Approaches to the Humeral Shaft

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NHS Foundation Trust

Aims

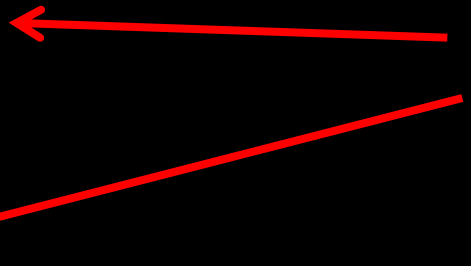
- Approaches to shaft of the humerus
- When to use which approach

Learning Outcomes

- By the end of the session you will:
- Know when to use which approach to humeral shaft
- Be aware of the approach and anatomy for each approach

What Approaches Do We Know?

- Anterior
- Anterolateral
- Lateral
- Posterior



Commonest used

Case 1

60 year old male

Fall down steps whilst drinking



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- How are you going to manage this fracture?

Anterolateral Approach

- Proximal 1/3 & Midshaft fractures
- Distal extension of the deltopectoral approach
- Radial nerve identified between the **brachialis** and **brachioradialis** distally

Anterolateral Approach

- Benefits
  - Supine positioning
  - Proximal extension possible via deltopectoral interval
- Disadvantages
  - Allows for less direct exposure of radial nerve since it lies posterior to intermuscular septum

