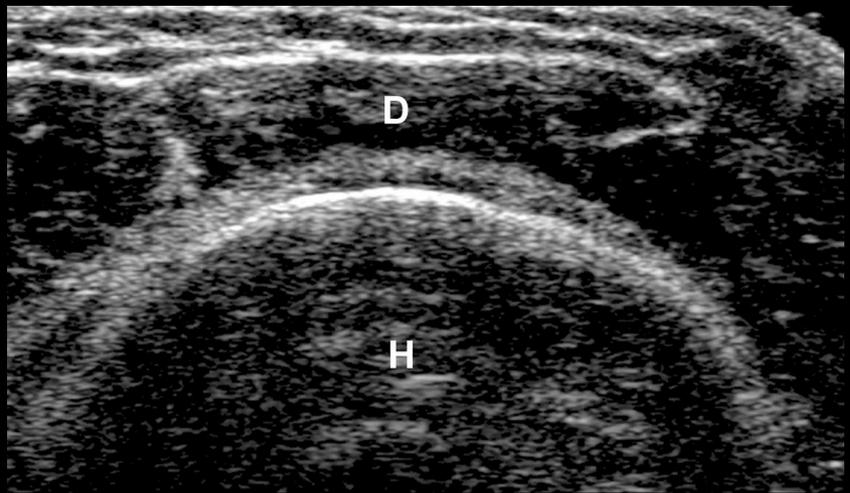
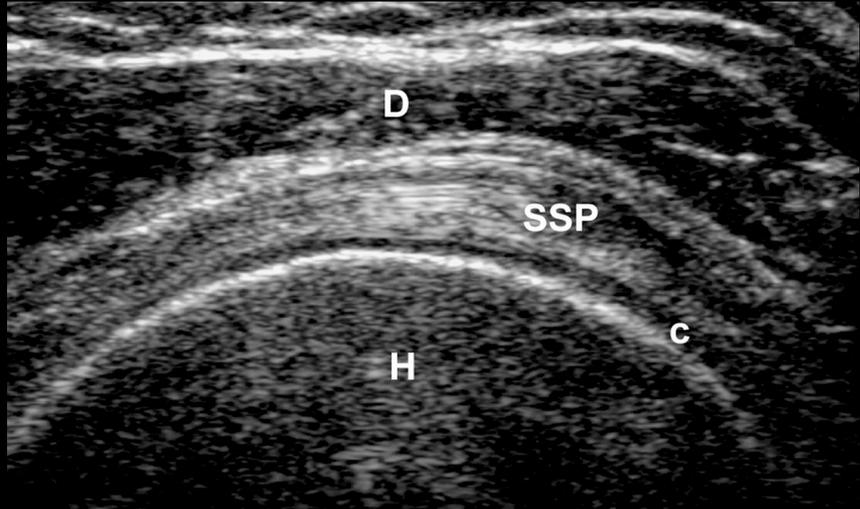
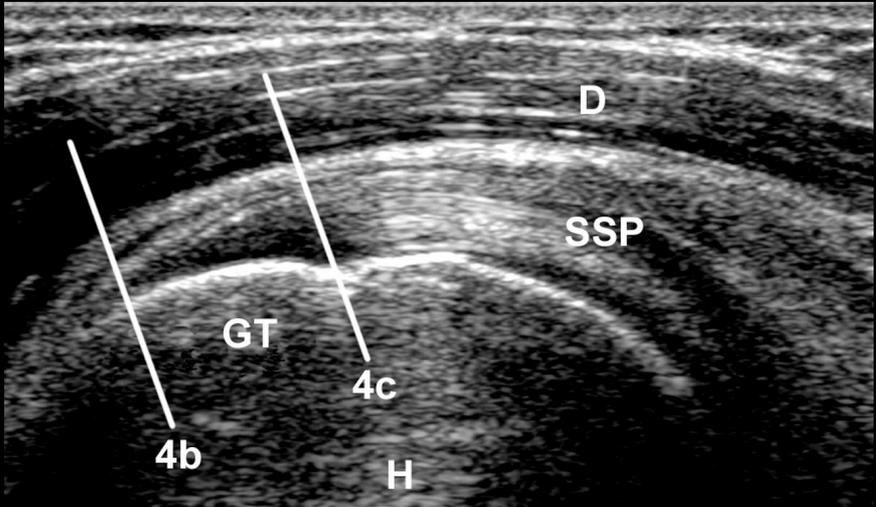


Causes d'erreur liées à la technique d'examen ANISOTROPIE



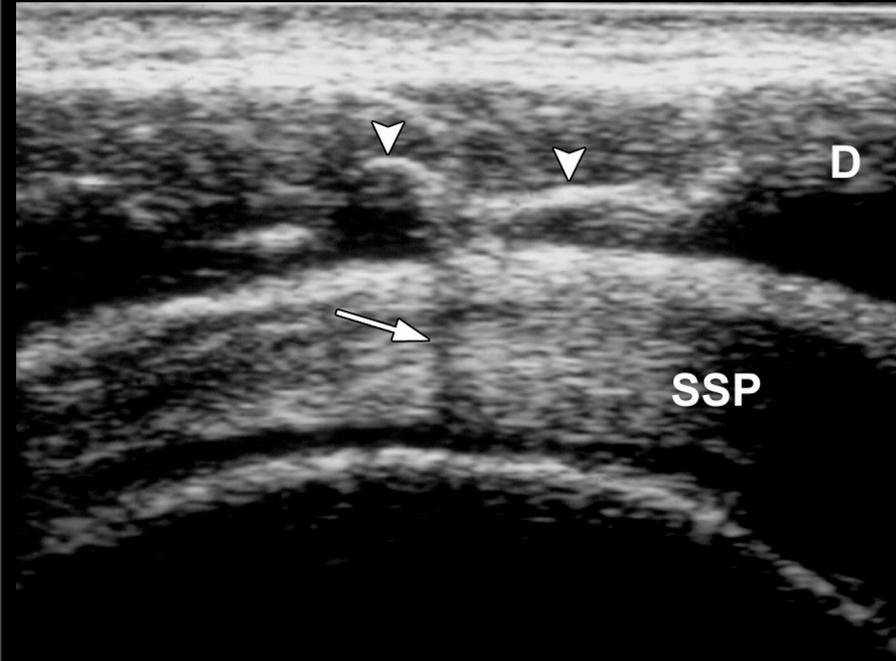
Causes d'erreurs liées à la technique d'examen

Mauvaise position de la sonde

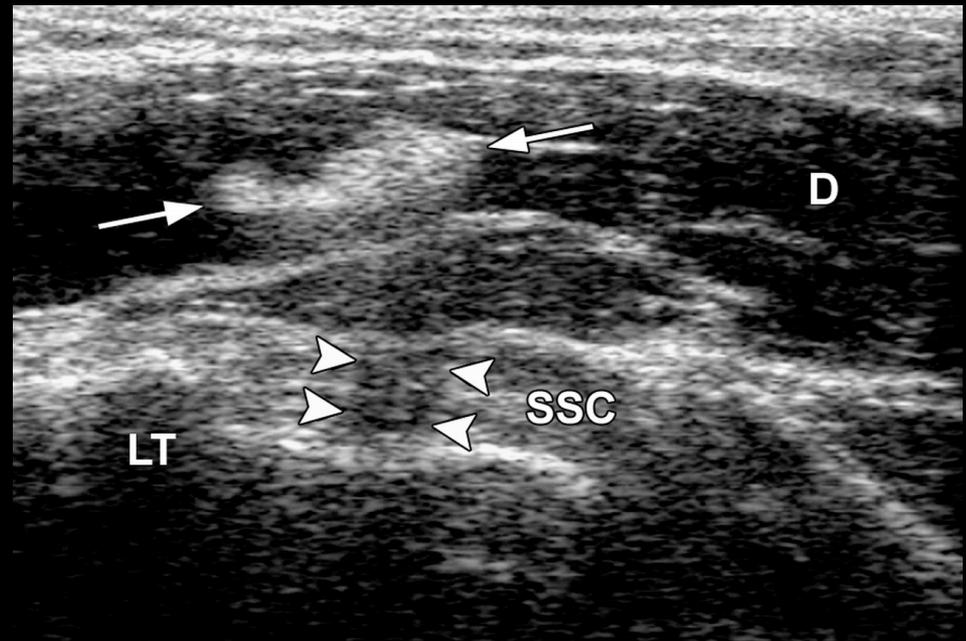


Causes d'erreurs anatomiques

Anomalies du deltoïde



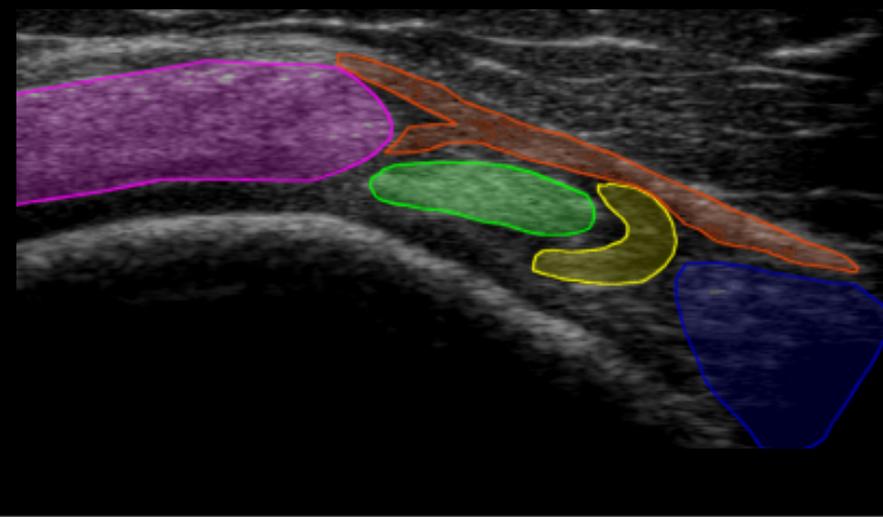
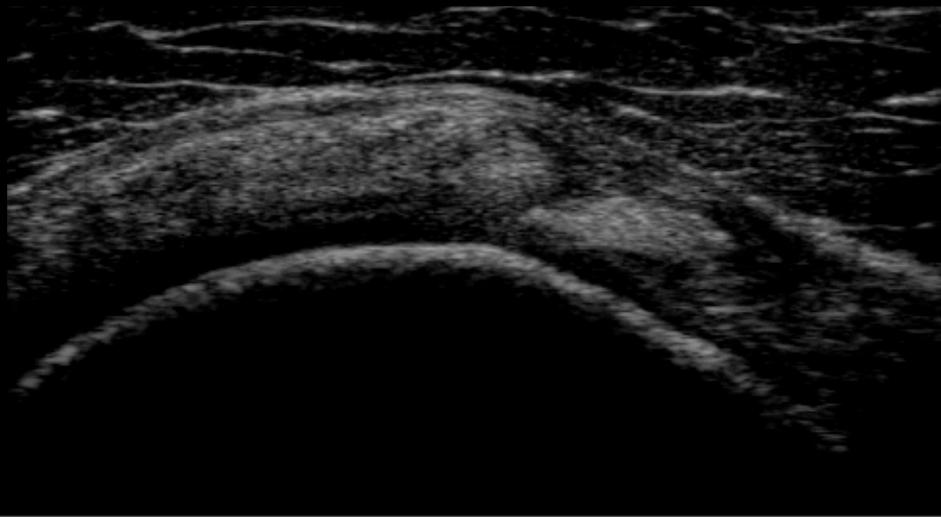
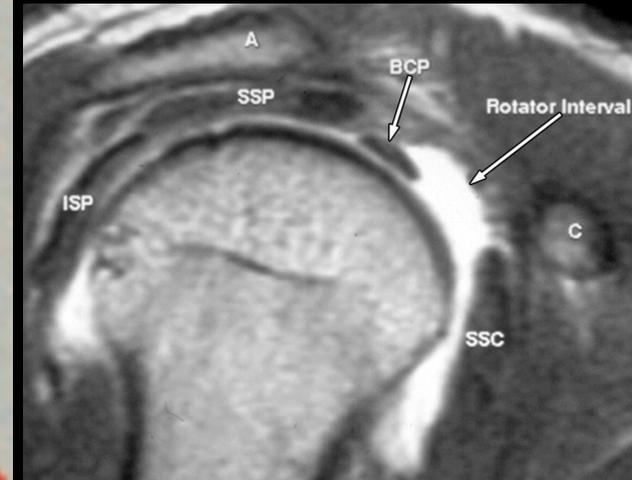
Septum



Bandes fibreuses

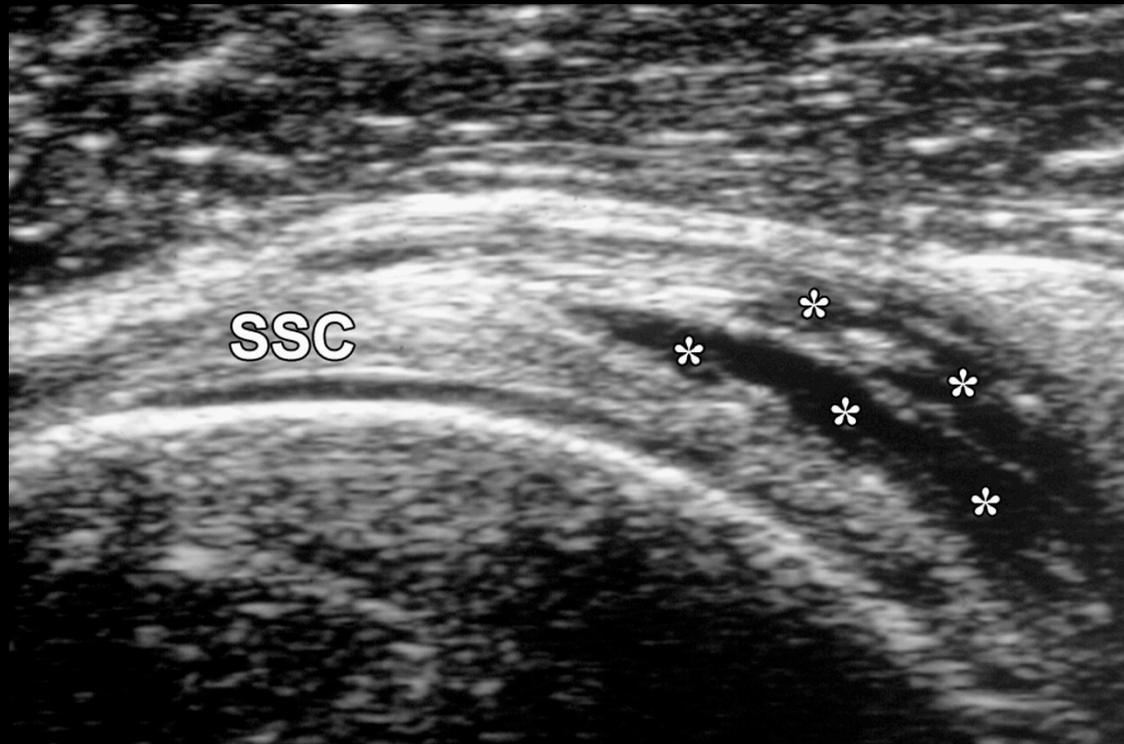
Causes d'erreurs anatomiques

Intervalle des rotateurs



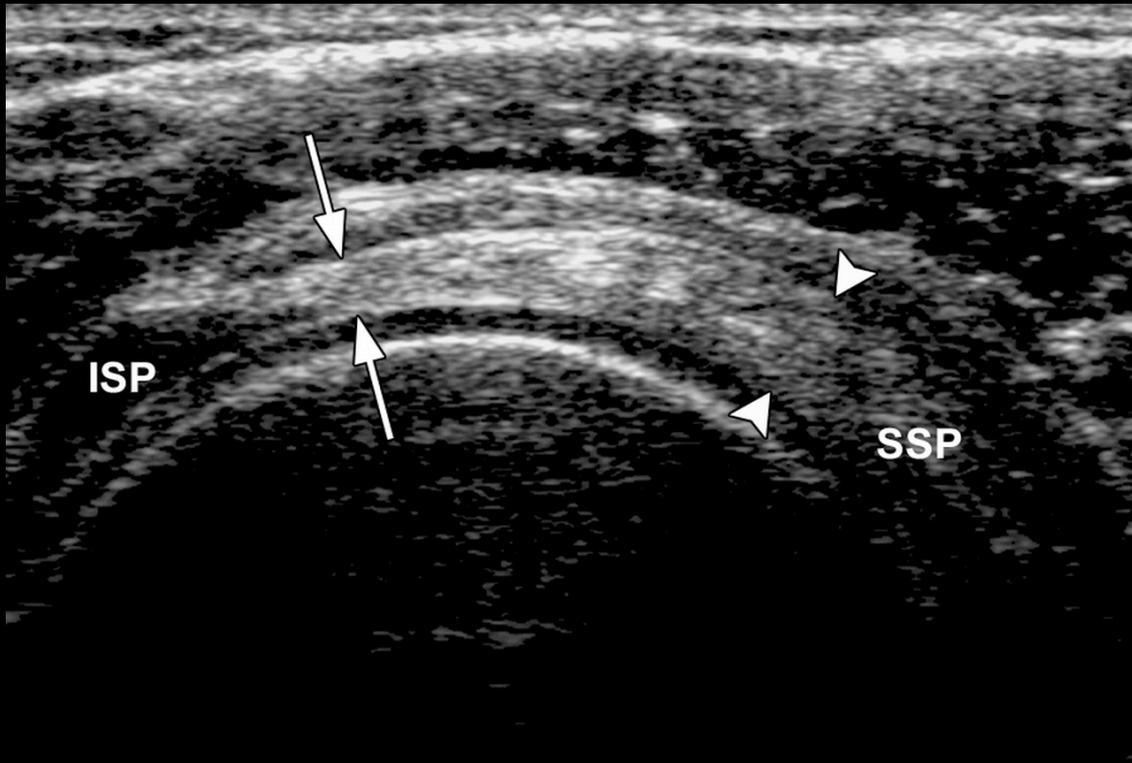
Images pièges

Jonctions Myo-Tendineuses



Images pièges

Jonction SE/IE et coiffes atrophiées (PR)

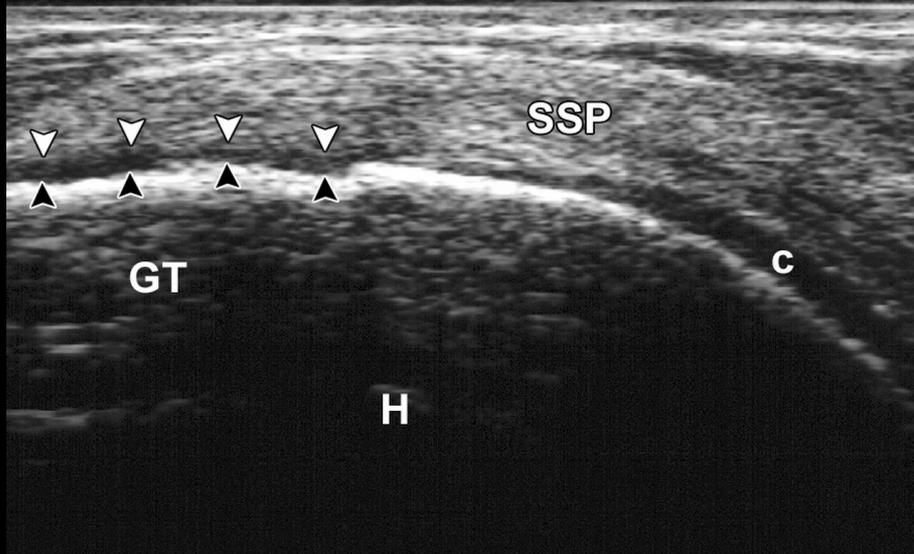


Bretzke CA, Crass JR, Craig EV, Feinberg SB.

Ultrasonography of the rotator cuff: normal and pathologic anatomy. Invest Radiol 1985;20:311-315.

Images pièges

Enthèse, cartilage...



