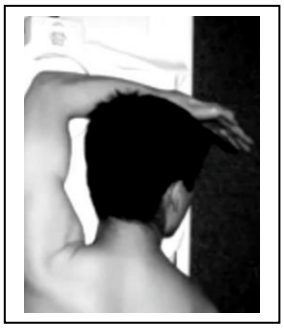
SUMMARY OF ELBOW IMAGING

- **Mri elbow :** - Open - Closed -Extremity
- **Indications :** * Pain *Trauma *Swelling *inflammation
- **Examination Technique:**



➔ **Surface coil** "one elbow"

➔ **Patient Position :**

- Prone "Swimmer position – superman position"
- FABS "Flexed Abducted Supinated View"

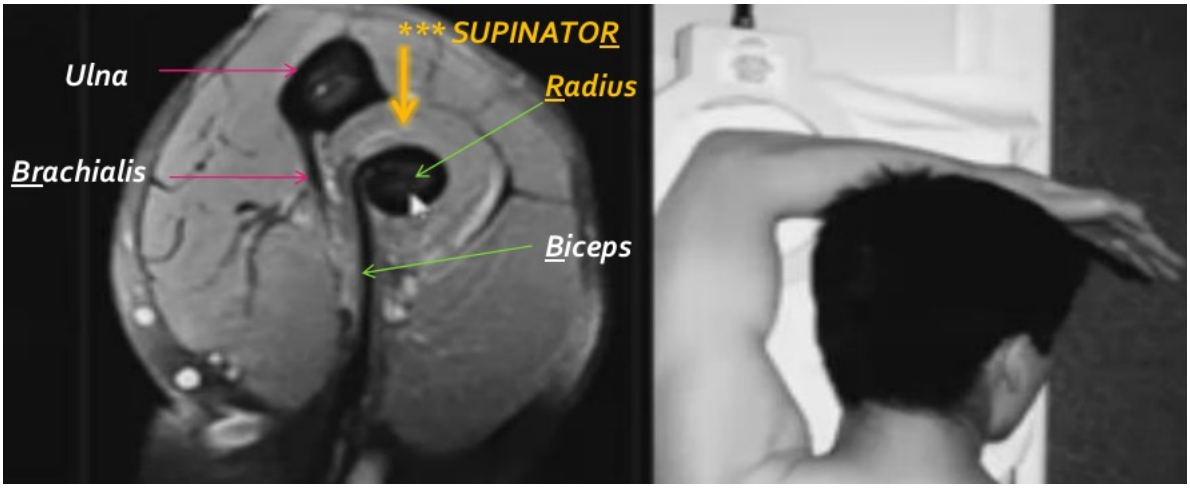
- **FABS**
  - ✓ Flexed Abducted Supinated View → Show distal biceps tendon

LAND MARK

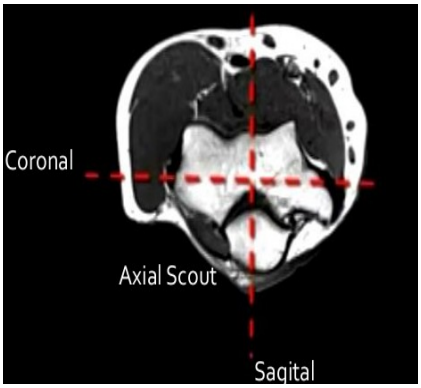
SUPINATOR MUSCLE FORMING COMPLETE RING AROUND Radius

- To identify Radius & Ulna in FABS position:
  - 2 tendons are seen **Biceps** & **Brachialis**

Biceps attached to Radius & Brachialis is attached to Ulna



- **Examination Protocol:**
  - ✓ FOV 14 : 16 cm "Not > 14 cm → for good quality image"
  - ✓ 3 mm slice thickness – 1 mm gap
  - ✓ Axial – Saggital – Coronal
  - ✓ T1 , T2 , T2 fa-tsat , STIR

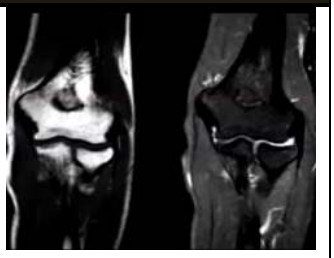


•**Protocol** must be :