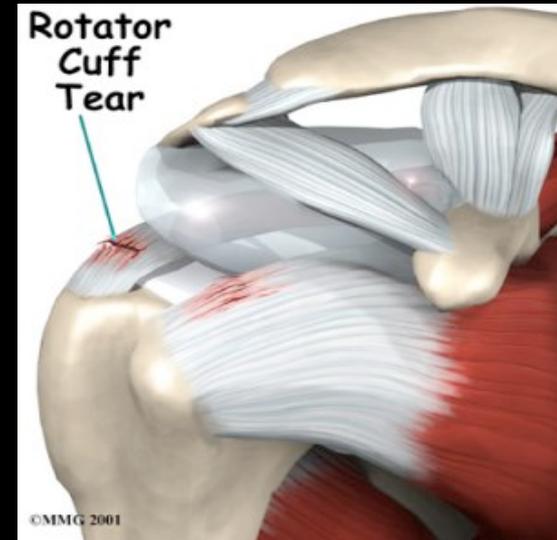
I. LES RUPTURES DE COIFFE



RUPTURE DE LA COIFFE

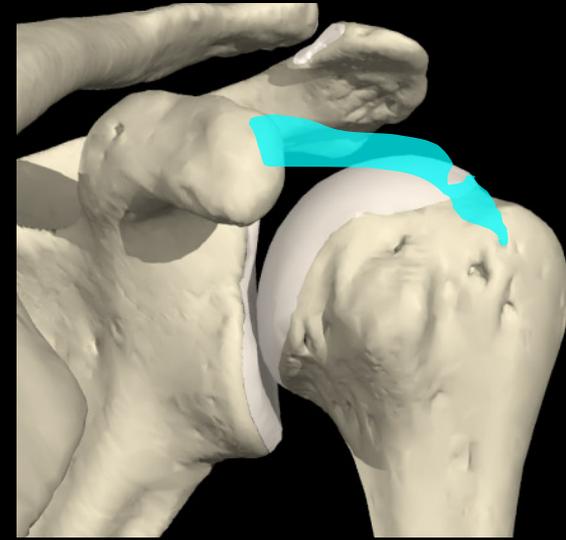
DEFINITIONS

- Fréquence liée à l'âge: 90% après 90 ans
- Profondes > Superficielles
- Rupture transfixiante
= rupture qui traverse toute l'épaisseur du tendon
= se voit dans les deux plans de coupe



DEFINITIONS: ruptures partielles

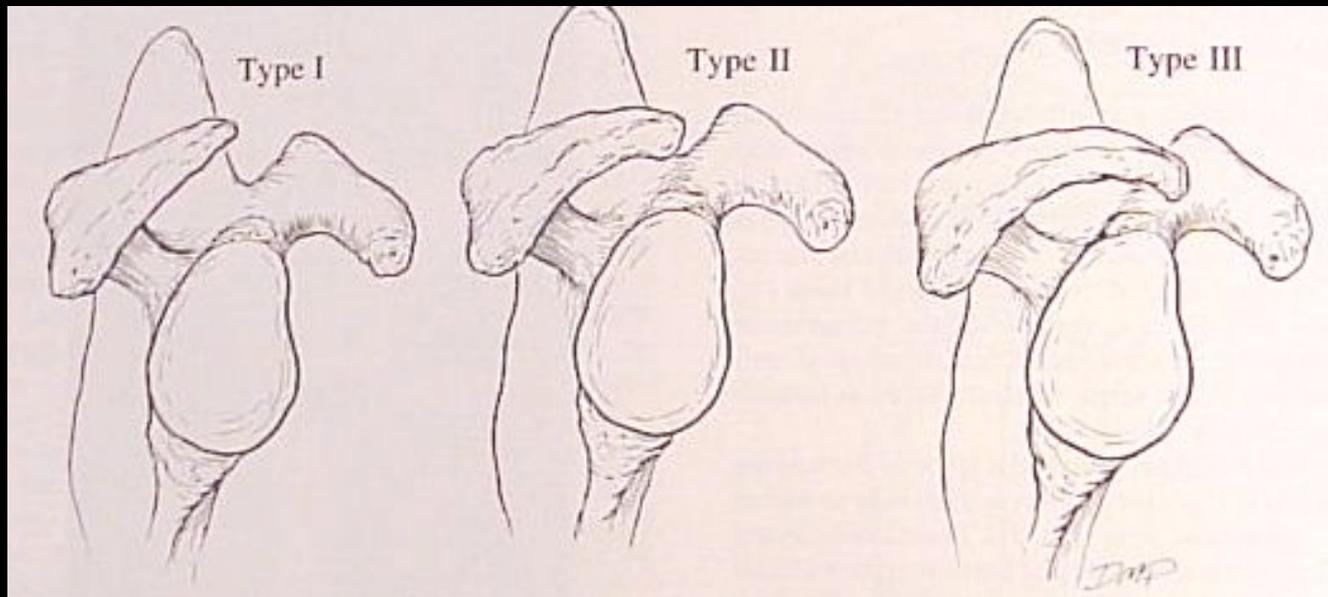
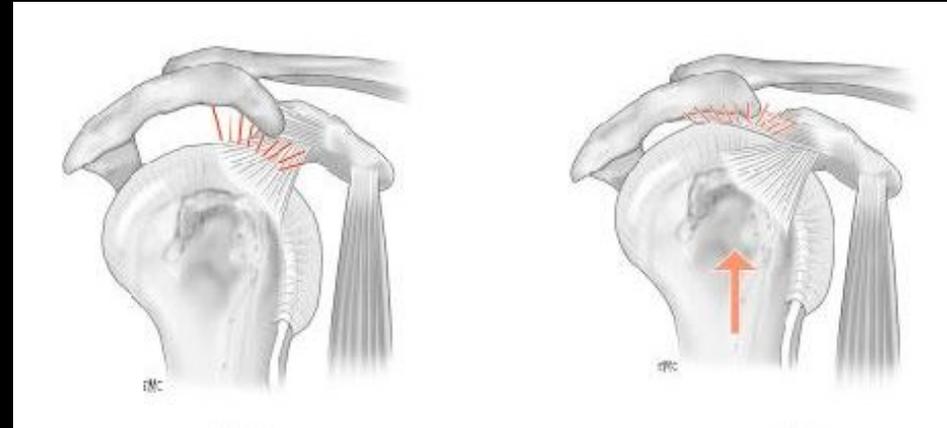
- Superficielle
 - bord superficiel du tendon
 - se voit dans les deux plans
- Profonde
 - se localise à l'insertion
 - Coupes longitudinales +++ / sagittales



Pathogénie des lésions de coiffe

Théorie extrinsèque Von Meyer 37, Neer

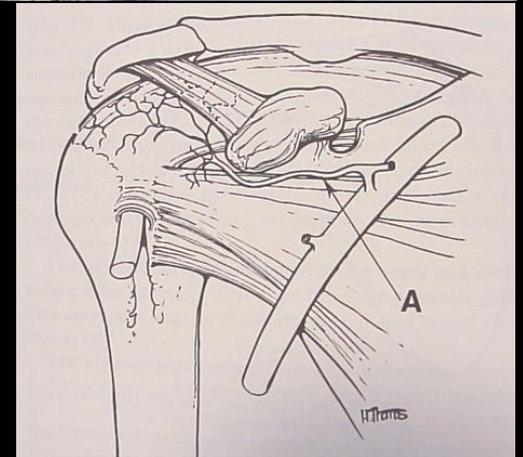
- Acromion
 - Crochu 80% des ruptures
 - Courbe 20%
 - Plat 0%



Pathogénie des lésions de coiffe

Théorie intrinsèque Codeman 1934, Uthoff 1986

- Zone critique mal vascularisée moins élastique
- Anomalies acromiales 2aires
- Lésions de la face profonde
- Lésions du LB
- Sous-épineux jamais en conflit



Ruptures complètes/incomplètes

- Complètes
 - sur toute la largeur: SE (sup à 2 cm)
 - sur toute la hauteur: IE/SS
- Incomplètes
 - = une partie de la largeur

RUPTURES TRANSFIXIANTES

- Echographie VS Chirurgie:

- SE: 57 à 100%

- SPE: 76 à 100%

- Tecfey (2000): US Vs Arthroscopie

- = Se: 100%, Spé: 85%, Exactitude: 96%

- Tecfey (2004): US Vs IRM Vs Arthroscopie

- exactitude US= exactitude IRM = 87%

- rétraction du tendon: US (73%) > IRM (63%)

- taille des lésions transfixiantes: US (87%) > IRM (80%)

- taille des lésions non transfixiantes: IRM (73%) > US (54%)

RUPTURES TRANSFIXIANTES DU SE = signes directs

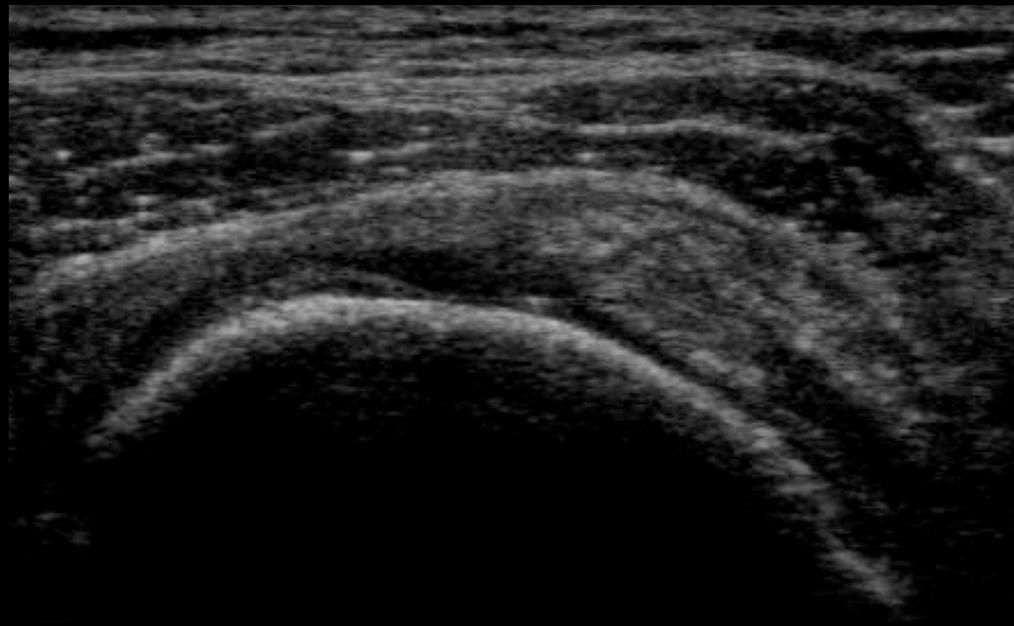
- Méplat tendineux ou marche d'escalier
- Zone anéchogène traversant le tendon
- Amincissement du tendon
- Disparition du tendon (Se:100%)

RUPTURES TRANSFIXIANTES DU SE

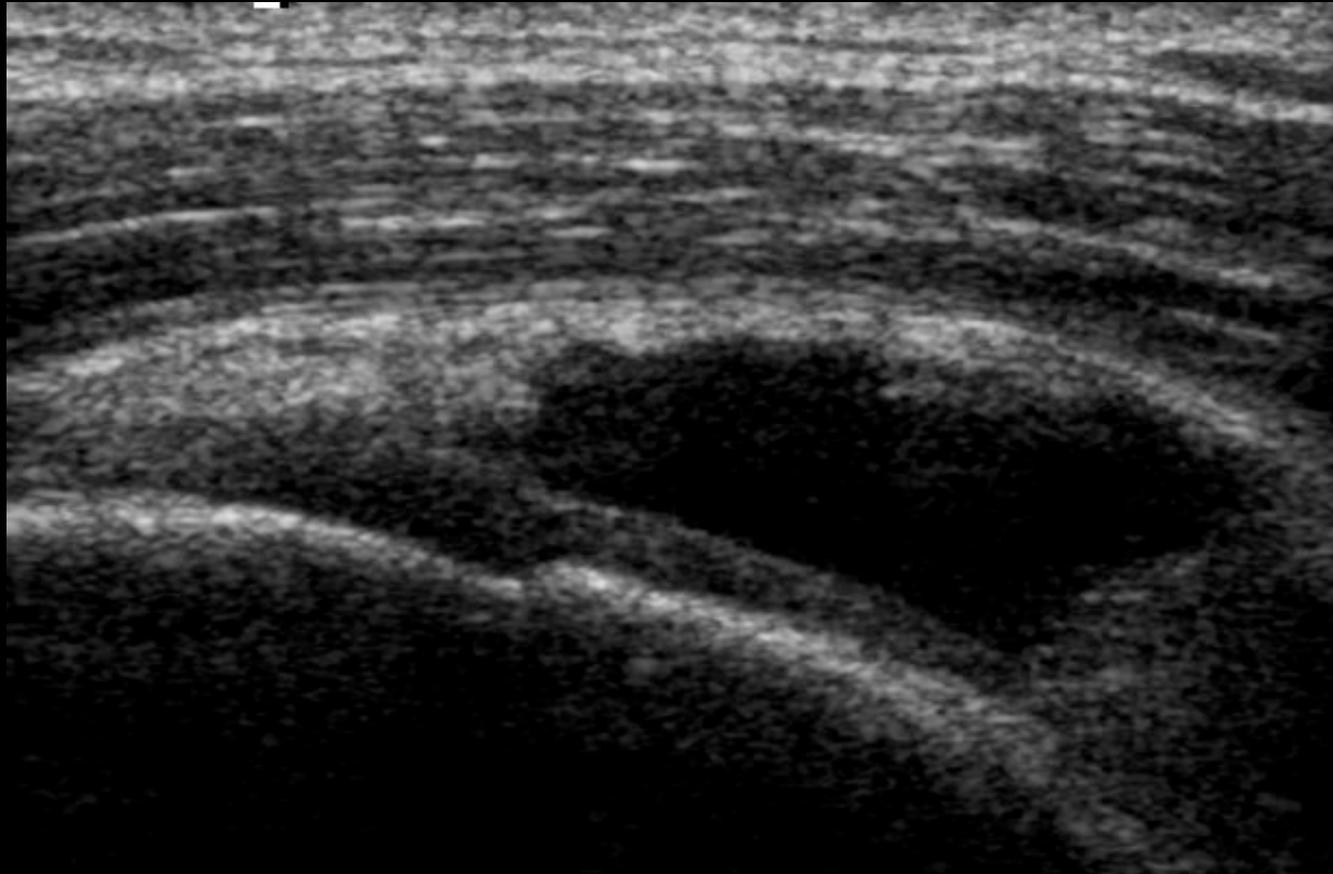
= signes indirects

- Erosions du tubercule majeur (Se: 86%)
- Bursite SAD
- Epanchement intra-articulaire
- Signe de l'interface cartilagineuse (Spé:100%)
- Hernie du deltoïde
- Atrophie (Hyperéchogénicité) musculaire

RUPTURES TRANSFIXIANTES DU SE = signes directs

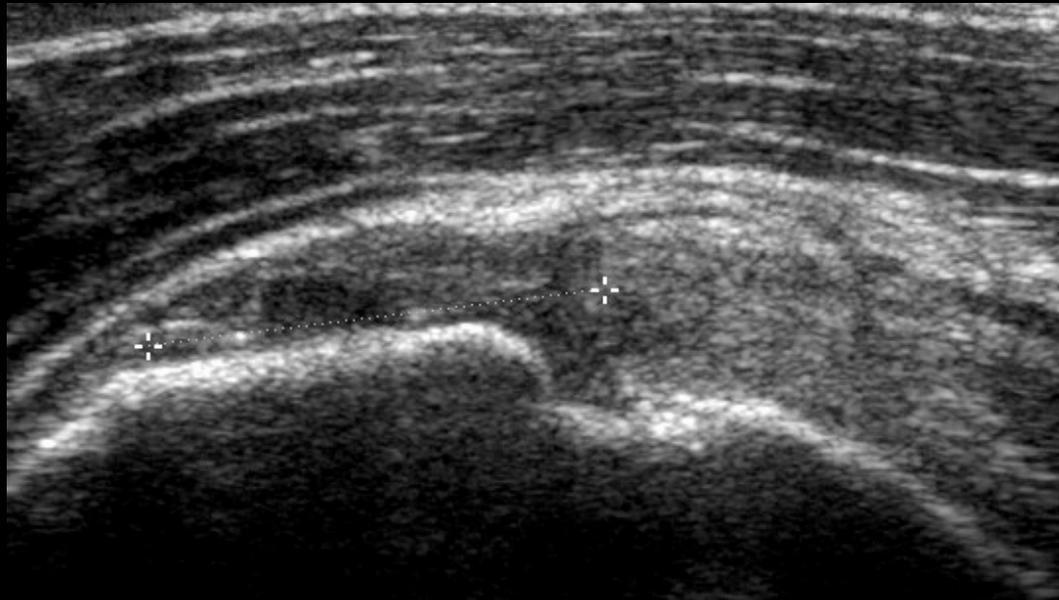


RUPTURES TRANSFIXIANTES DU SE = signes directs

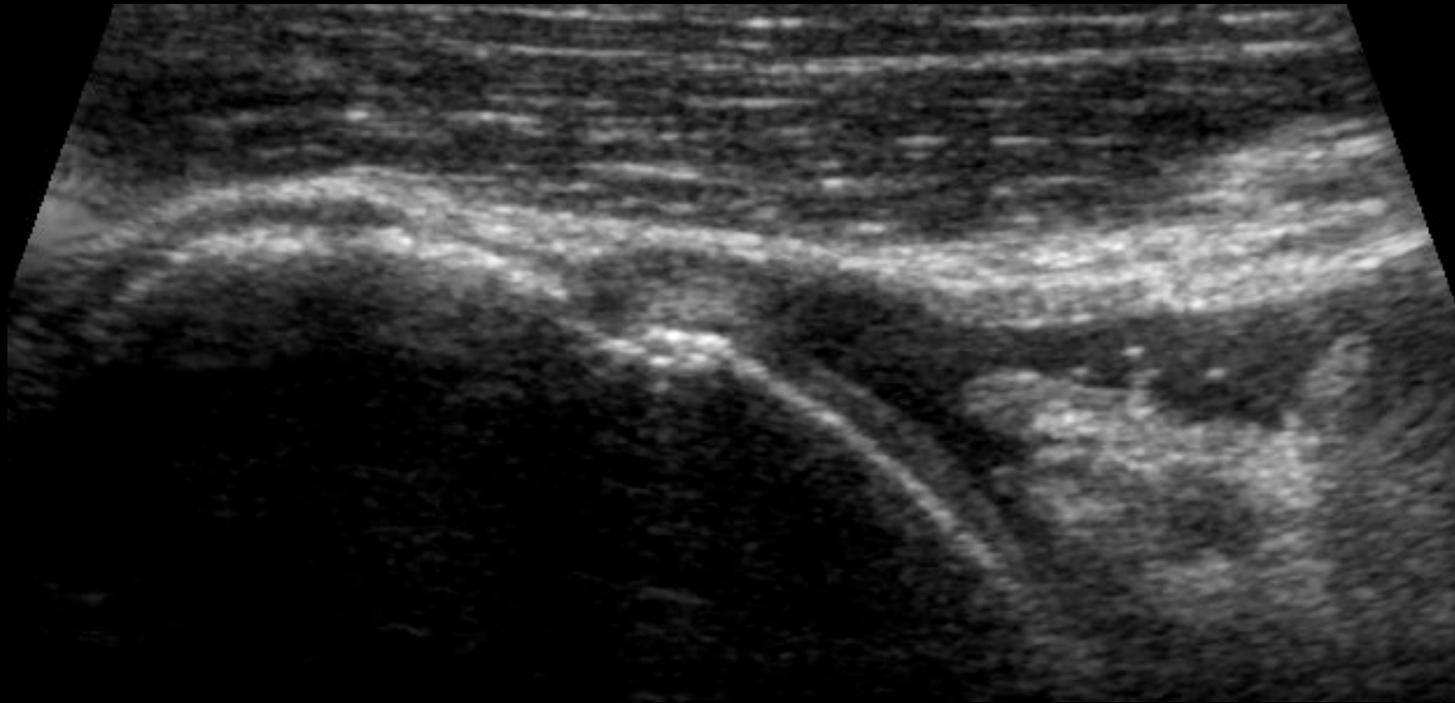


RUPTURES TRANSFIXIANTES DU SE = signes directs

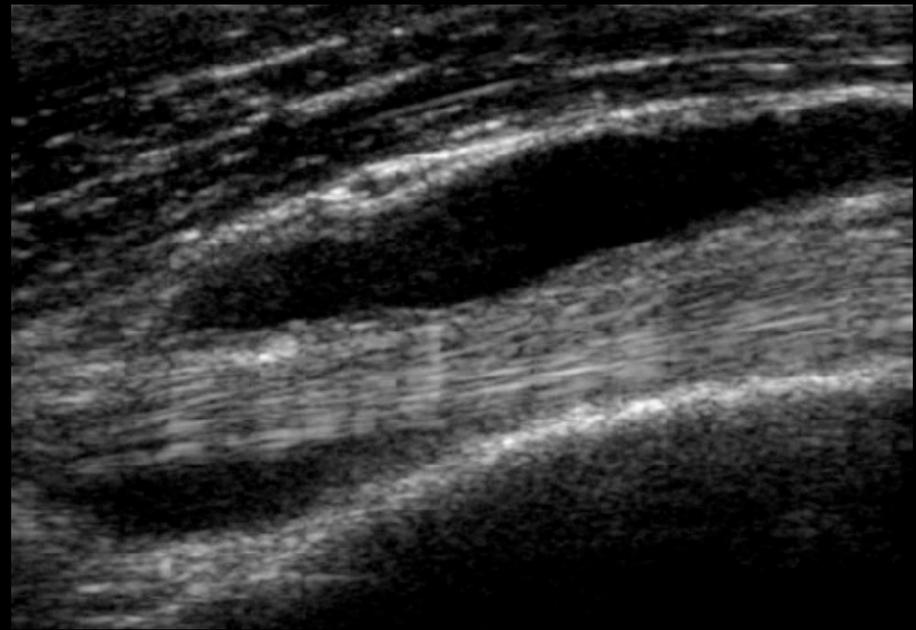
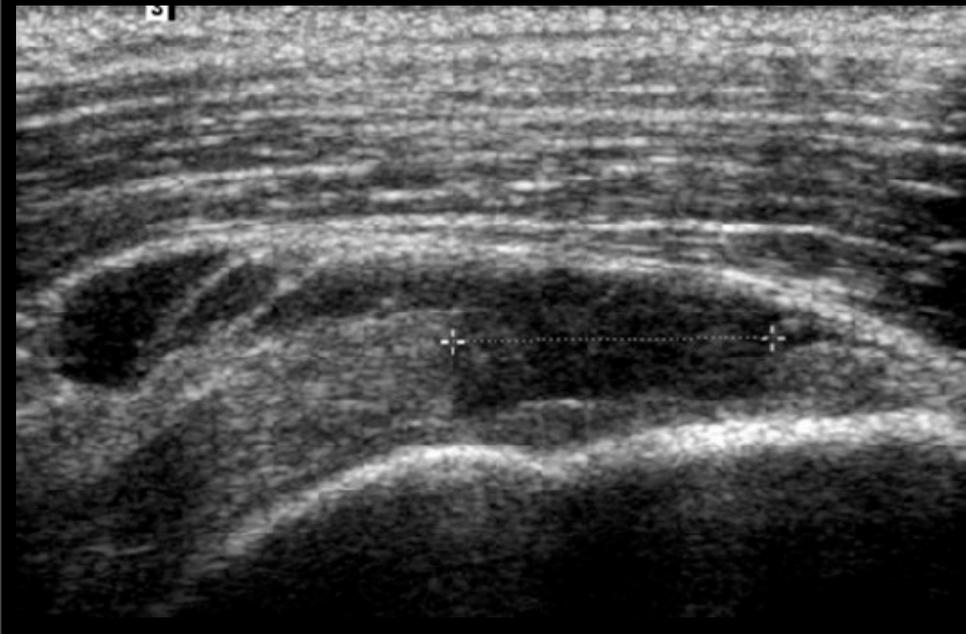
Amincissement du tendon



RUPTURES TRANSFIXIANTES DU SE = signes directs



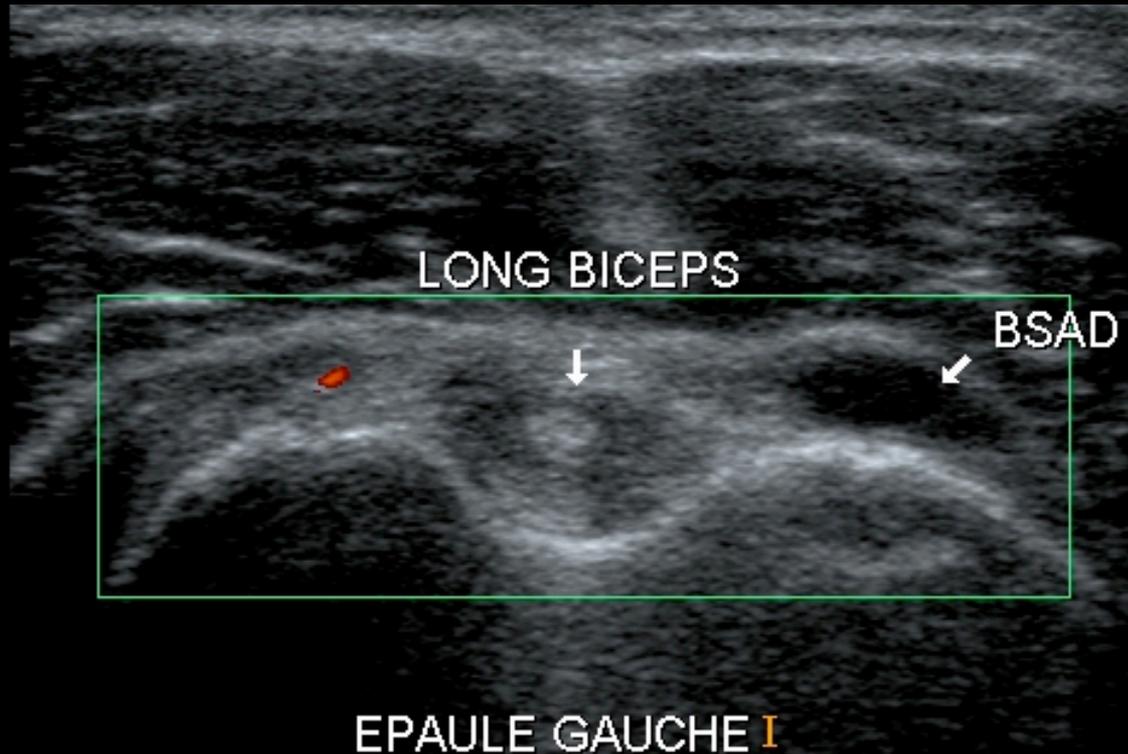
RUPTURES TRANSFIXIANTES DU SE = signes indirects



RUPTURES TRANSFIXIANTES DU SE

= signes indirects

Double épanchement



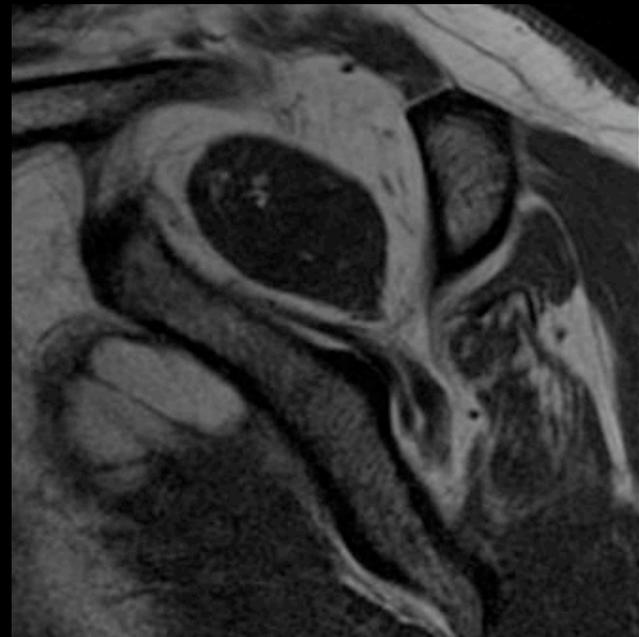
Hollister & al: VPP: 95% / Spé: 99% / Se: 22 %

Association of sonographically detected subacromial/subdeltoid bursal effusion and intraarticular fluid with rotator cuff tear AJR 165: 605-608

RUPTURES TRANSFIXIANTES DU SE = signes indirects

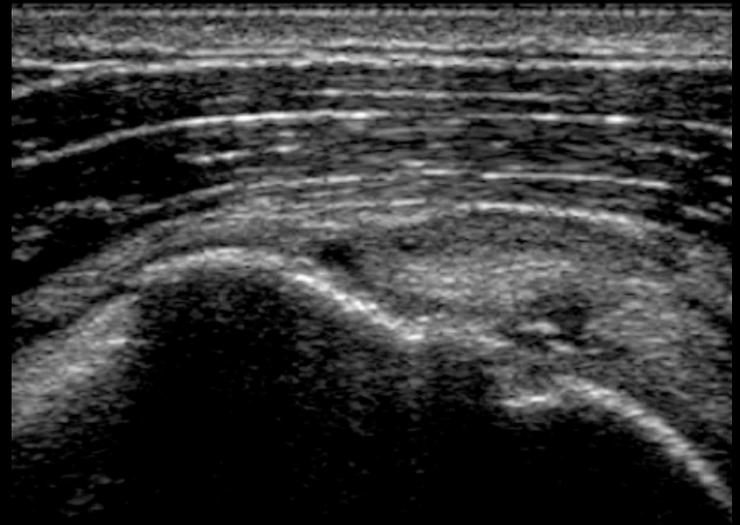
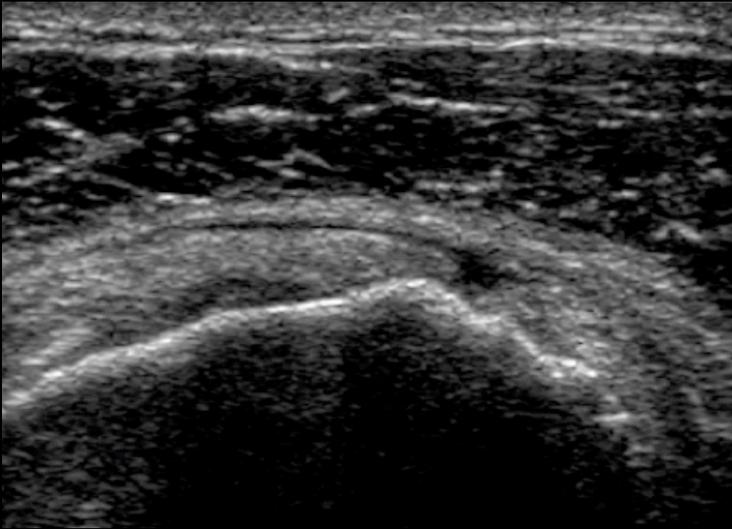


RUPTURES TRANSFIXIANTES DU SE = signes indirects

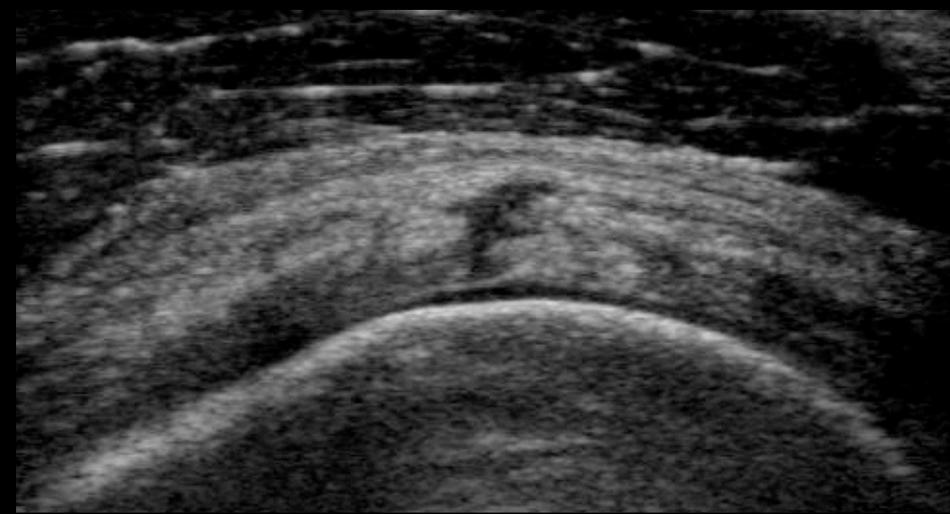
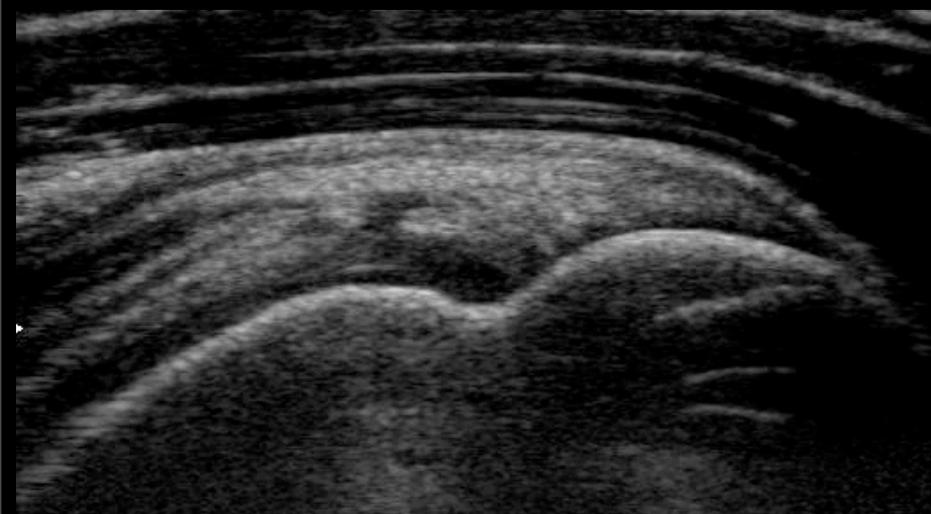


- PAS DE QUANTIFICATION
- NON VISUALISATION DU SS

RUPTURES TRANSFIXIANTES DU SE = Topographie

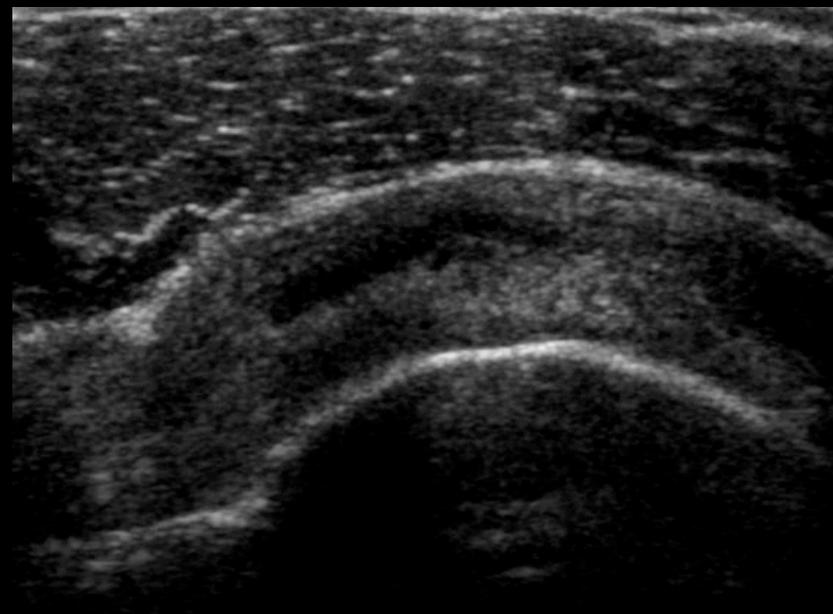
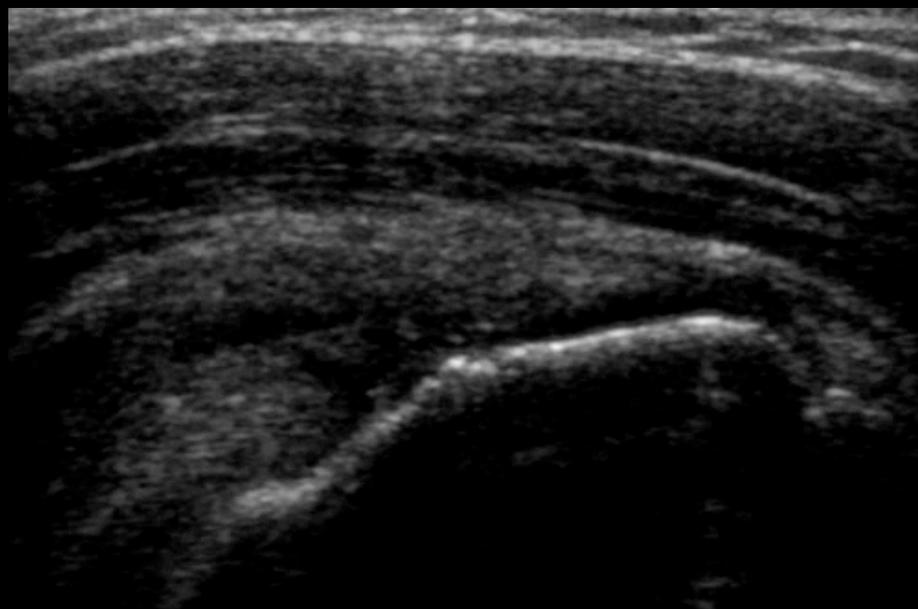


RUPTURES TRANSFIXIANTES DU SE Topographie

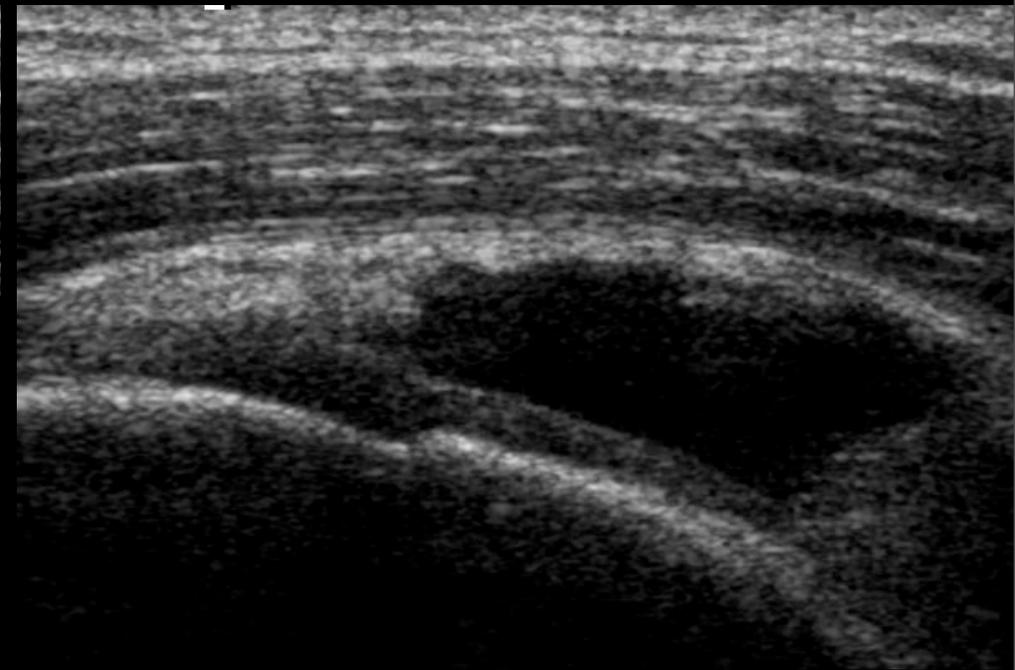
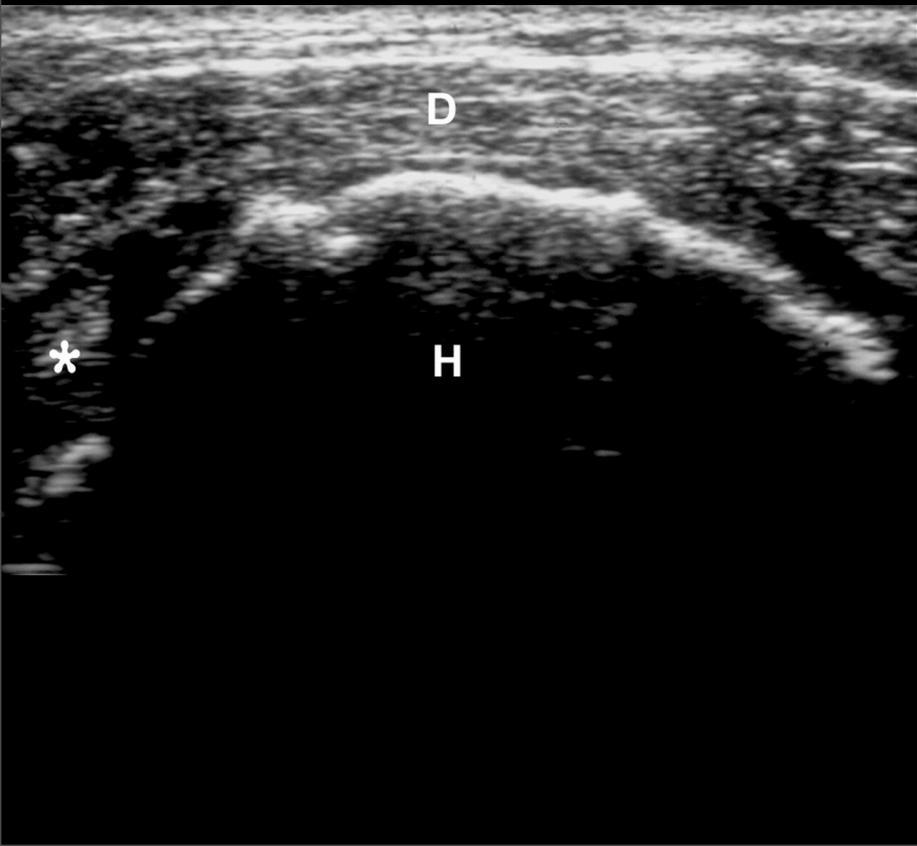


RUPTURES TRANSFIXIANTES DU SE

Topographie



RUPTURES TRANSFIXIANTES DU SE = ancienneté

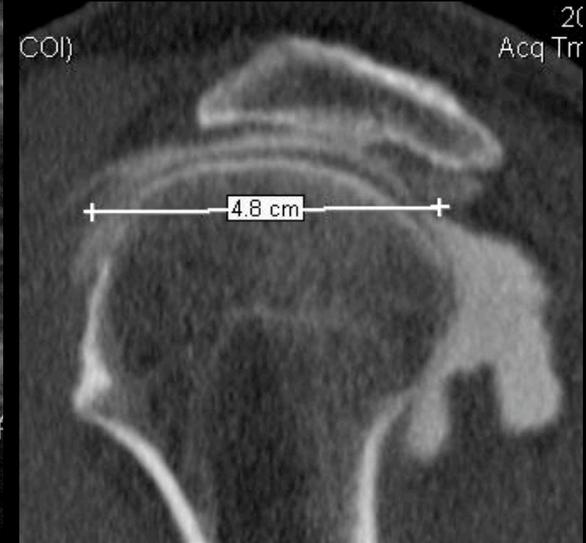
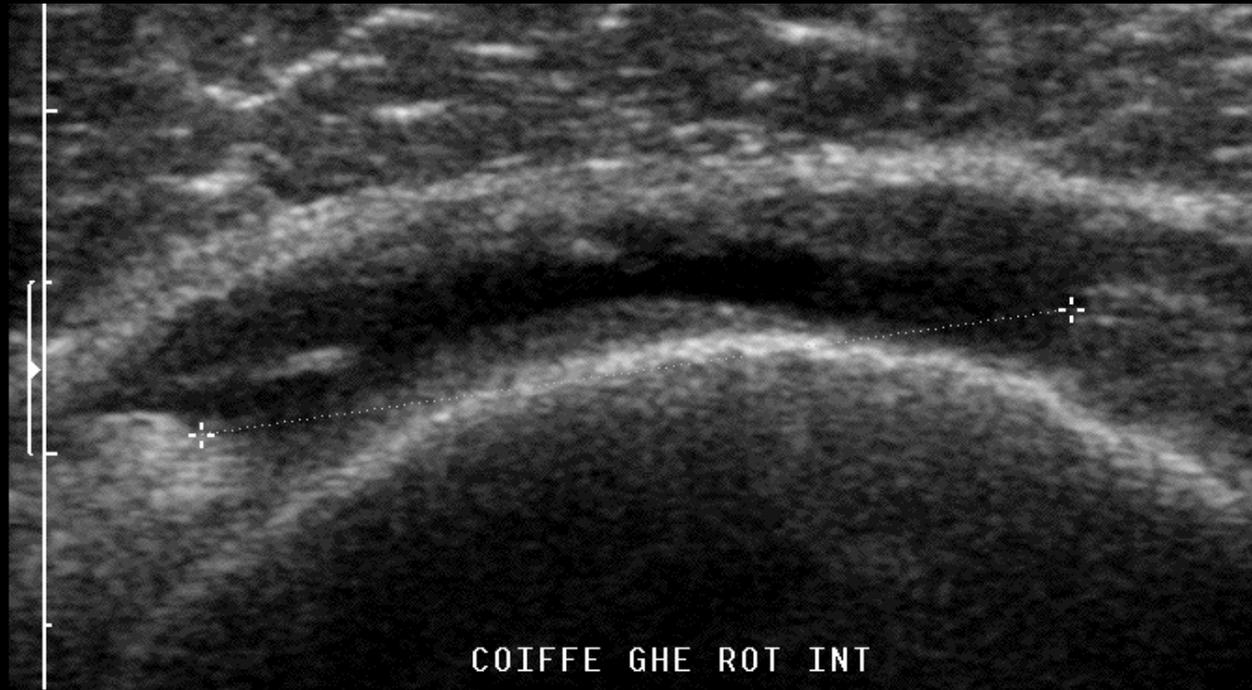


RUPTURES TRANSFIXIANTES DU SE

Discussion

- Meilleur signe: « hiatus » / disparition du tendon
- CAT:
 - préciser siège: antérieur +++
 - Mesures selon axes longitudinal et sagittal
 - Lésions associées: LB? SS?
- Jacobson
 - Association EP péri-bicipital + érosions TM
 - Spé: 100%, Se: 60%, pertinence: 84%