3 T1	**Sag. – Ax. - Cor.**
+ Any 3 T2	**Sag. – Ax. – Cor**

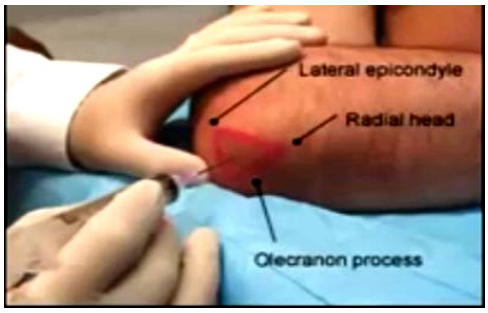
*i.e **T2** or **STAIR** or **Gradient***

SUMMARY OF ELBOW IMAGING

T1	T2WI	Structures		
Low	Low	-Cortical bone -Tendons -Ligaments -Calcifications	CFT, CET, Biceps ..... MCL, RCL	
Low	High	Fluid	Effusion – Cyst – Articular cartilage	
High	Low	FAT	Subcetaineous - Dermoid	

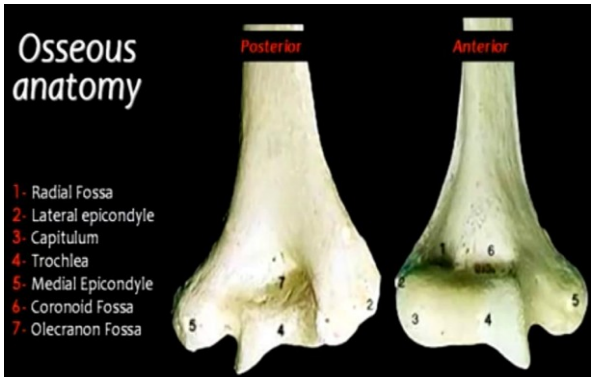
MR ARTHROGRAPHY

- **Direct injection 0.5 ml Gd / 10 ml saline**
- **Indications:**
  - ✓ Loose bodies "common in elbow"
  - ✓ Osteochondral lesions
  - ✓ UCL pathology "Ulnar Collateral Ligament"



Anatomical Triangle for injection & Aspiration

ANATOMY



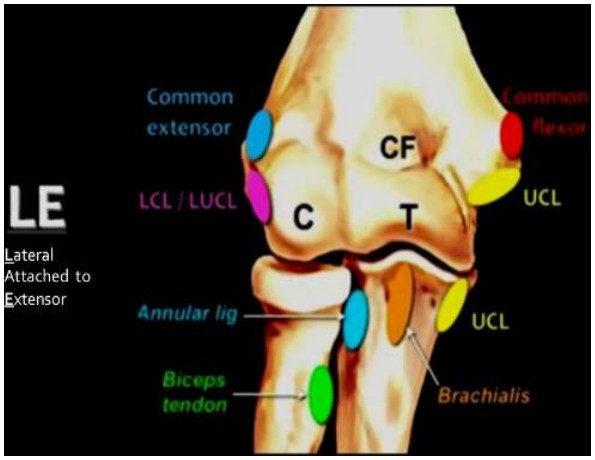
•**Medial Epicondyle** :

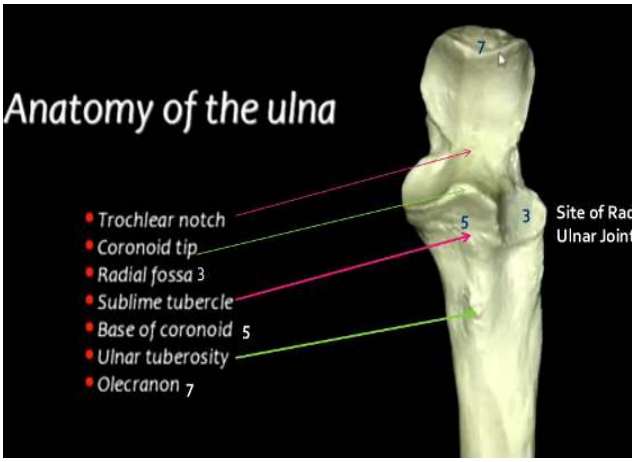
is Significantly more prominent than lateral

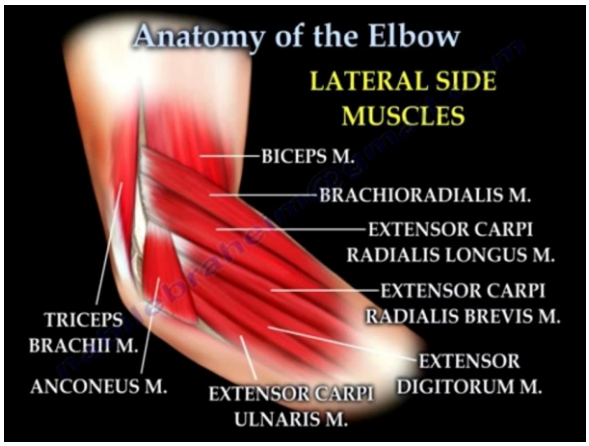
➔ At Distal Humerus :