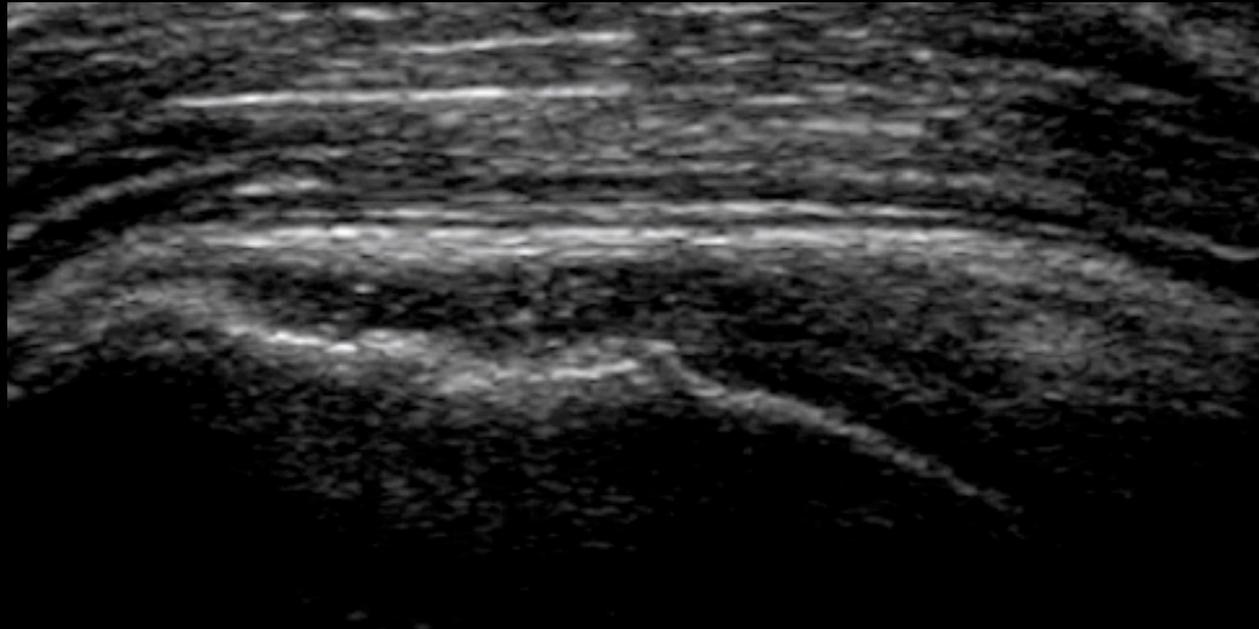
RUPTURES TRANSFIXIANTES DU IE = Extension postérieure



D= 25.3mm

RUPTURES TRANSFIXIANTES DU IE

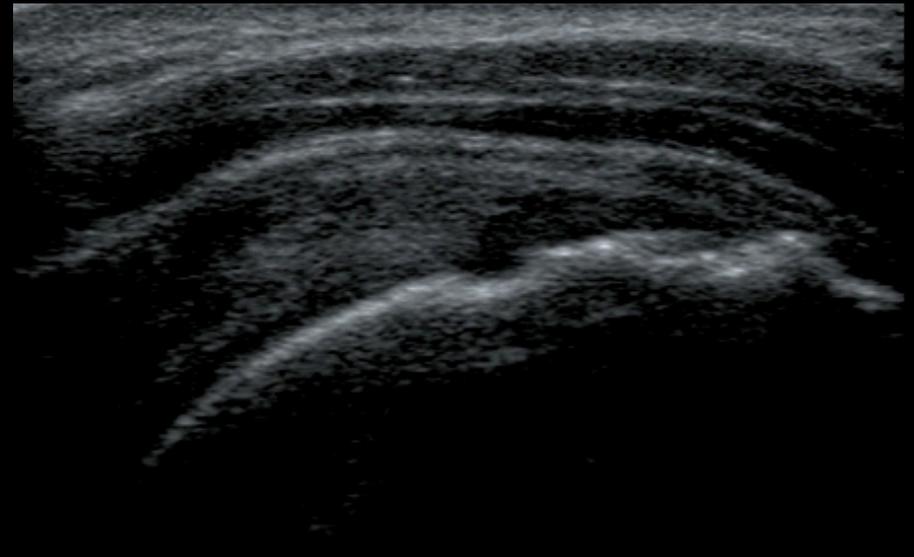
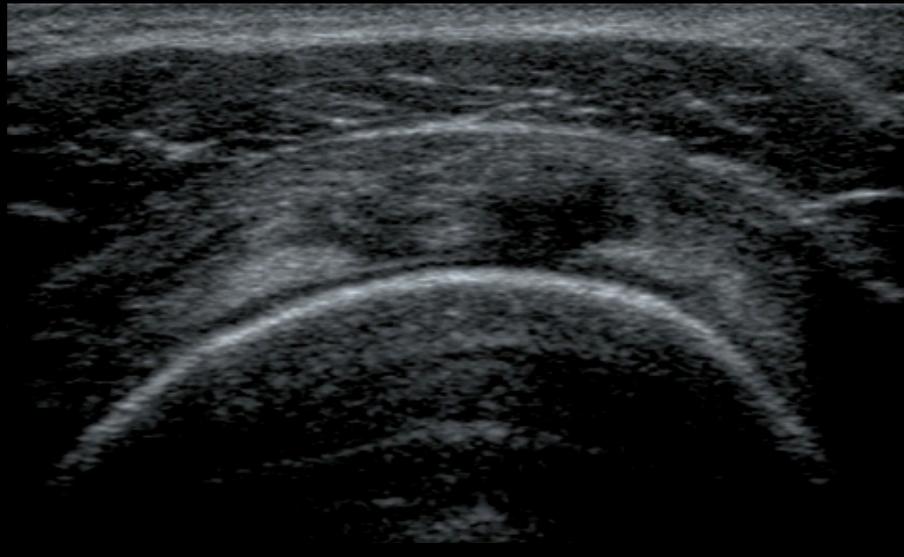
= lésions isolées rares



RUPTURES PARTIELLES

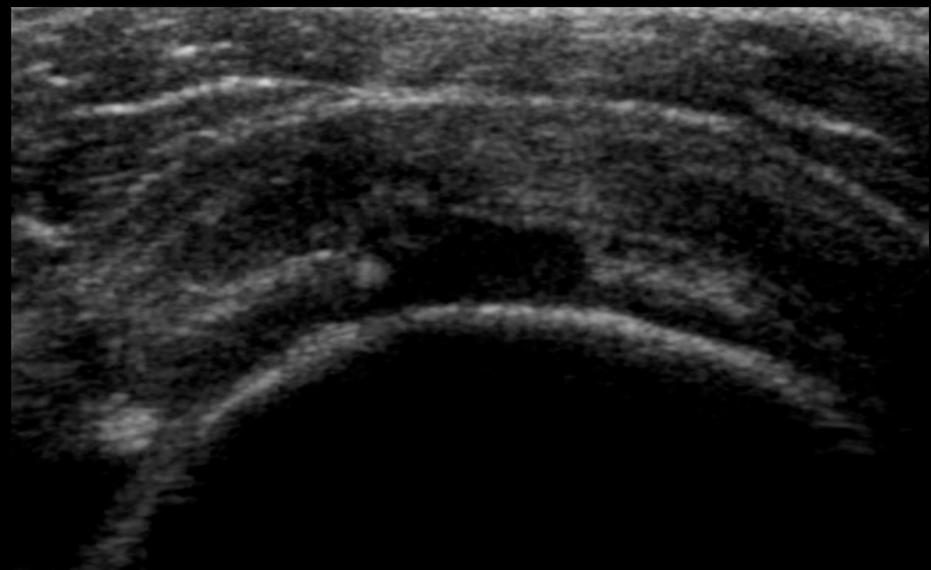
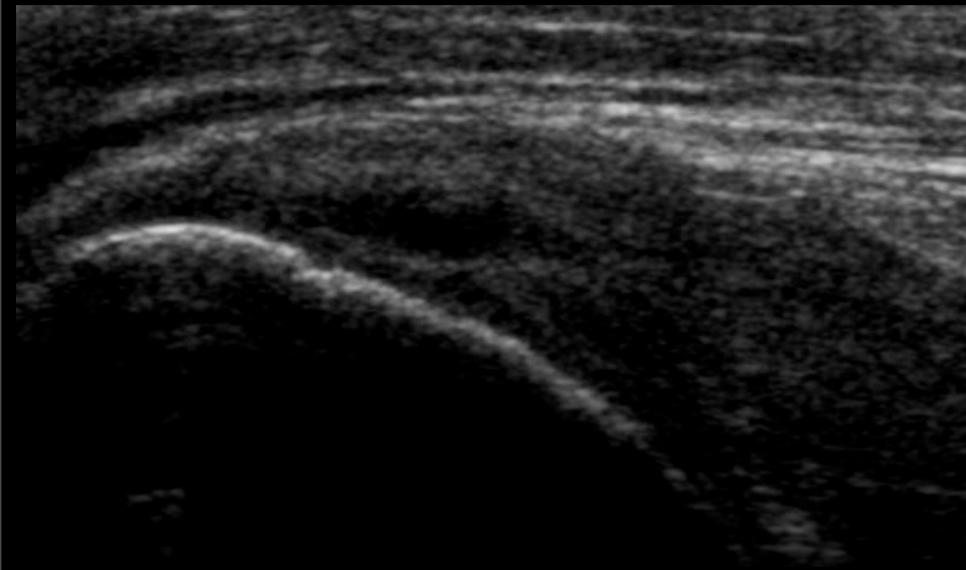
- rupture non transfixiante
- versant bursal = superficielle
- versant articulaire = profonde

RUPTURES PROFONDES DU SE

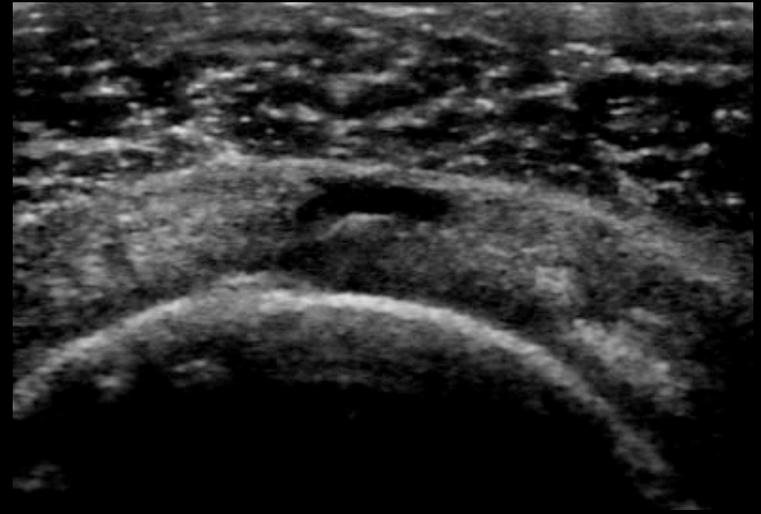
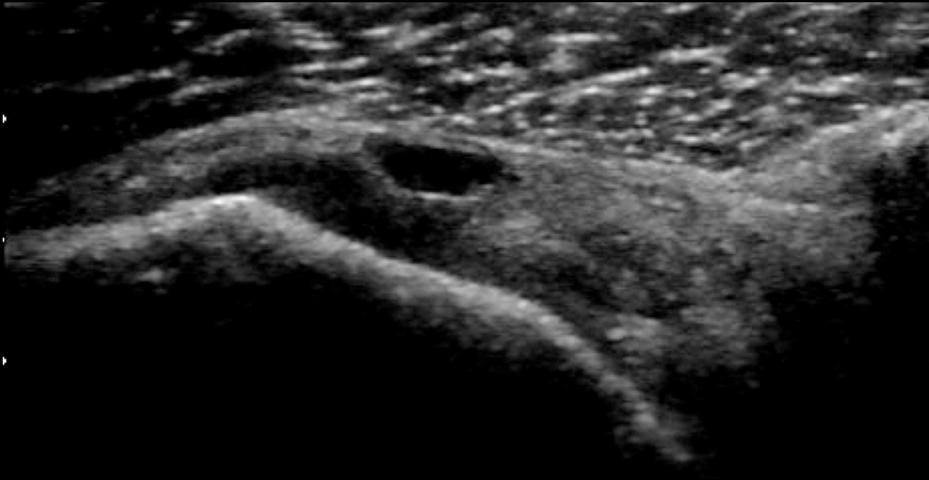


- jonction cartilage/TM
- zone hétérogène +/- liquidienne
- épanchement intra-articulaire (bicipital)
- aspect fibrillaire normal en superficie

RUPTURES PROFONDES DU SE

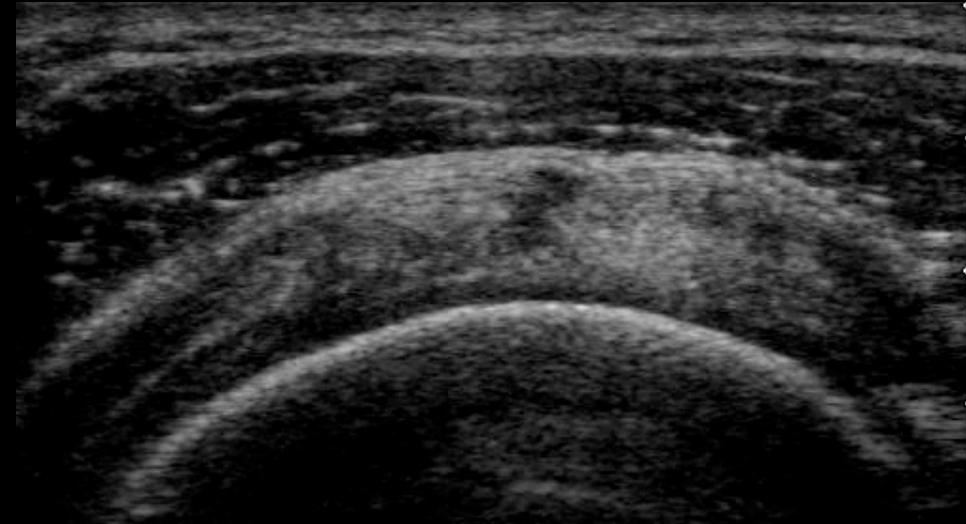
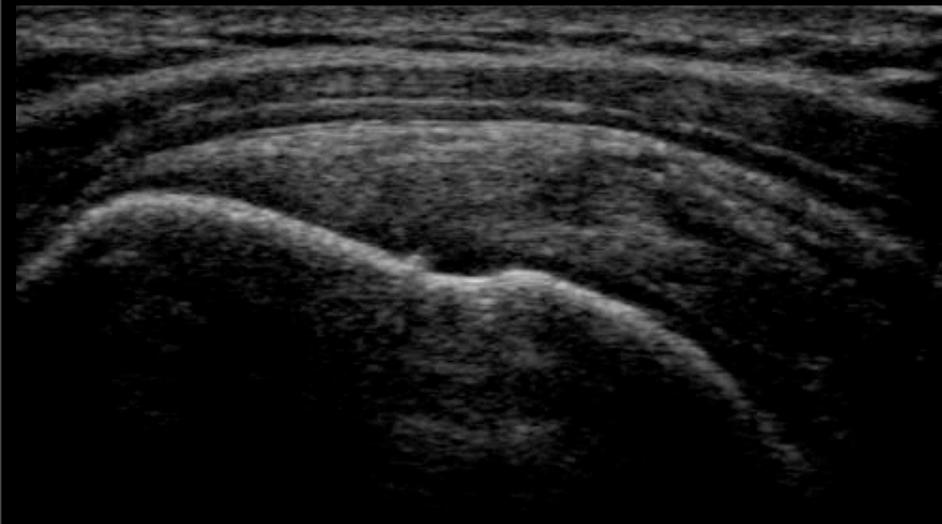


RUPTURES SUPERFICIELLES DU SE



- Désinsertion des fibres superficielles
- Epanchement de la BSAD
- Conflit sous-acromial associé = méplat tendineux

RUPTURES PARTIELLES SUPERFICIELLES DU SE



RUPTURES PARTIELLES SUPERFICIELLES DU SE

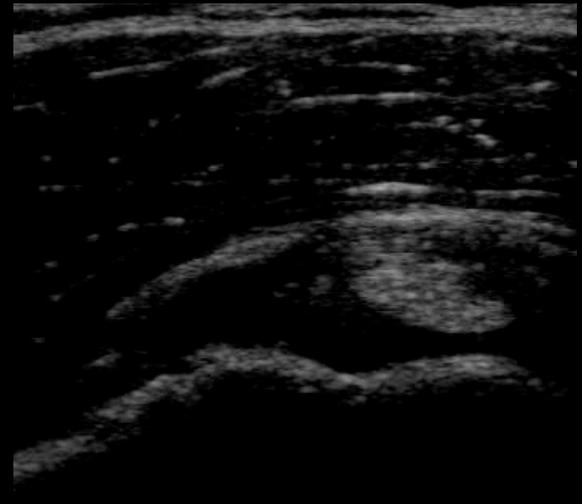
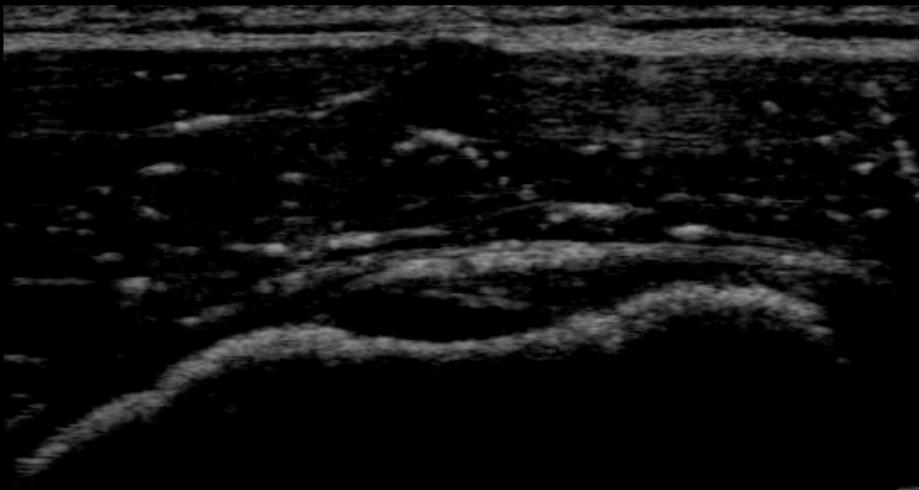
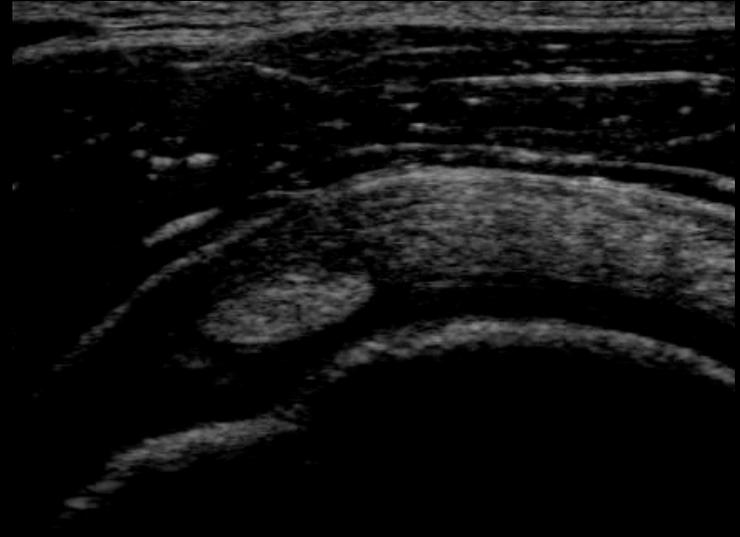
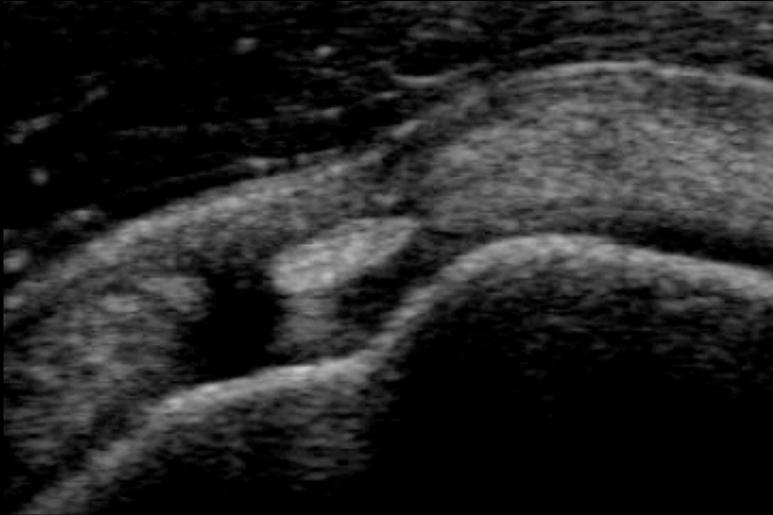