•**Trochlea** is medial & articulate with **Ulna.**

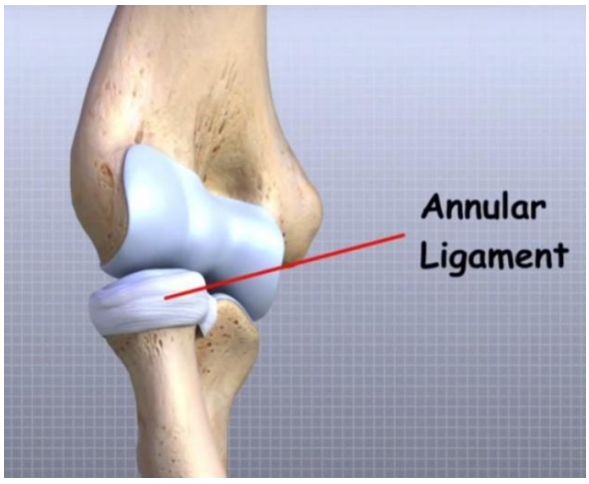
•**Capitulum** is lateral & articulate with **Radius**

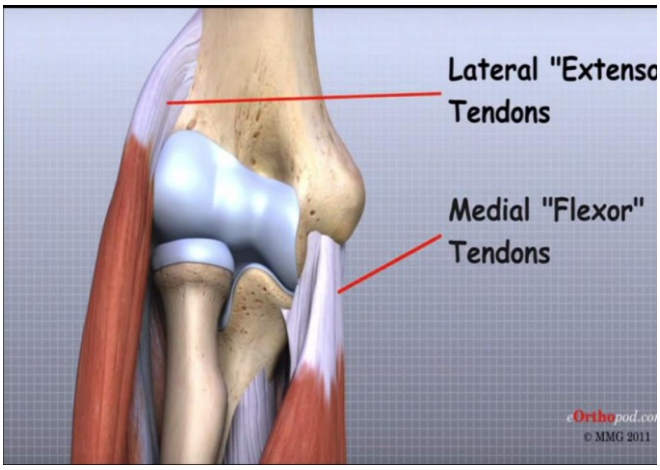


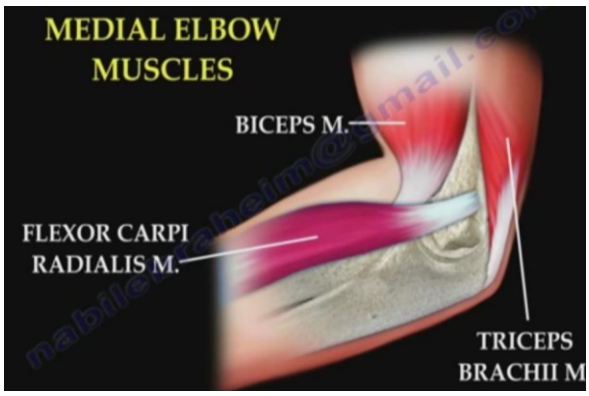


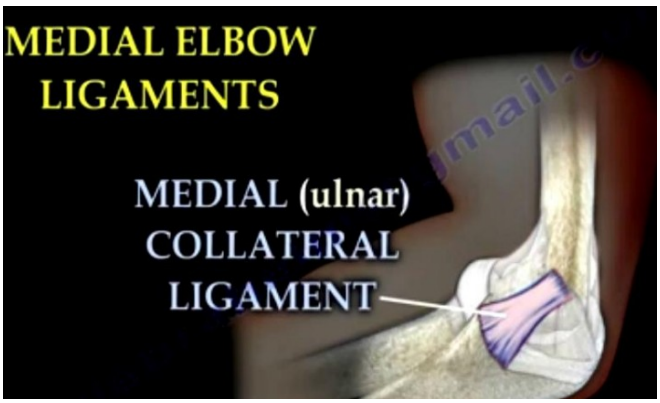

Anatomy of the Elbow
LATERAL SIDE MUSCLES
BICEPS M.
BRACHIORADIALIS M.
EXTENSOR CARPI RADIALIS LONGUS M.
EXTENSOR CARPI RADIALIS BREVIS M.
EXTENSOR DIGITORUM M.
TRICEPS BRACHII M.
ANCONEUS M.
EXTENSOR CARPI ULNARIS M.

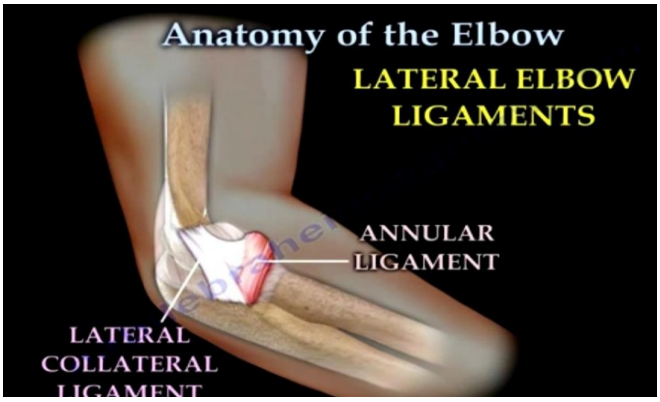

Medial Collateral Ligament
Lateral Collateral Ligament


Annular Ligament


Lateral "Extensor" Tendons
Medial "Flexor" Tendons
© MMG 2011


MEDIAL ELBOW MUSCLES
BICEPS M.
FLEXOR CARPI RADIALIS M.
TRICEPS BRACHII M


MEDIAL ELBOW LIGAMENTS
MEDIAL (ulnar) COLLATERAL LIGAMENT

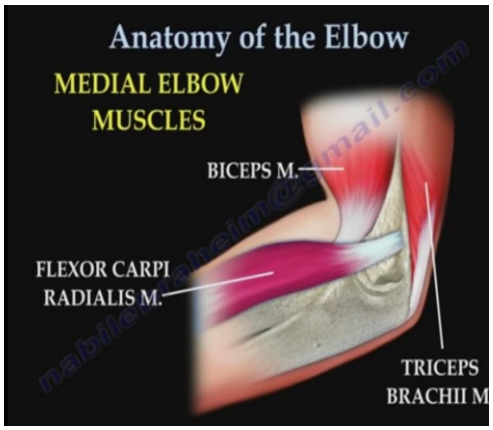

Anatomy of the Elbow
LATERAL ELBOW LIGAMENTS
ANNULAR LIGAMENT
LATERAL COLLATERAL LIGAMENT

➔TENDONS & LIGAMENTS←

"4 Groups" **A**nterior – **P**osterior – **M**edial – **L**ateral

↘ I- Posterior compartment : Triceps / **O**lecranon bursa / **A**nconeous muscle /

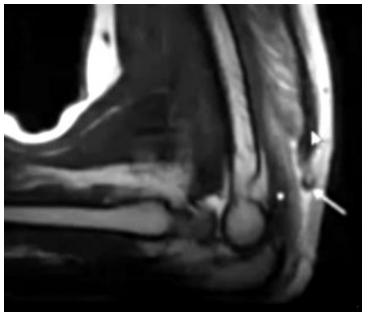
1- TRICEPS : Tri /Has **3 Tendons** :-**L**ong & **L**ateral Are **L**ateral. → Olecranon/ - **M**edial is

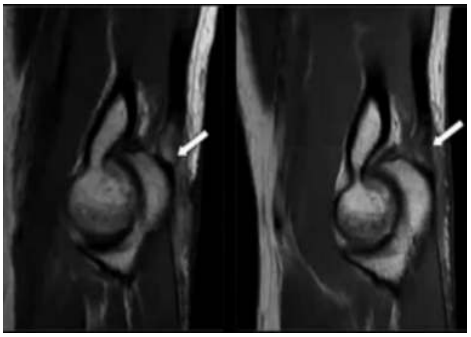


↘ **Avulsion Triceps Tendon** : *"Small piece of bone = Avulsion Triceps "*

- ⇨ **Uncommon** "Least common elbow injury"
- ⇨ **CP**: pain , swelling , unable to extend elbow
- ⇨ **X-ray** → Swelling +/- Piece of bone
- ⇨ **MRI** → Thickened retracted tendon + Edema
- ⇨ **TTT:** Surgical repair

Avulsion Tear of Triceps Tendon → Further MRI assessment "Partial or Full Thickness Tear"