RUPTURES DE COIFFE

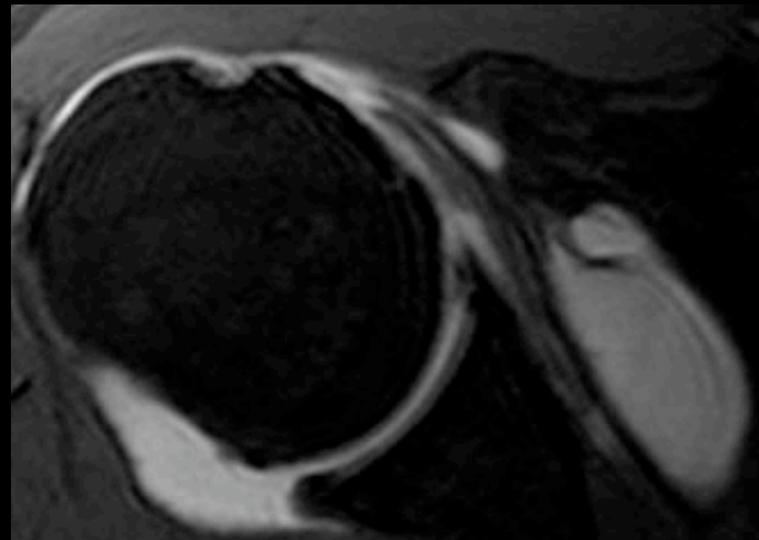
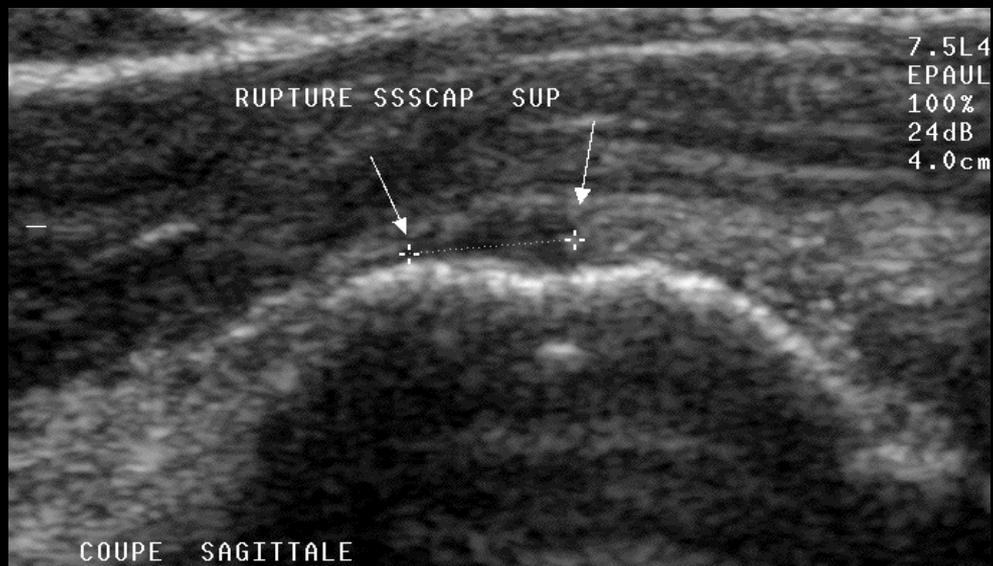
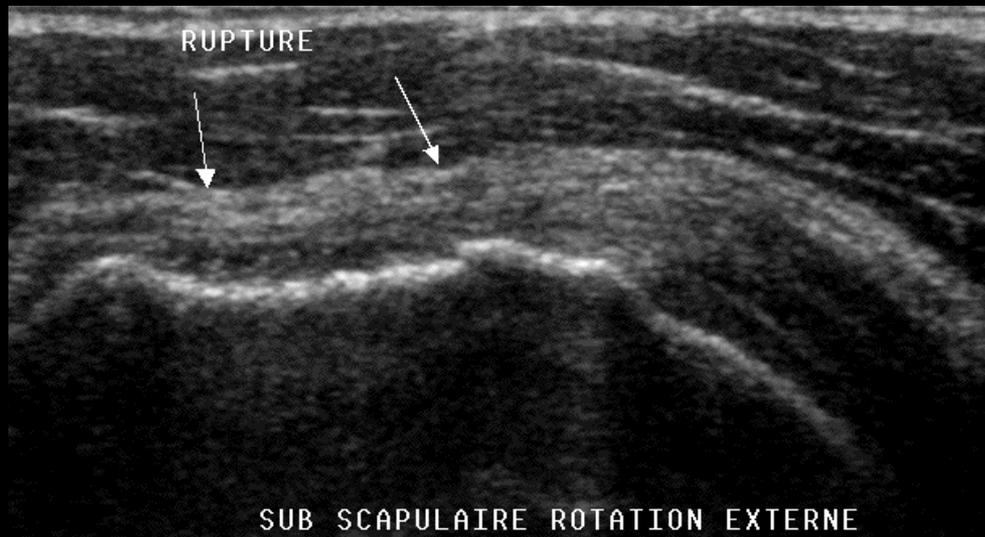
- Lésion du SE?
 - Transfixiante ou non?
 - Profonde ou superficielle?
 - Mesures dans les deux plans de l'espace
 - Extension postérieure: IE?
-
- Bilan d'extension: LB et SS



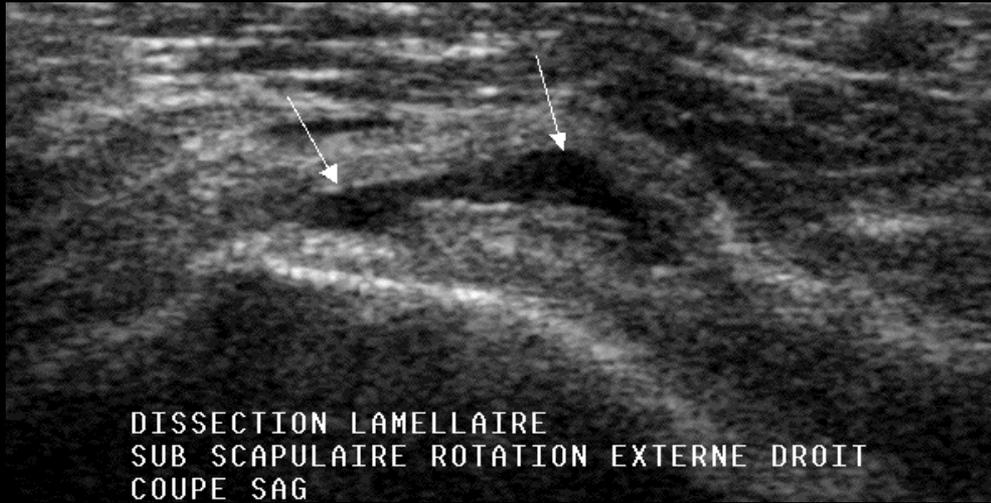
RUPTURES DU SUB-SCAPULAIRE



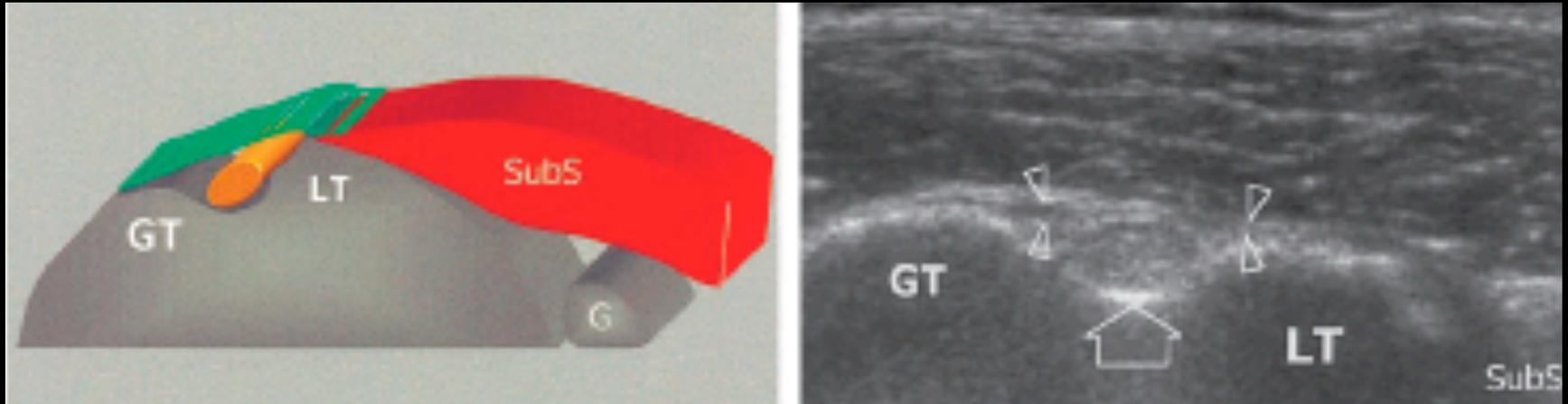
RUPTURES TRANSFIXIANTES DU SS



CLIVAGES DU SUB-SCAPULAIRE



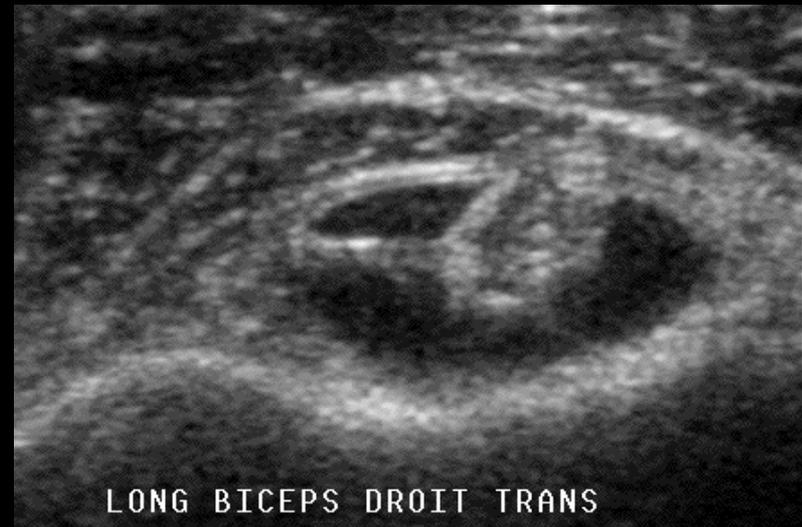
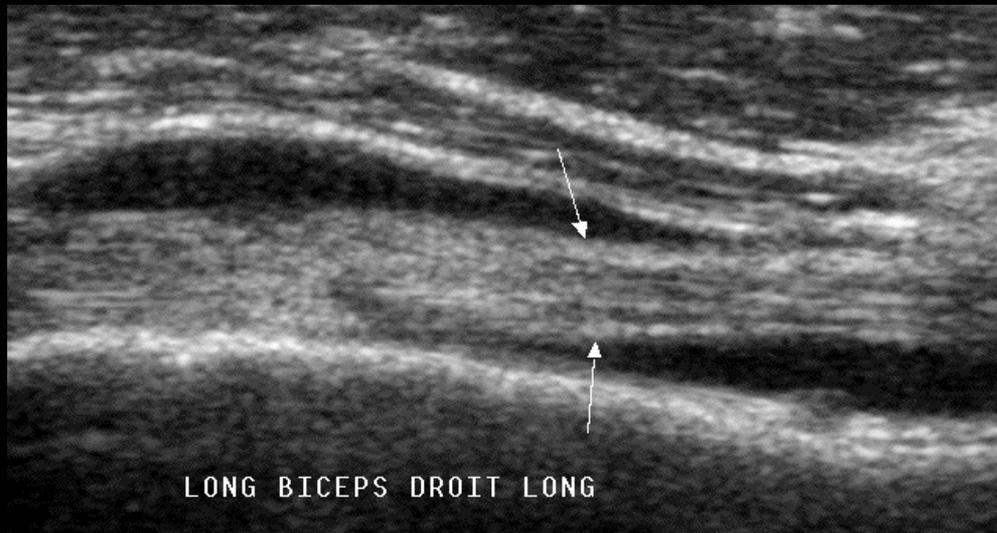
LONG BICEPS



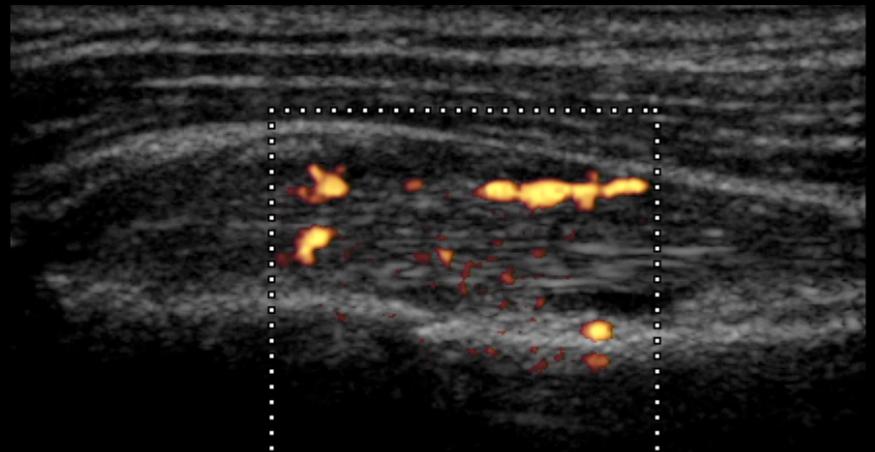
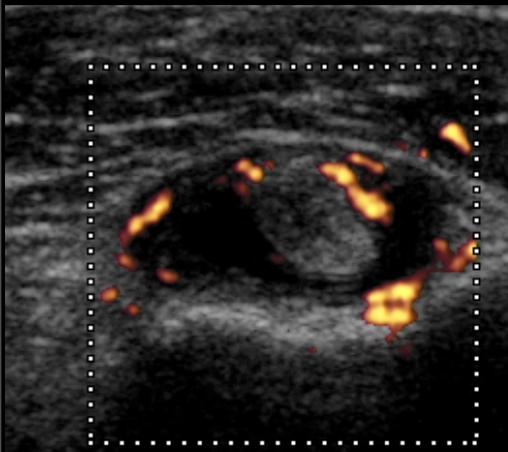
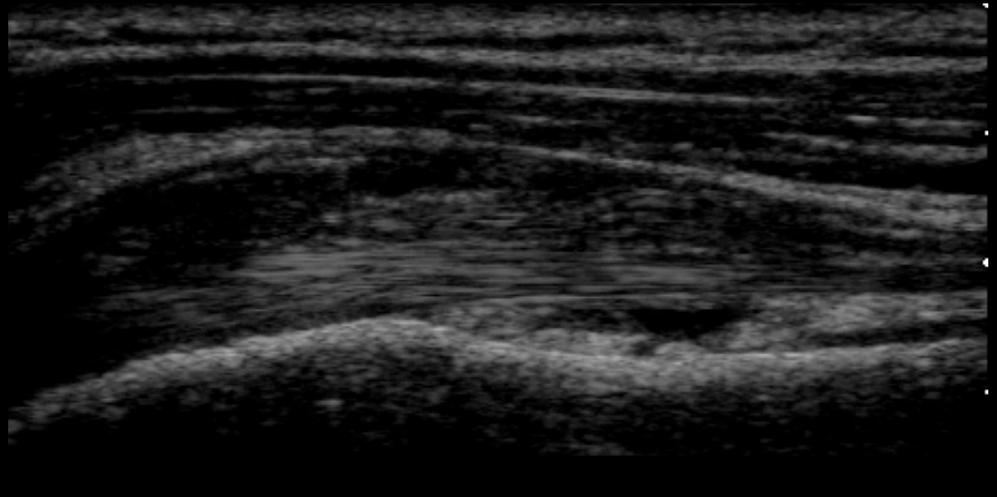
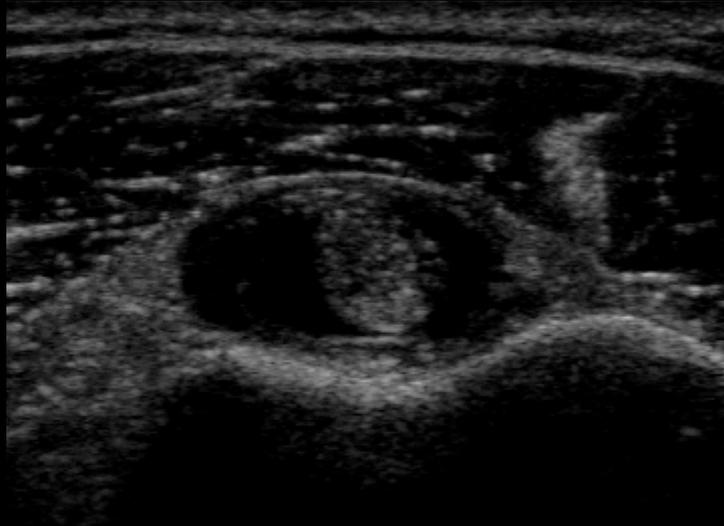
- Prévalence: 30% des lésions du SE
- Conflit direct avec versant inférieur de l'acromion
= lésion antérieure du SE ou supérieure du SS
- Subluxation répétée
= lésion du SS

TENOSYNOVITE

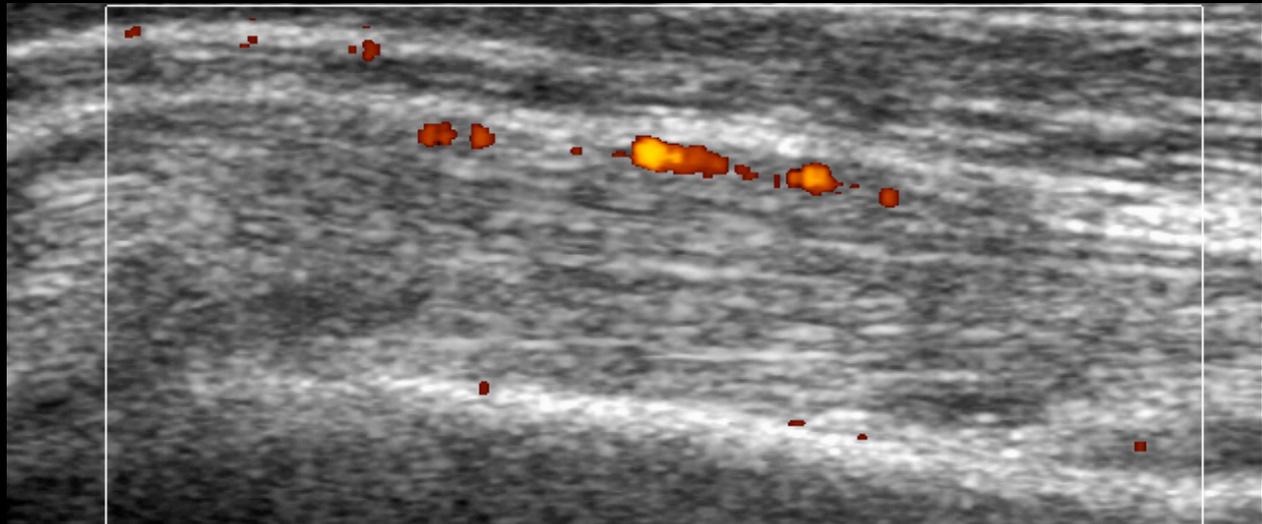
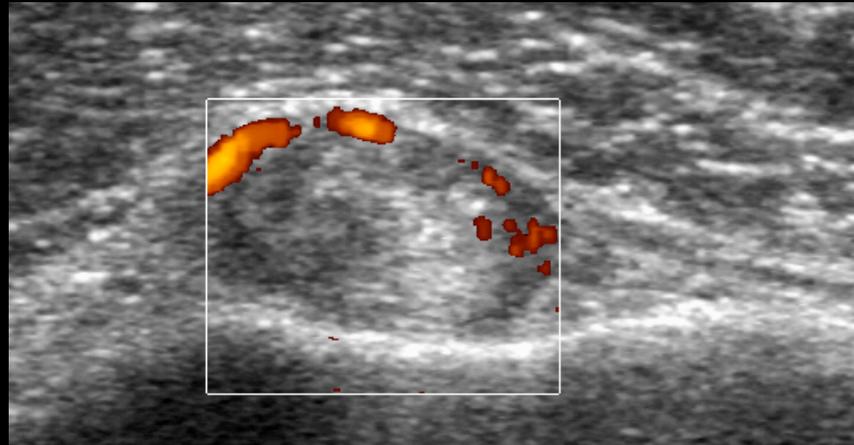
- Epanchement liquidien
- Epaissement du tendon
- Perte de sa forme ovale
- Fissuration
- Rupture
- Assèchement de la gouttière