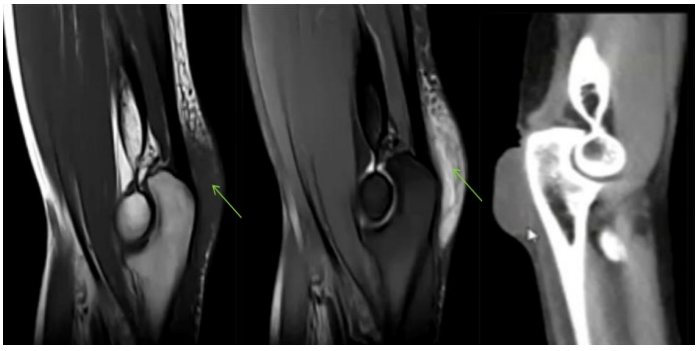




Triceps tendenopathy "intact+Abnormal signal"

2- olecranon bursitis Old name → "Student Elbow"

- Inflamation of olecranon bursa
- **Causes :**
  - Extensive use ←Student & table
  - Repeated Trauma
  - Infection
  - Infamation : Rhumatoid , gout, ... Etc
- **CP**: Swelling , Pain
- **X-ray**: Soft tissue swelling at olecranon +/- Fracture +/- Calcification (in gout)



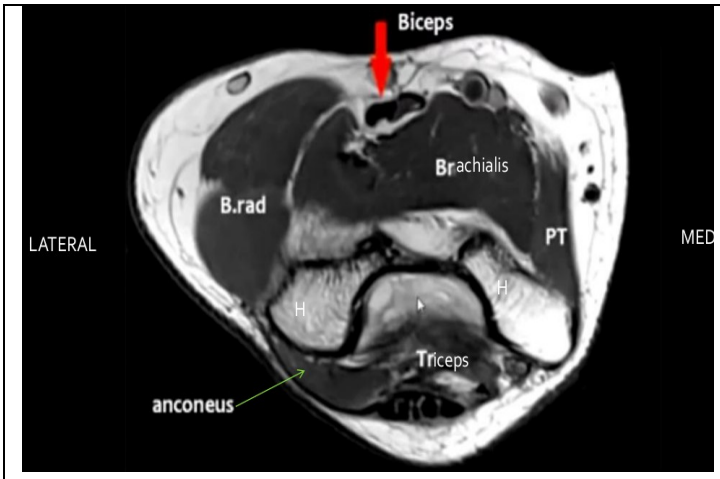
- **CT & MRI :**
  - **Bursa** → Fluid / Marginal Enh.
  - **Muscle :** Triceps edema
  - **Joint :** Effusion
  - **Ca :** in gout , seen in CT

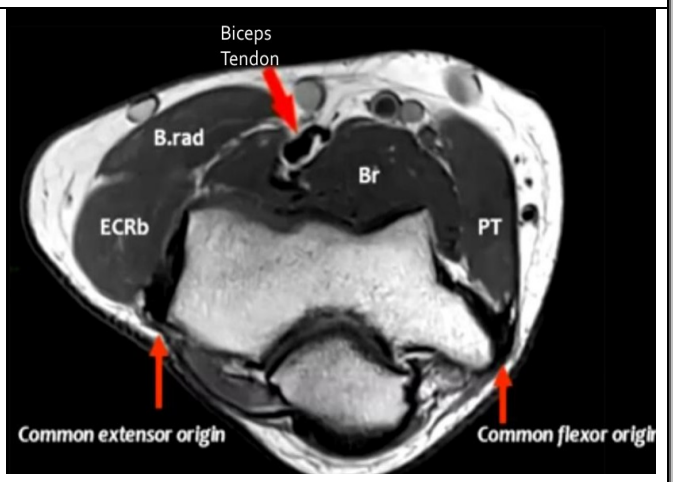
↘ II- Anterior compartment

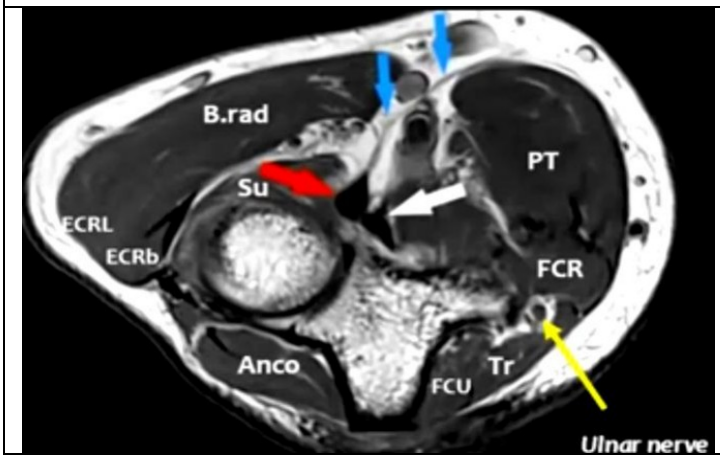
- Biceps tendon
- Brachialis tendon
- Supinator syndrome
- Bicepito radial bursitis

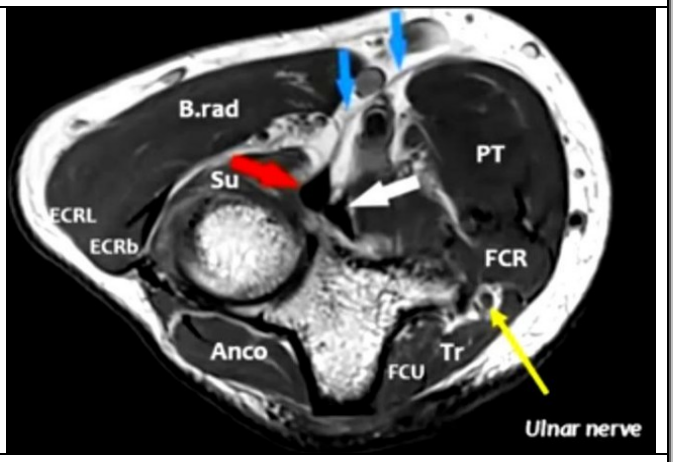
B,B,B,S

1- Biceps Tendon







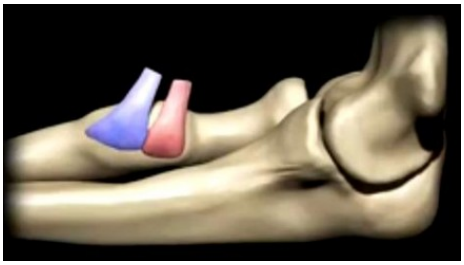


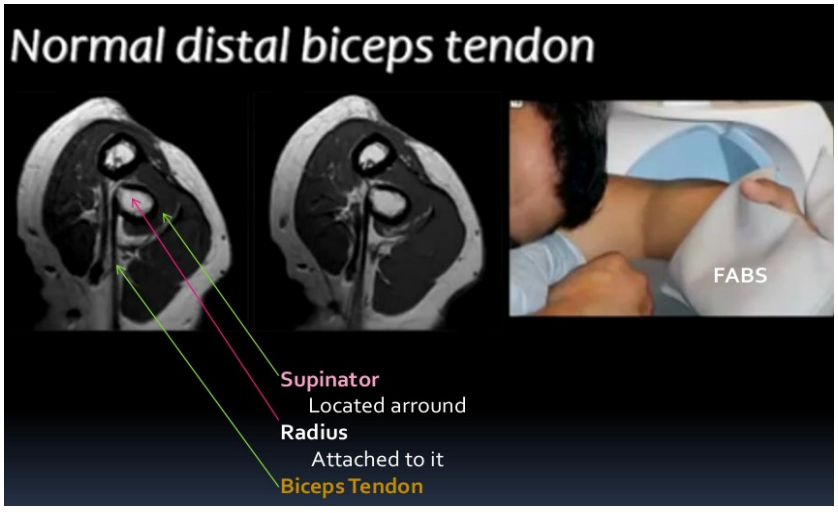
LANDMARKS : Biceps & Brachialis "Every Ms of them has ONE R ☺"

- ✓ **Biceps attached To Radius**
- ✓ **BRachialis Attached to Ulna**

↳ **Biceps Tendon** → Anteriorly & Lat "Red arrow"
↳ **Brachialis " "** →Behind & Medially "White Arrow"

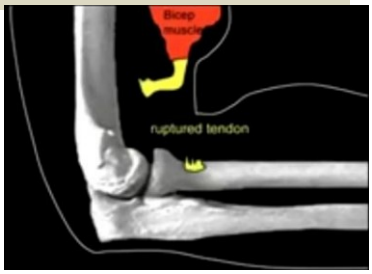
Biceps Tendon





↘ DISTAL BICEPS TENDON RUPTURE

Best seen in Saggital



- ⇨ **Cause**: forcefull flexion trauma
- ⇨ Torn Biceos → Retracted in the arm
- ⇨ Unbalbable cord like biceps tendon
- ⇨ MRI occasionally needed to confirm