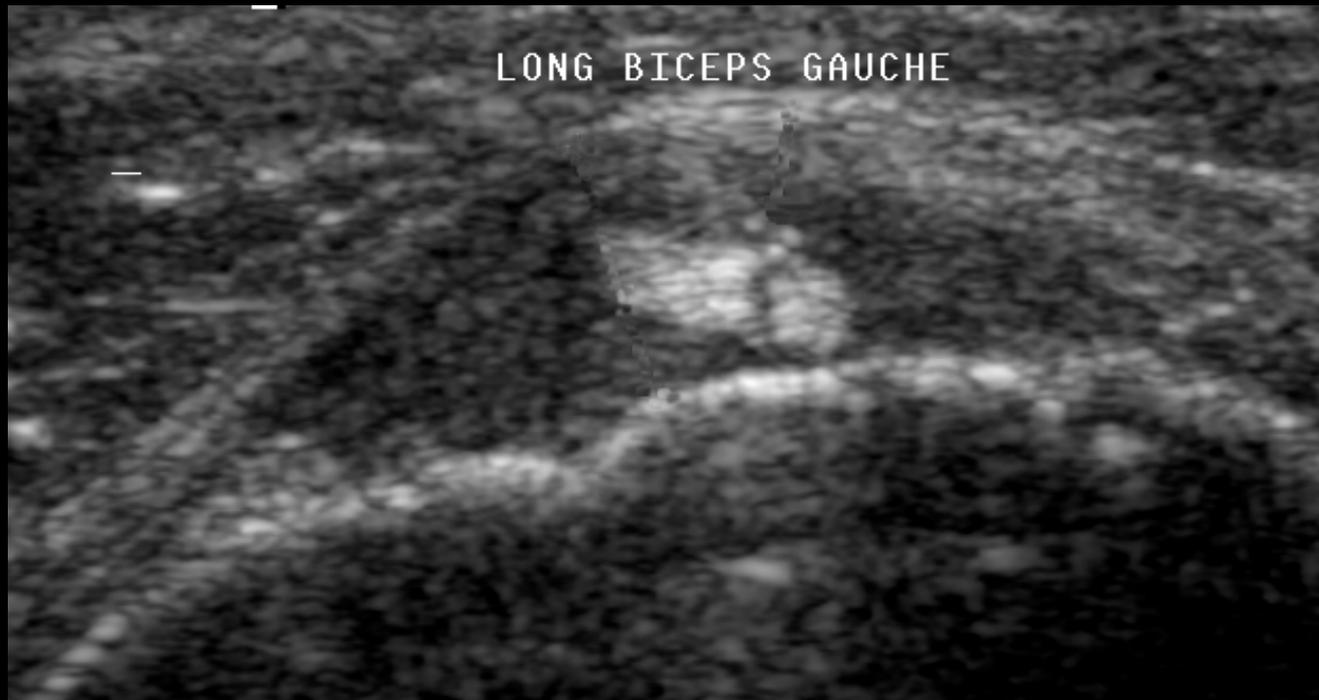
TENOSYNOVITE



TENDINOPATHIE HYPERTROPHIQUE



TENDINOPATHIE FISSURAIRE



SUBLUXATION

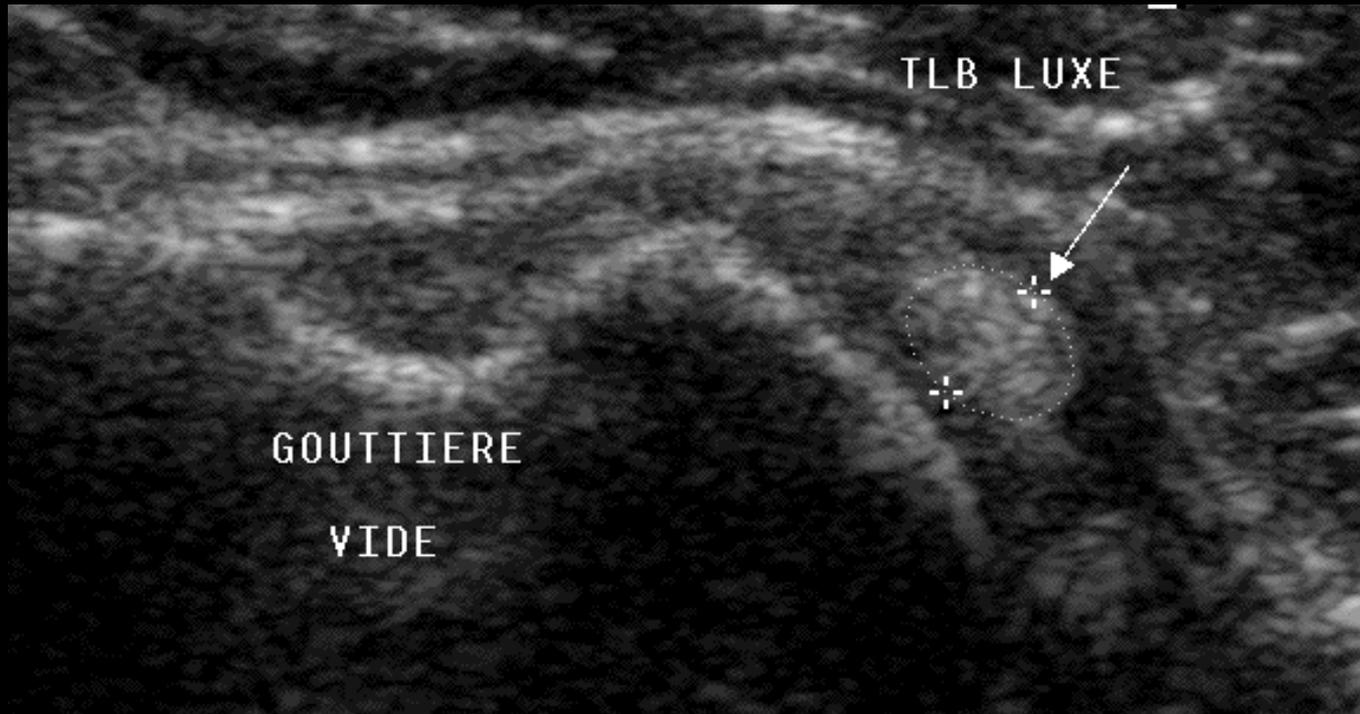


EPAULE DROIT

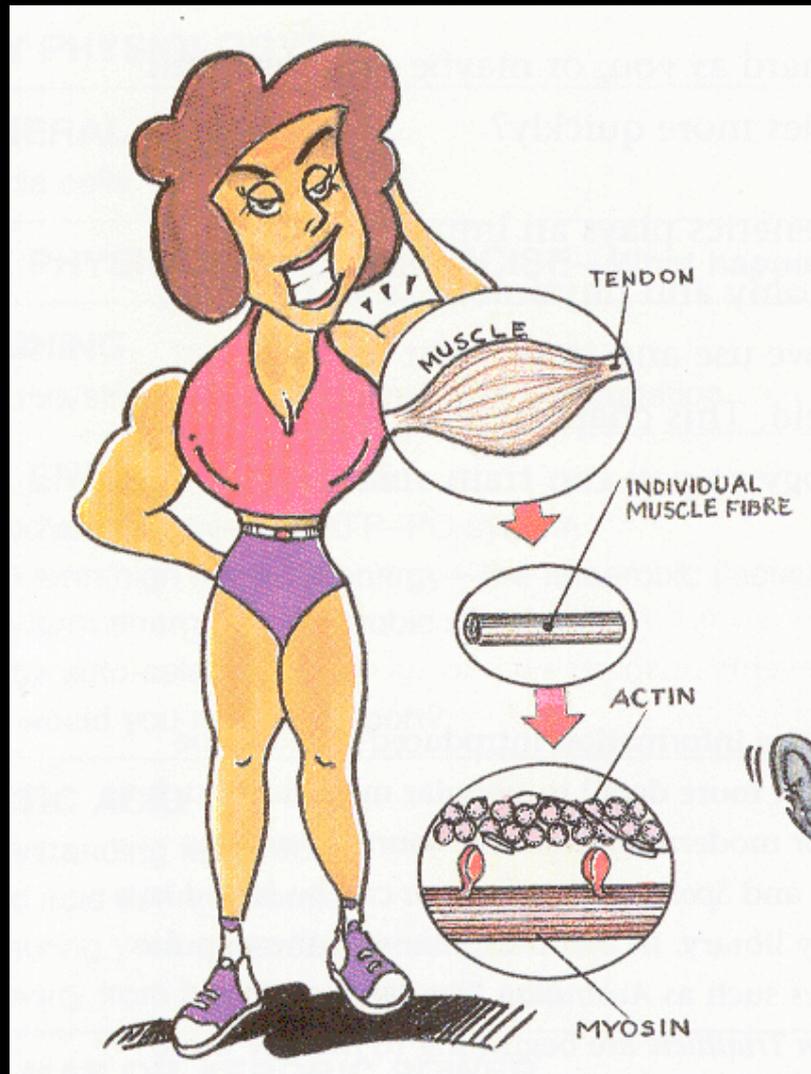
LONG BICEPS LUXATION □

LUXATION

= recherche rupture SS



TENDINOPATHIES DE LA COIFFE

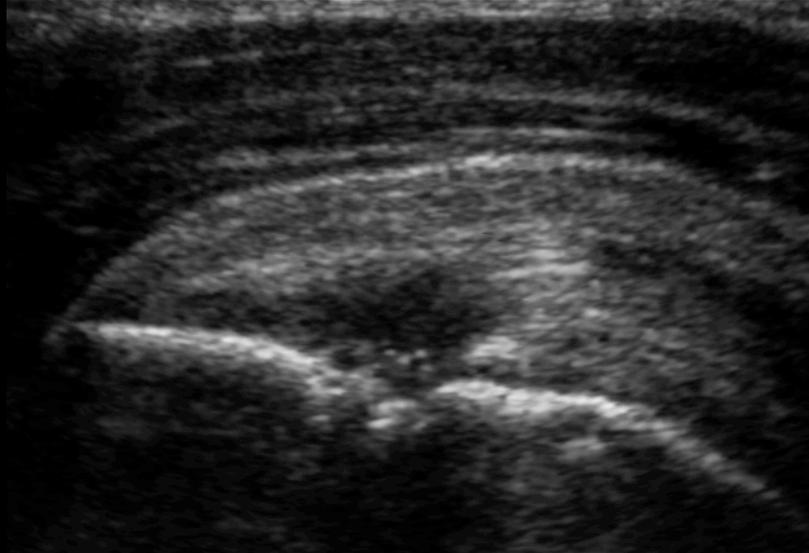


II. LES TENDINOPATHIES

- ENTHESOPATHIES
- TENDINOPATHIES HYPERTROPHIQUES
- TENDINOPATHIES CALCIFIANTES



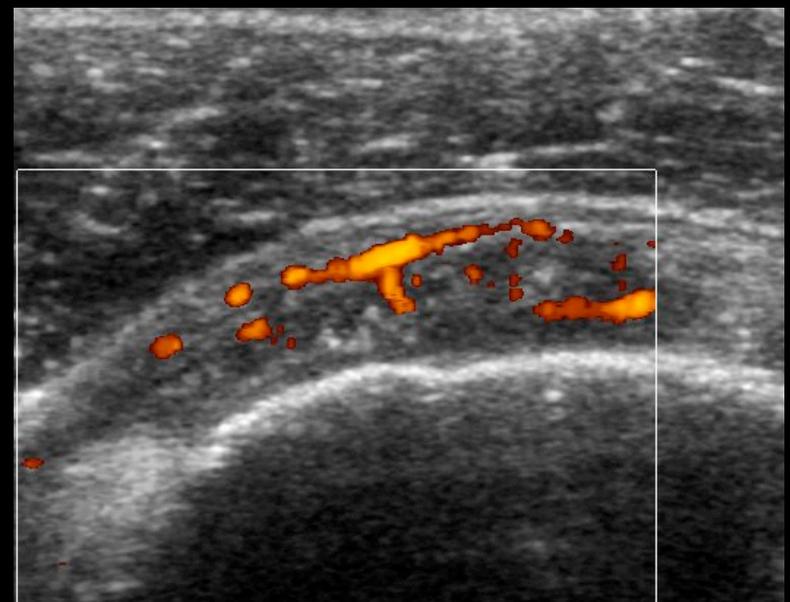
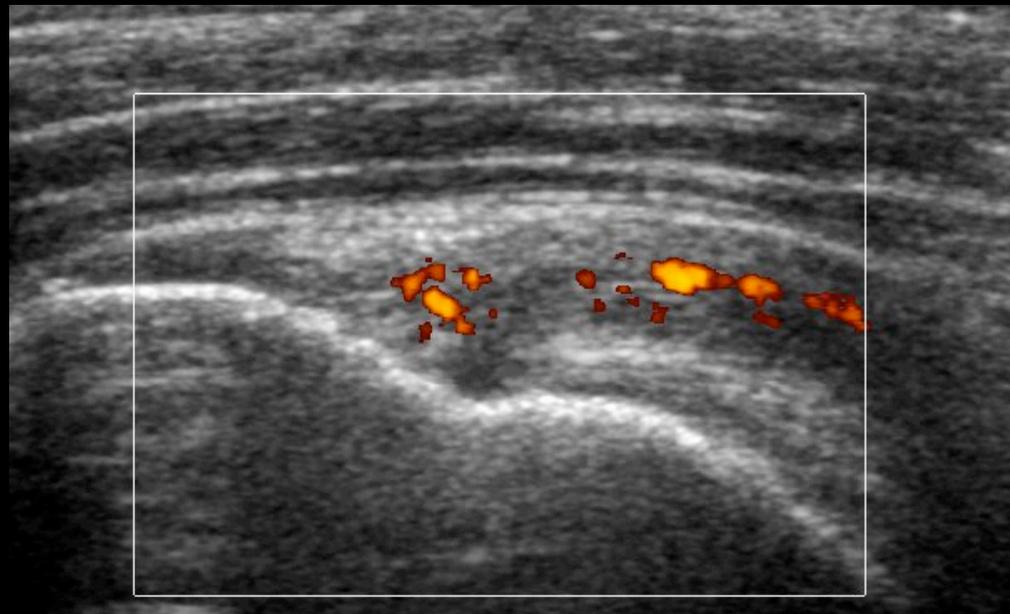
ENTHESOPATHIES DU SUPRA-EPINEUX



- Lésions dégénératives de l'insertion tendineuse
- Pathologie d'hypersollicitation
- Pas d'épanchement associé
- Calcification fine
- Pas de phénomène inflammatoire intra-tendineux
- En aval du col anatomique

TENDINOPATHIES HYPERTROPHIQUES

- aspect hétérogène
- hypertrophie +/- hyperhémie
- calcifications punctiformes tardives

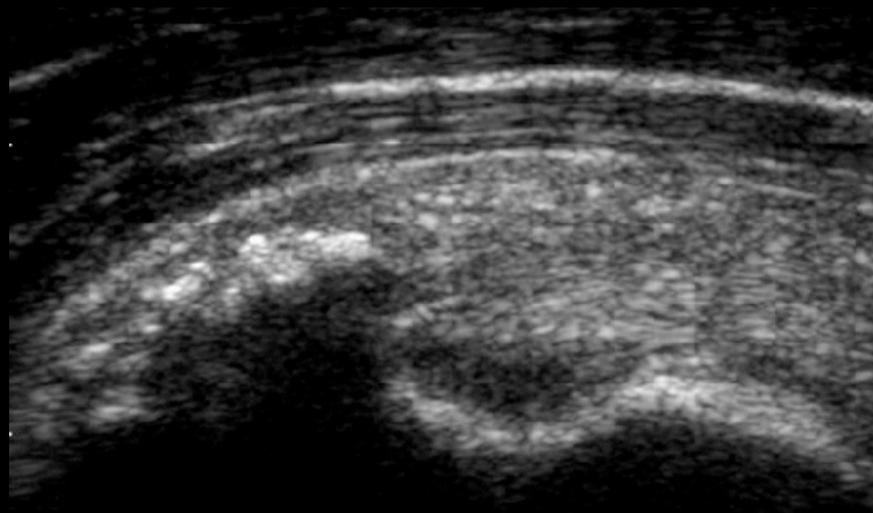


TENDINOPATHIES CALCIFIANTES

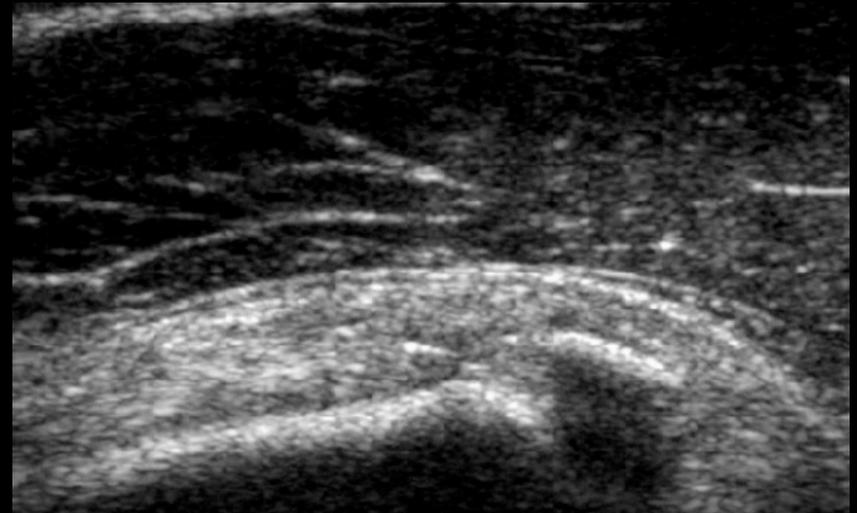
- prédominance féminine
- âge moyen
- dépôts d'hydroxyapatite +++
- SE > SS
- 3 phases: constitution, phase d'état et résorption
- Symptomatique si Conflit SA
- Migration = « épaule gelée hyperalgique »
 - calcification sous la BSAD
 - calcification dans la BSAD
 - liquéfaction
 - dans l'os
- Ponction-lavage-aspiration?



TENDINOPATHIES CALCIFIANTES

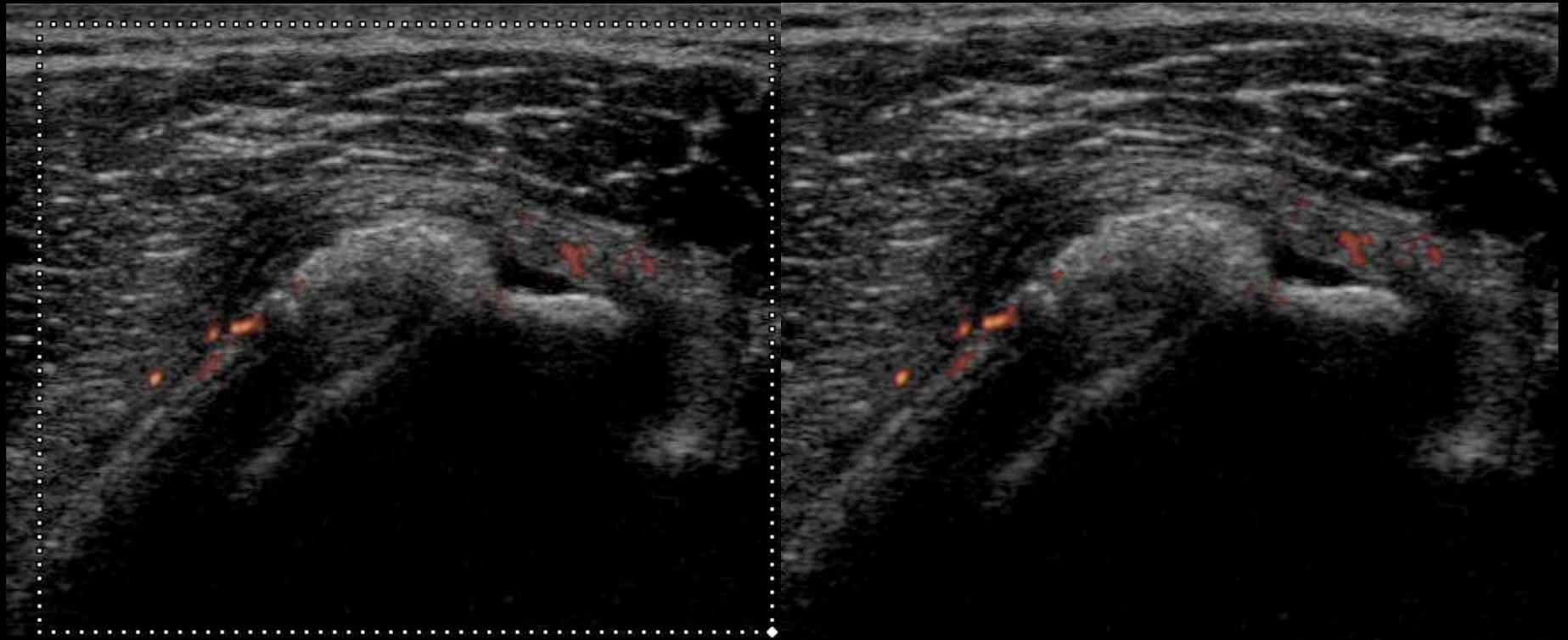


SUPRA EPINEUX ROTATION INTERNE CORO



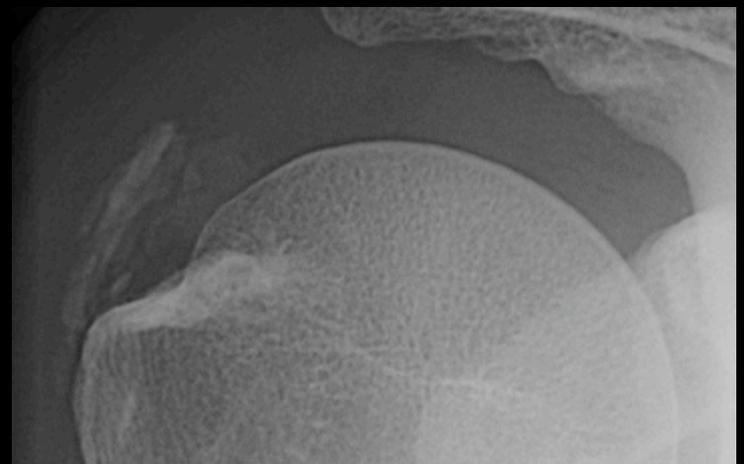
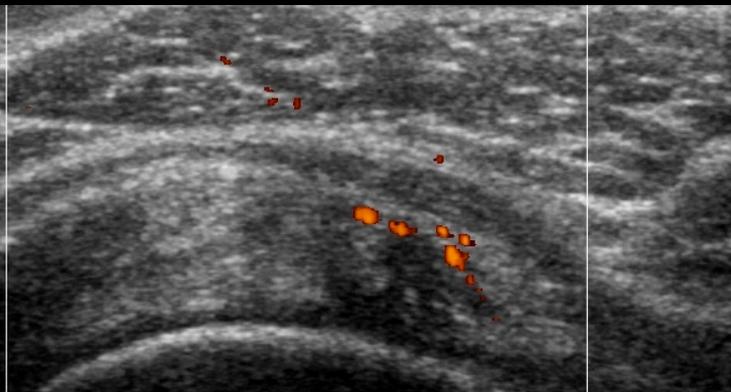
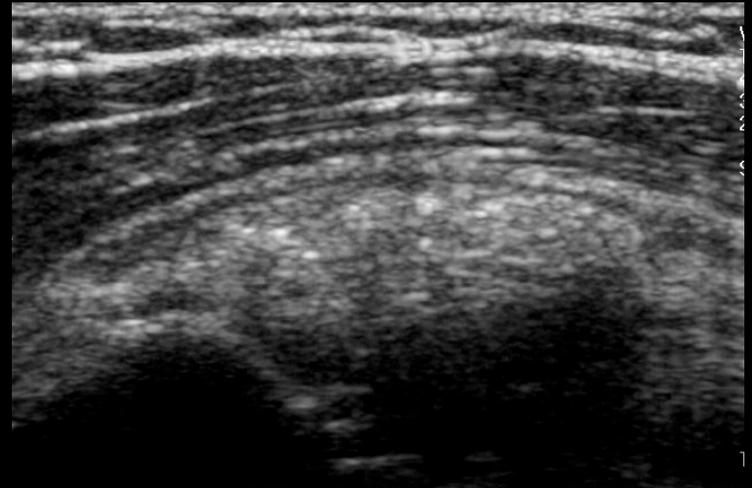
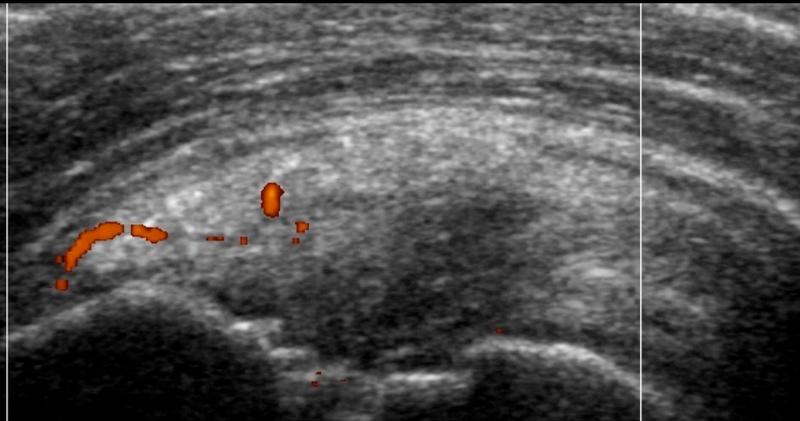
SUPRA EPINEUX ROTATION INTERNE SAG

TENDINOPATHIES CALCIFIANTES



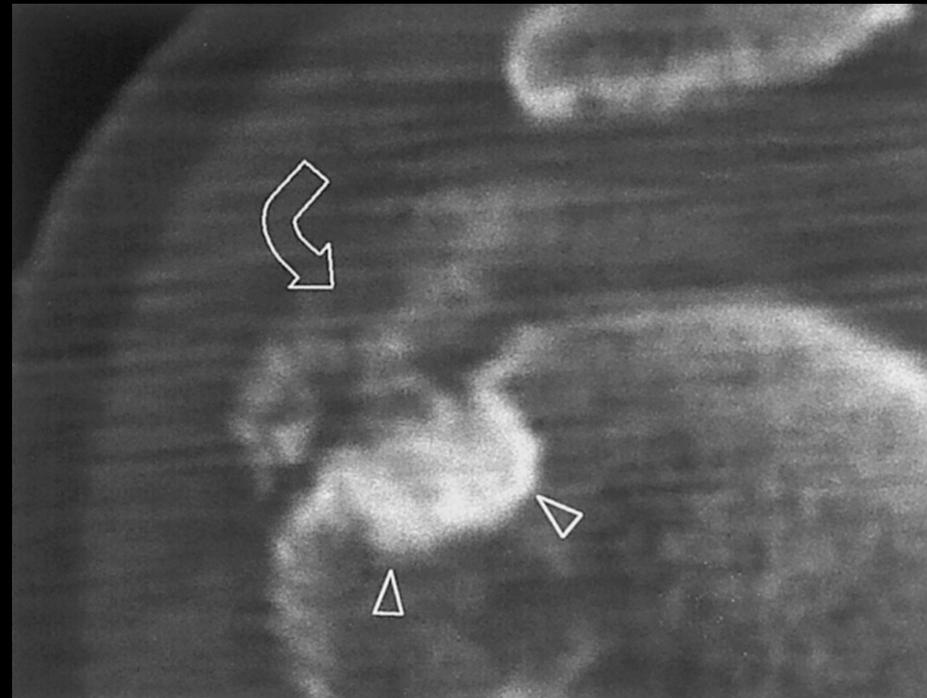
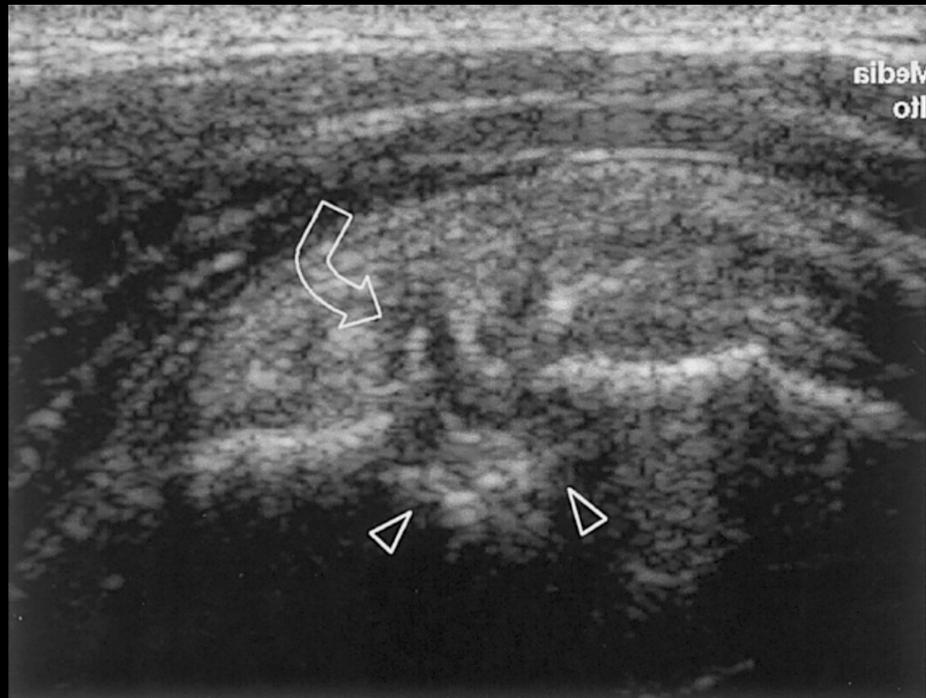
TENDINOPATHIES CALCIFIANTES

Liquéfaction



TENDINOPATHIES CALCIFIANTES

Migration intra-osseuse



III. LES CONFLITS DE L'ÉPAULE

- Définition

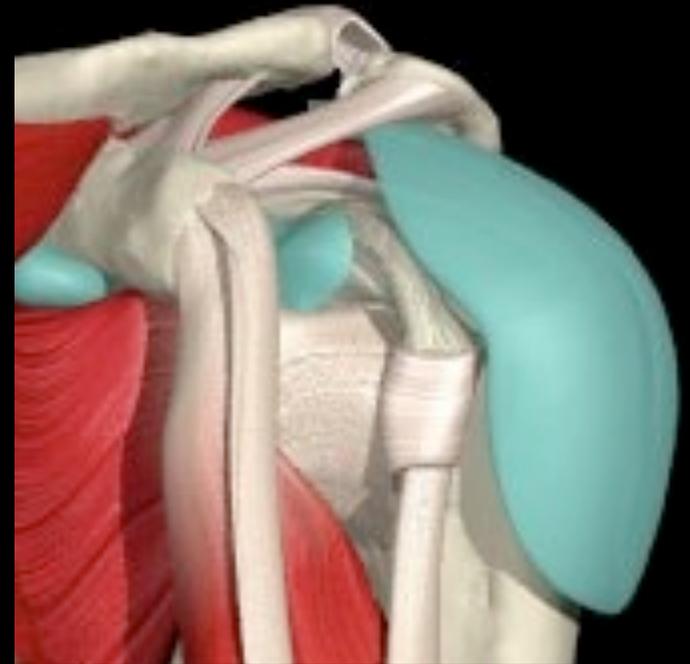


- Conflit sous-acromial ou antéro-supérieur (Neer)
- Conflit Antéro-Interne
- Conflit postéro-supérieur (Walch)

CONFLIT SOUS-ACROMIAL

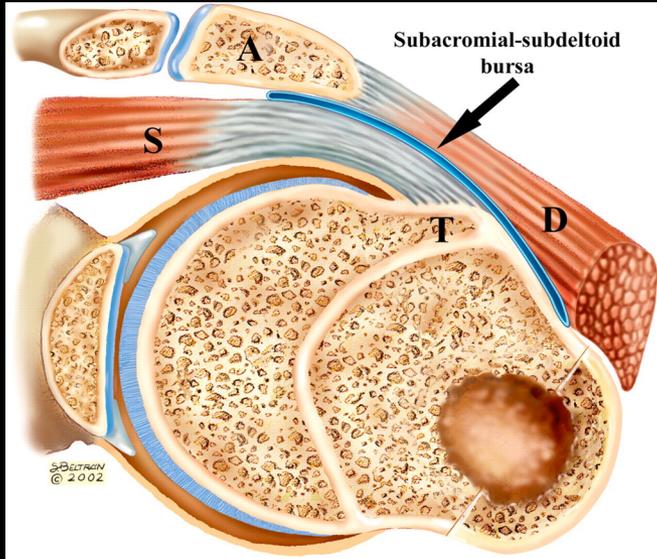
= conflit antéro-supérieur ou impingement syndrome

- Contact anormal SE/ Acromion + LAC
=> épaissement BSAD
- Douleurs nocturnes
- Arc douloureux à 60°
- Causes:
 - Tendineuses +++
 - Osseuses: ostéophytose SA, acromion agressif
 - Ligamentaire: LAC court

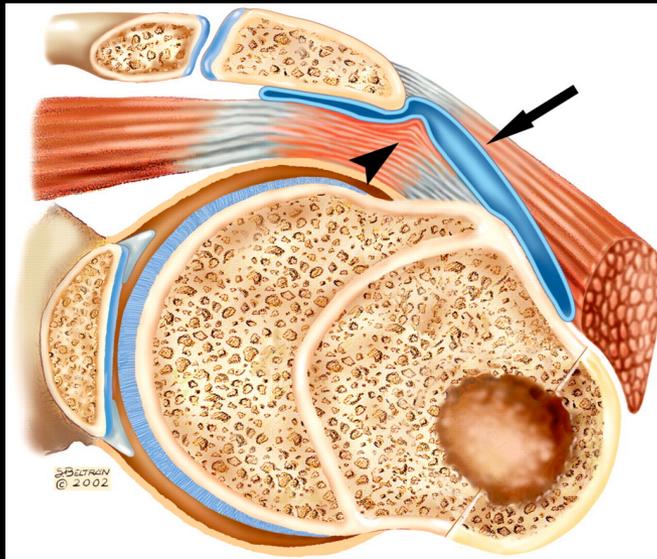


CONFLIT SOUS-ACROMIAL

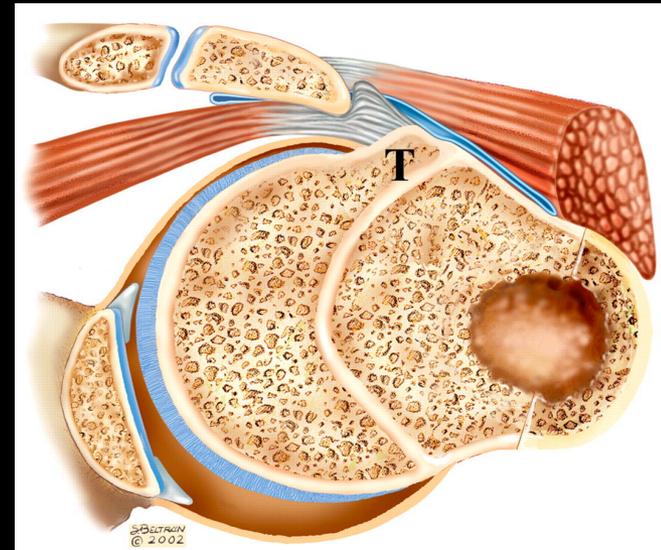
Bureau, N. J. et al. Am. J. Roentgenol. 2006;187:216-220



Grade 1: US No- Arthropathie AC?



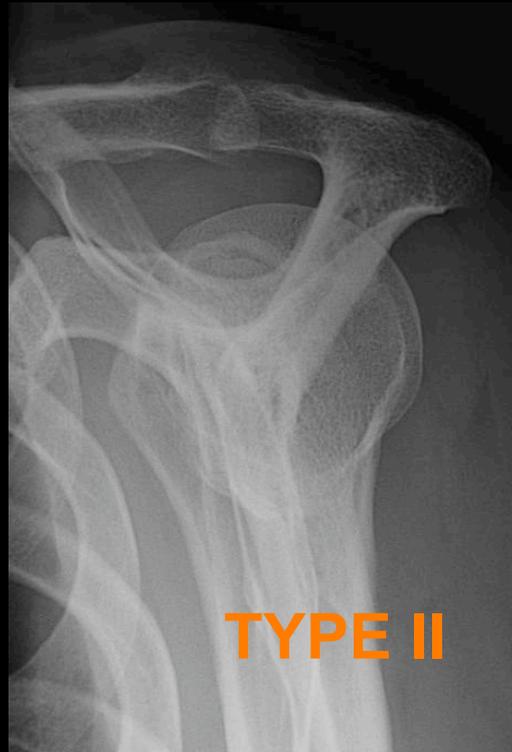
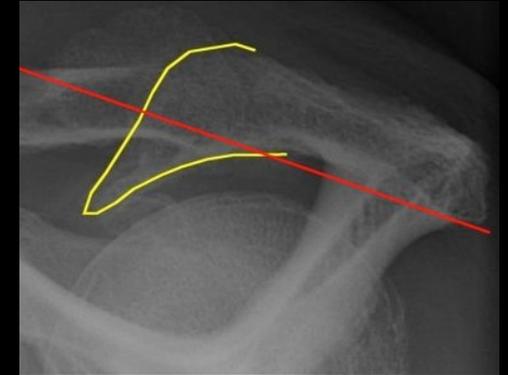
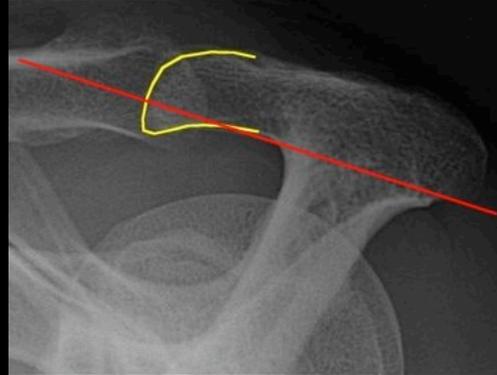
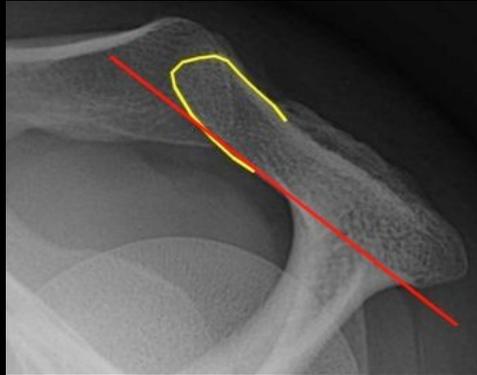
Grade 2: soft-tissue involvement



Grade 3: upward migration of humeral head

CONFLIT SOUS-ACROMIAL

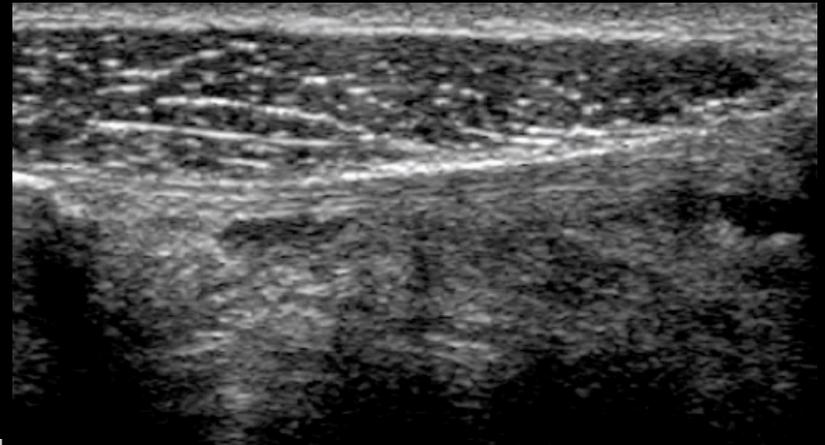
Classification de Bigliani



CONFLIT SOUS-ACROMIAL

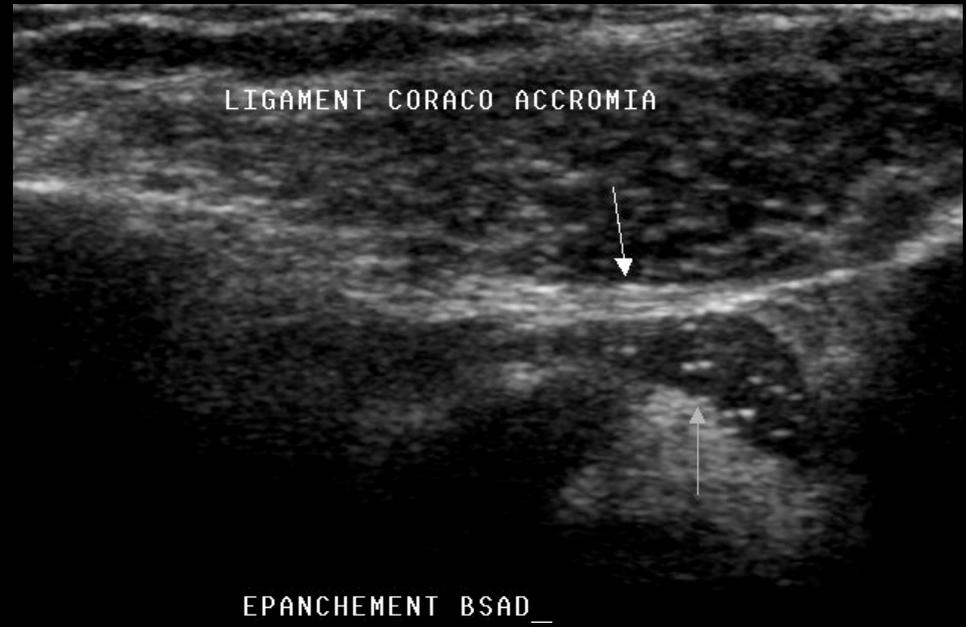
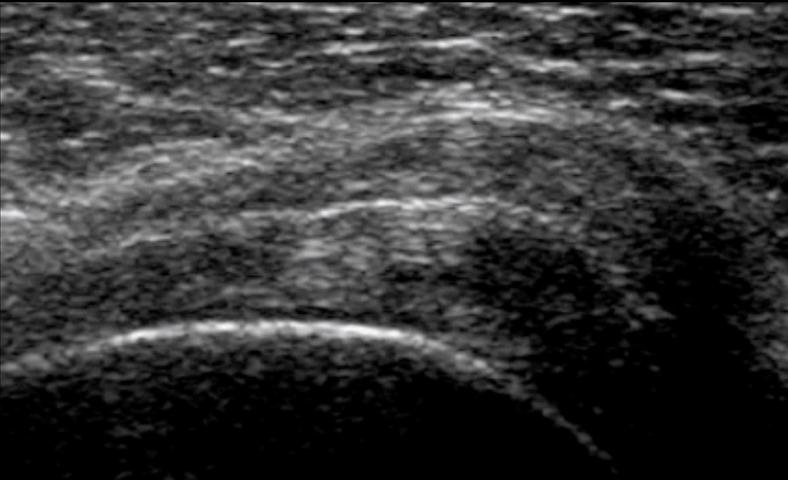
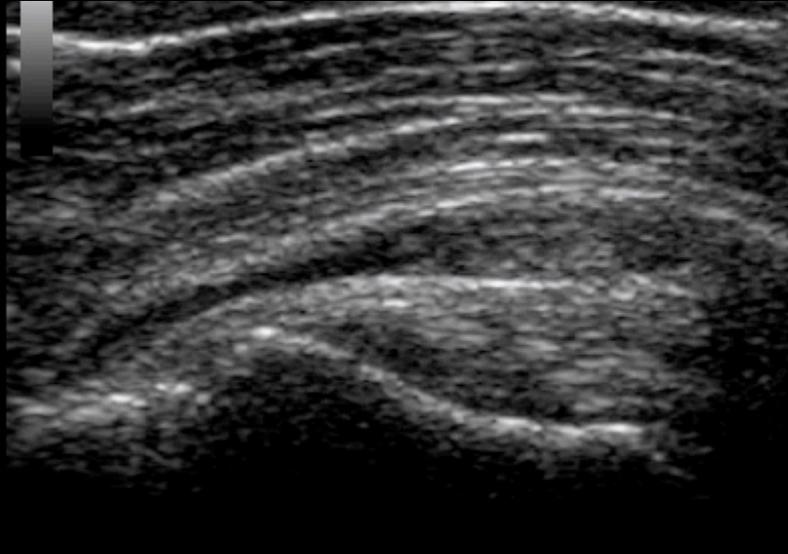
= Comment?

- Echographie dynamique
- Sonde parallèle puis perpendiculaire / LAC
- RI/RE

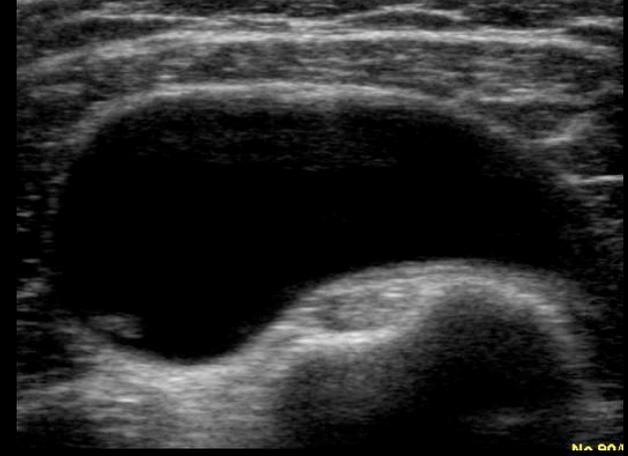
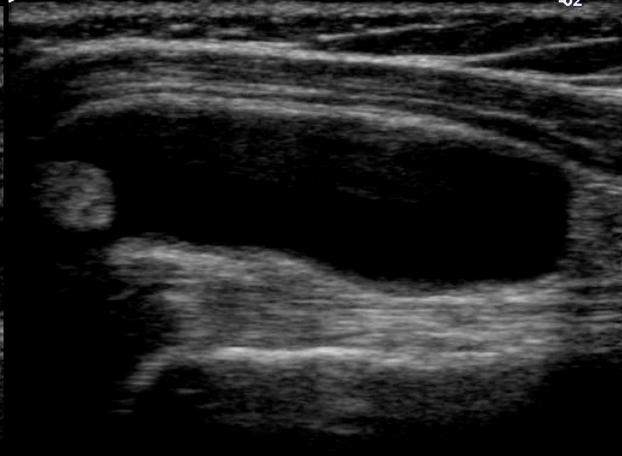
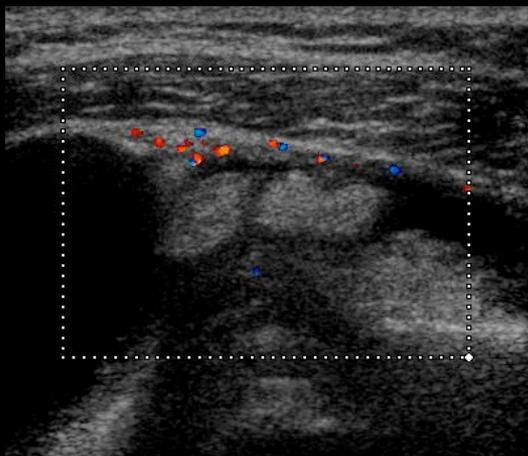
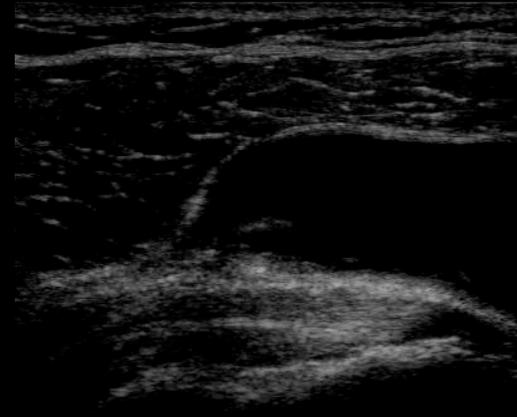
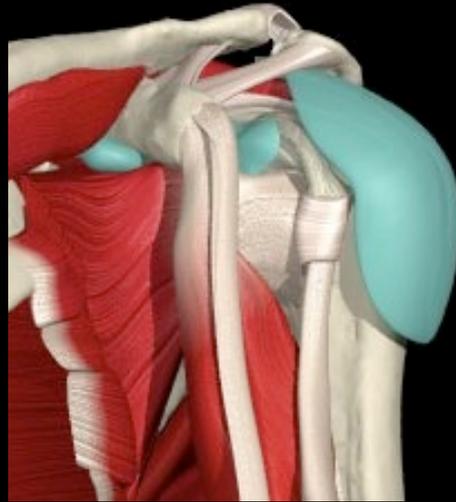
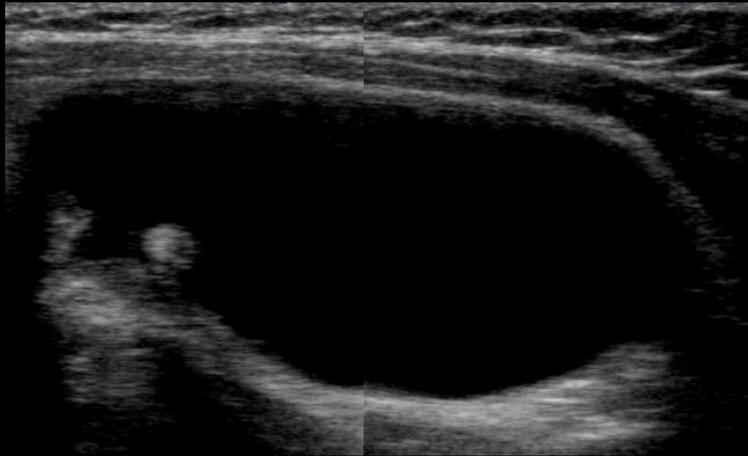


- Signes échographiques
 - épanchement BSAD: cinétique + épaisseur
 - Hypertrophie SE
 - Lésion superficielle SE

CONFLIT SOUS-ACROMIAL



CONFLIT SOUS-ACROMIAL

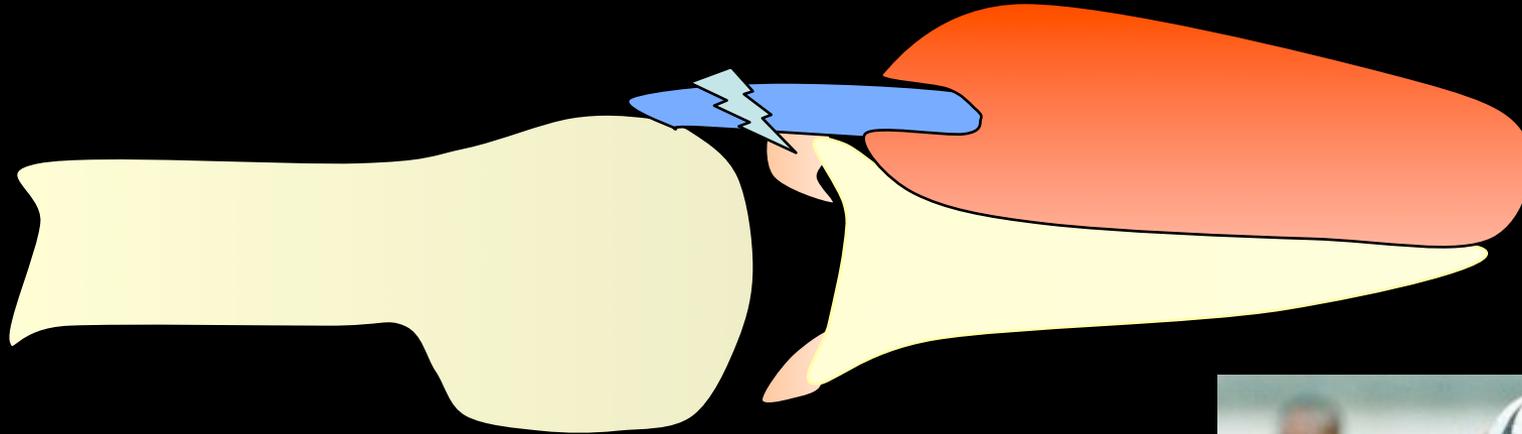


CONFLIT ANTERO-INTERNE

= conflit sous-coracoïdien

- Tendon impliqué: sub-scapulaire
- Clinique:
 - = douleurs à l'adduction et à la rotation interne
- Echographie
 - tendinopathie SS
 - Diminution distance SS/coracoïde > 10 mm

CONFLIT POSTERO-SUPERIEUR



- Conflit de micro-instabilité
- Tendons incriminés: IE et SE
- Douleurs à l'armé du bras
- Echographie:
 - lésions partielles profondes
 - Érosion osseuses
 - Kystes du labrum postérieur



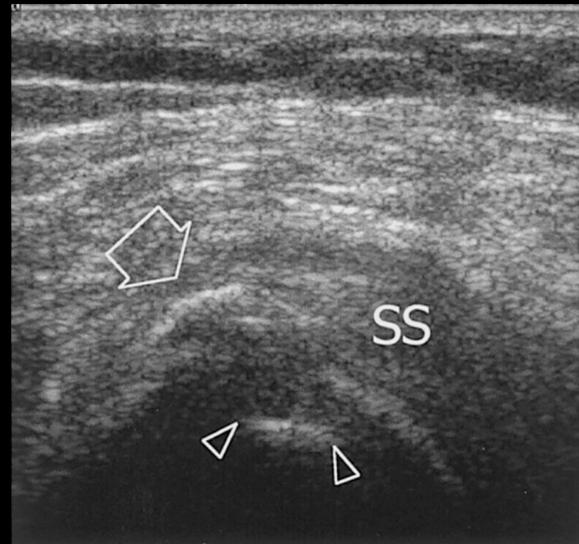
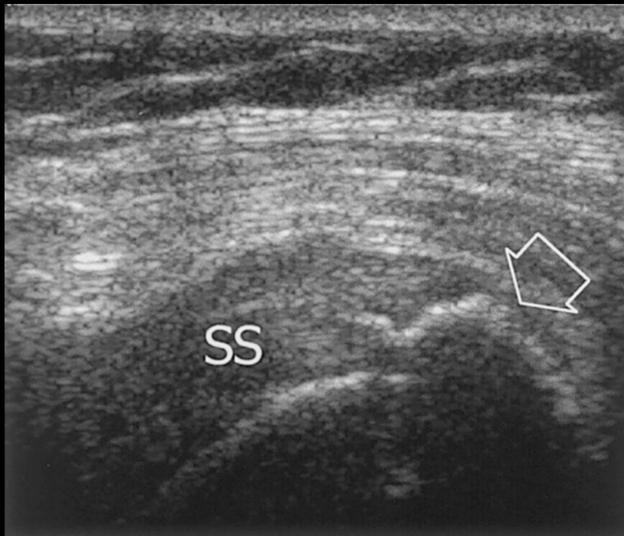
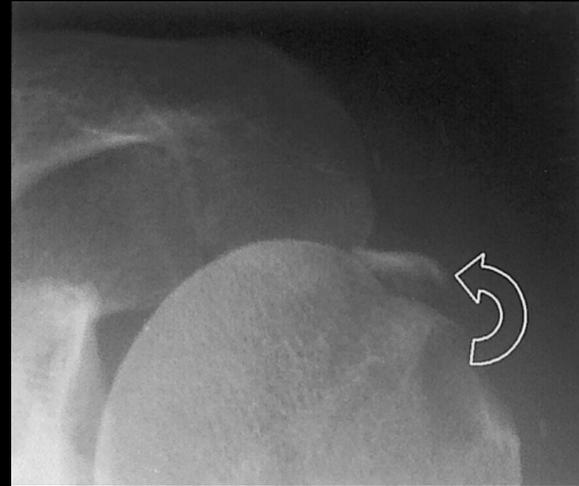
IV. PATHOLOGIE OSSEUSE

Encoche postéro-supérieure

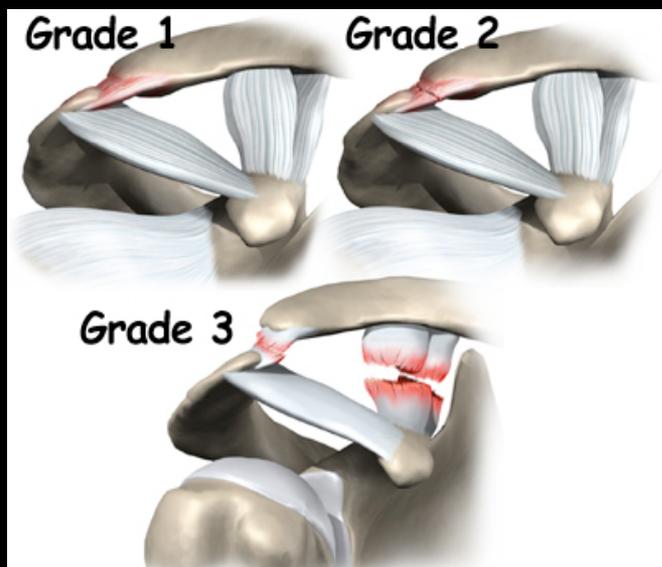
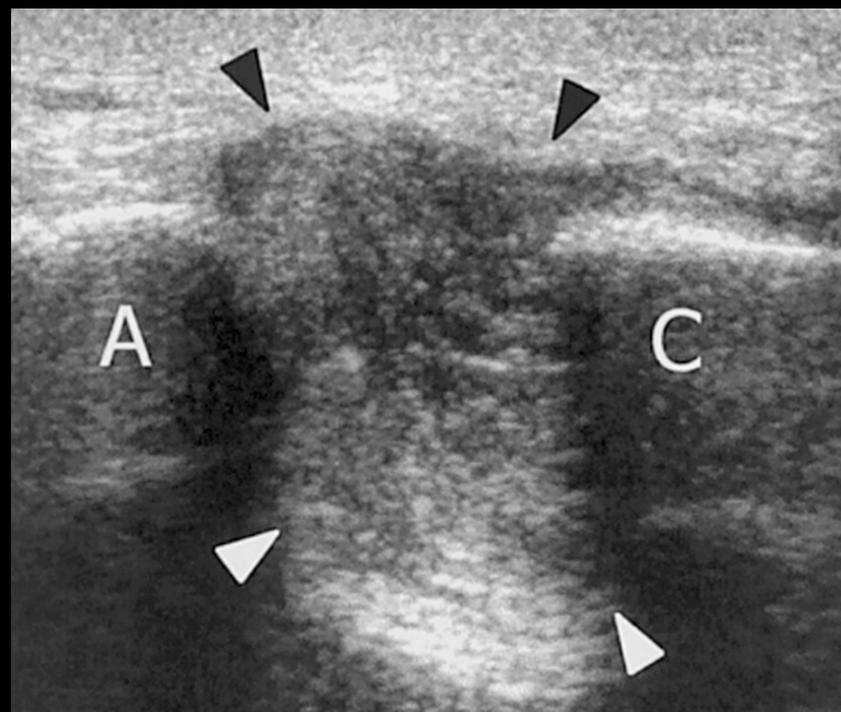
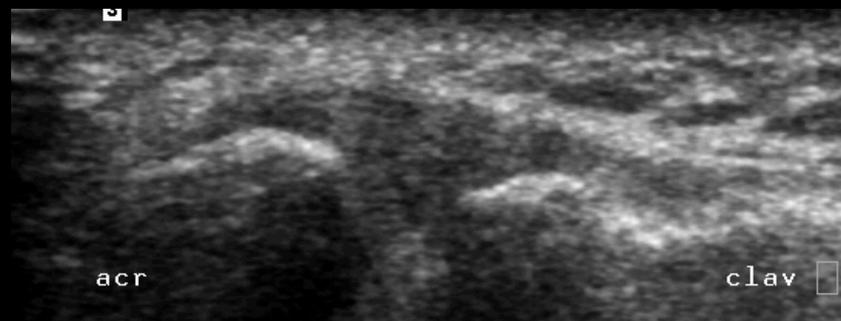


INFRA EPINEUX ROTATION INTERNE DROIT

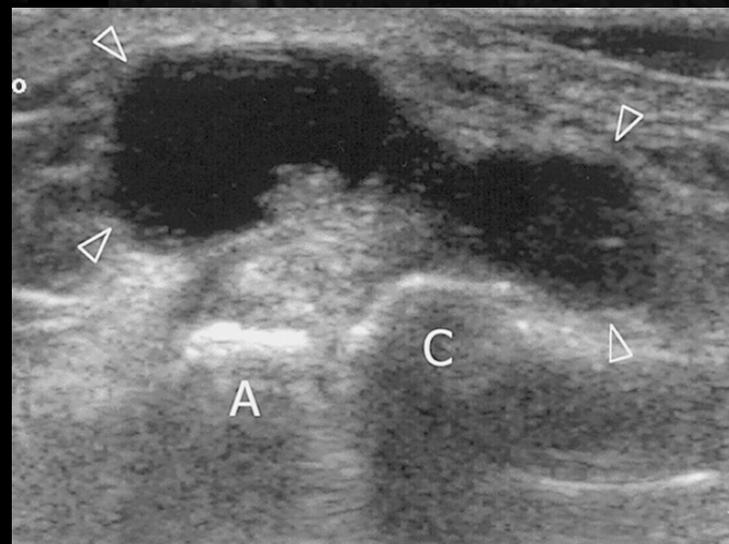
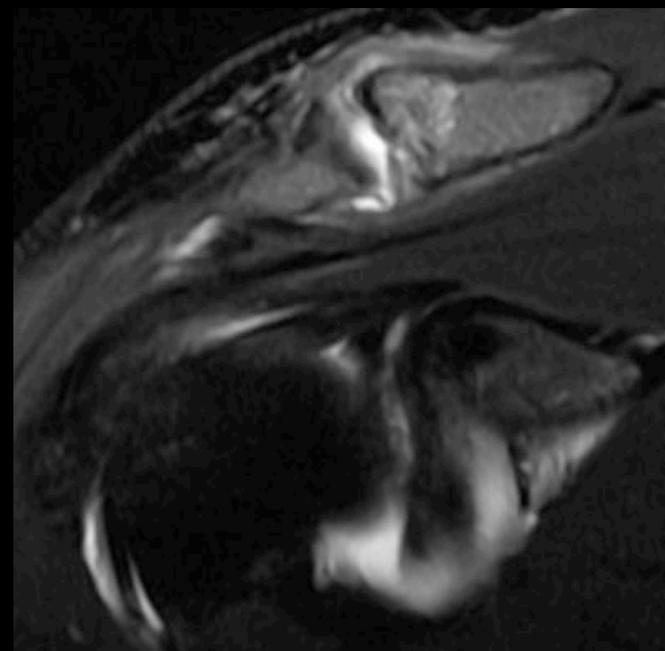
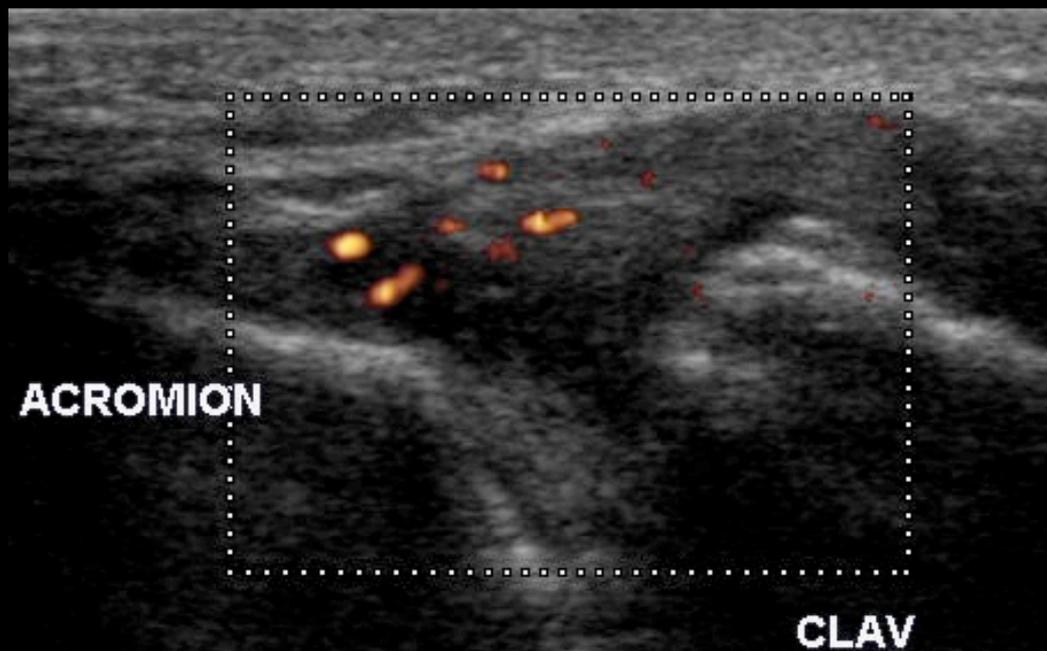
Fracture du tubercule majeur



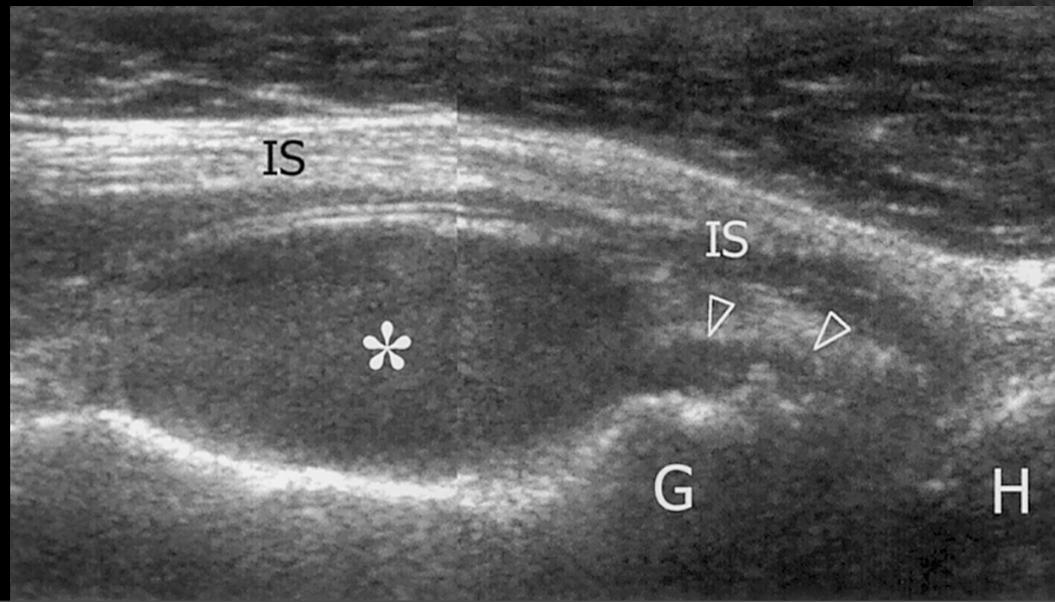
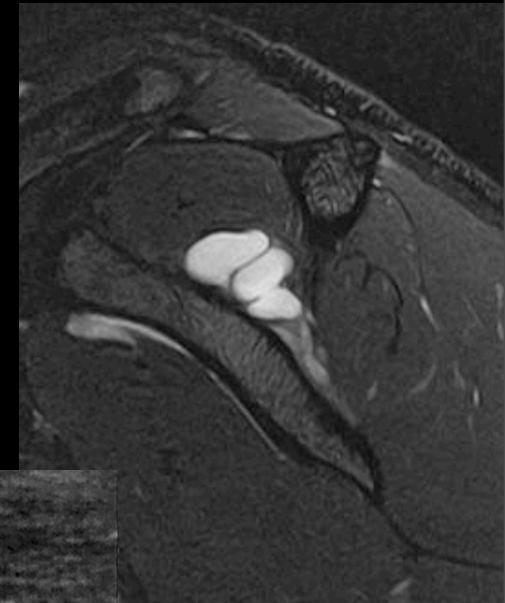
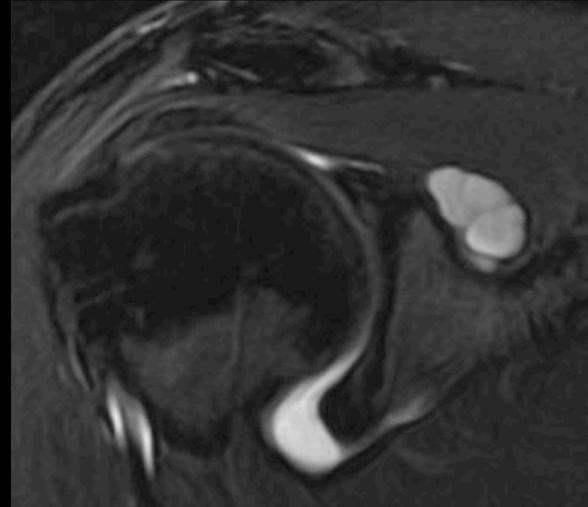
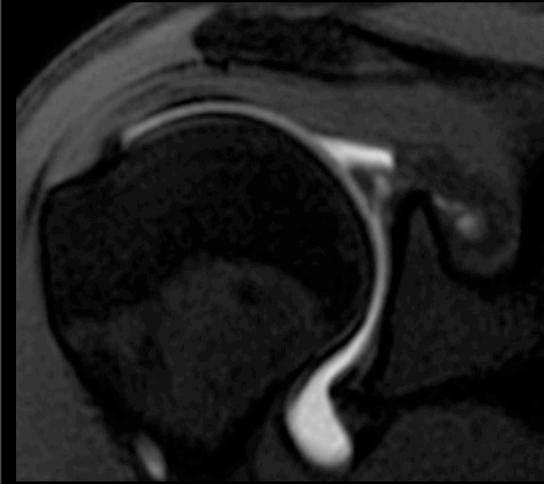
PATHOLOGIE ACROMIO-CLAVICULAIRE



PATHOLOGIE ACROMIO-CLAVICULAIRE



KYSTE DE L'ECHANCRURE SPINO- GLENOIDIENNE





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