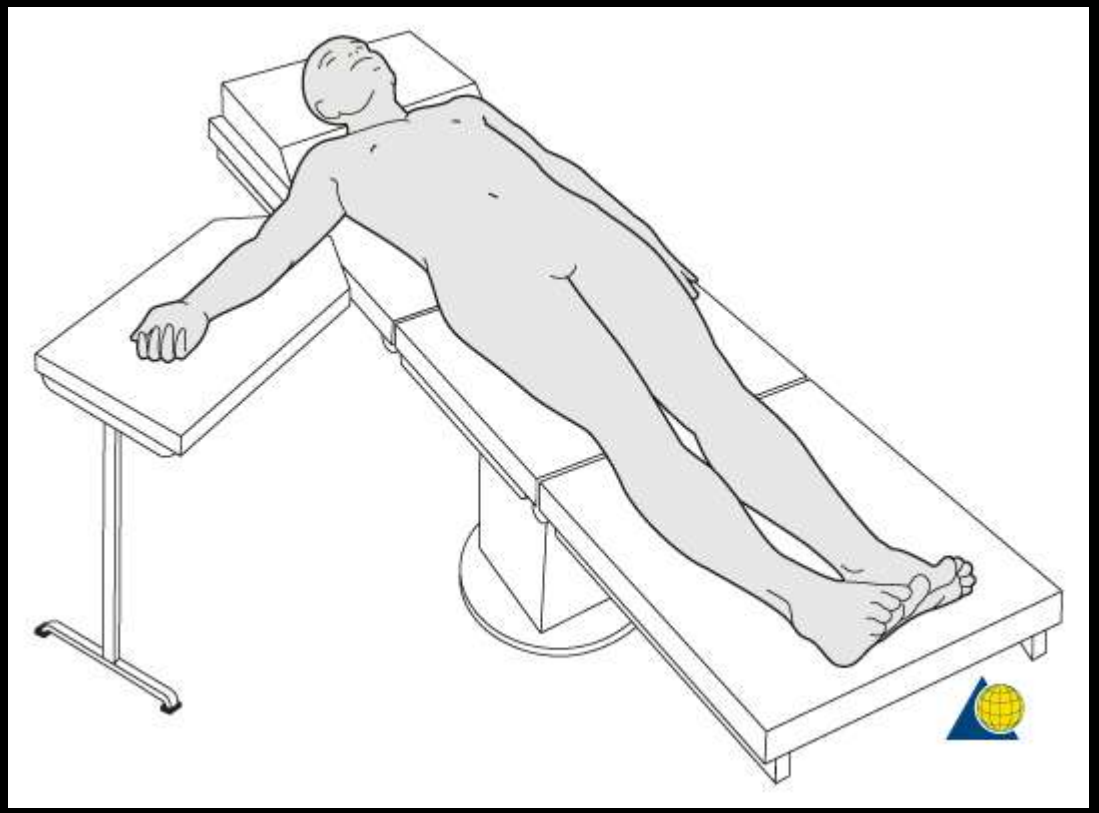
Setup

Supine & Arm Board

No Tourniquet

Think about where II needs to go

Surgeon sit head side

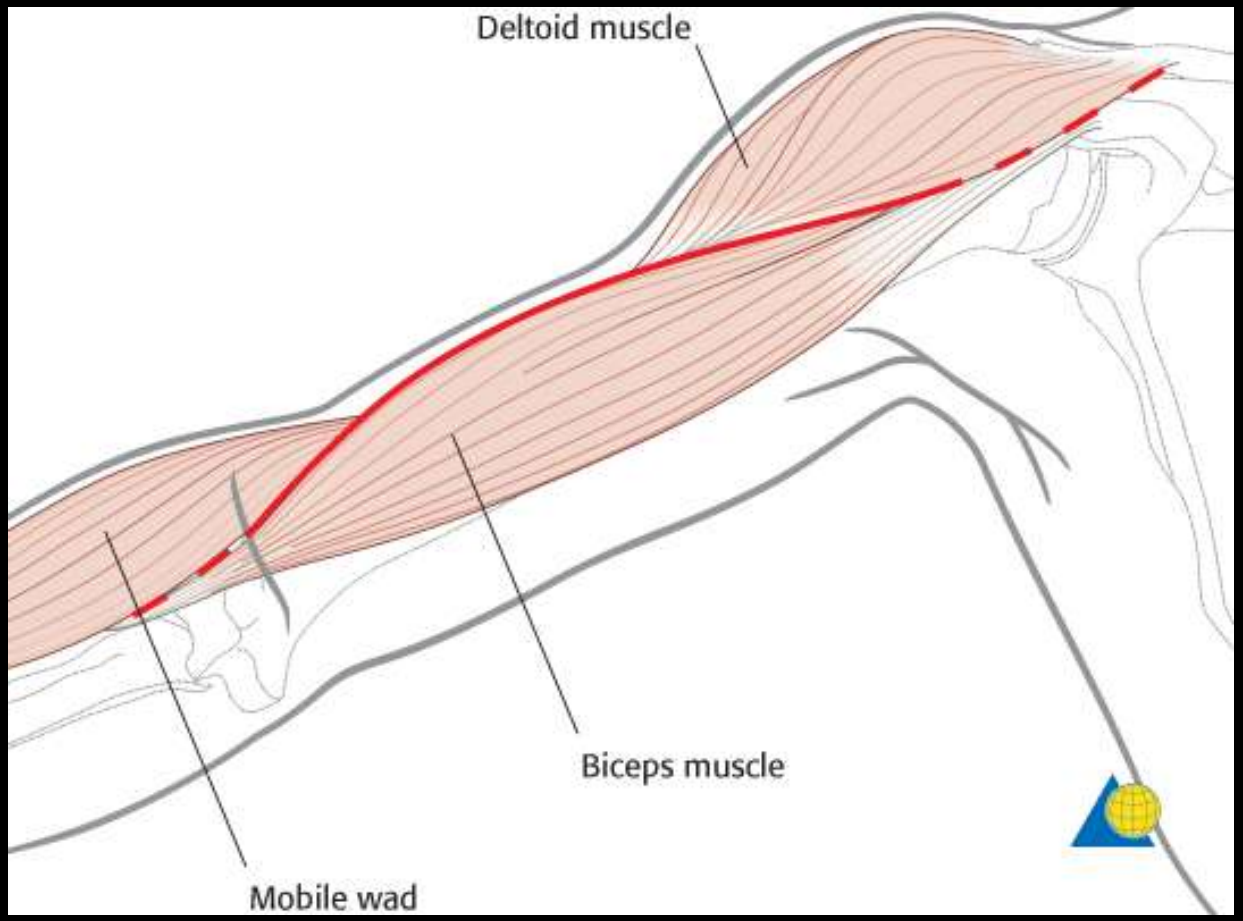


Incision

Extension of Deltopectoral App.

Landmarks:

Corocoid
Deltoid
Lateral Biceps
Brachioradialis

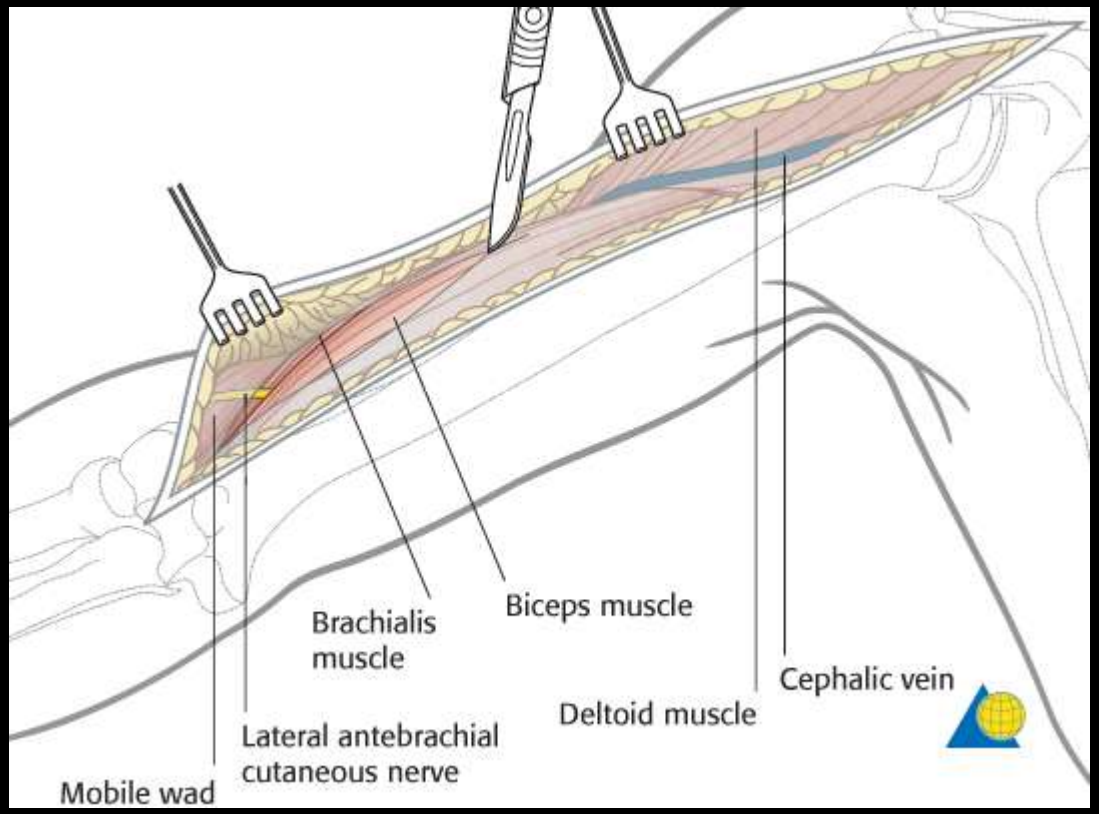


Superficial Dissection

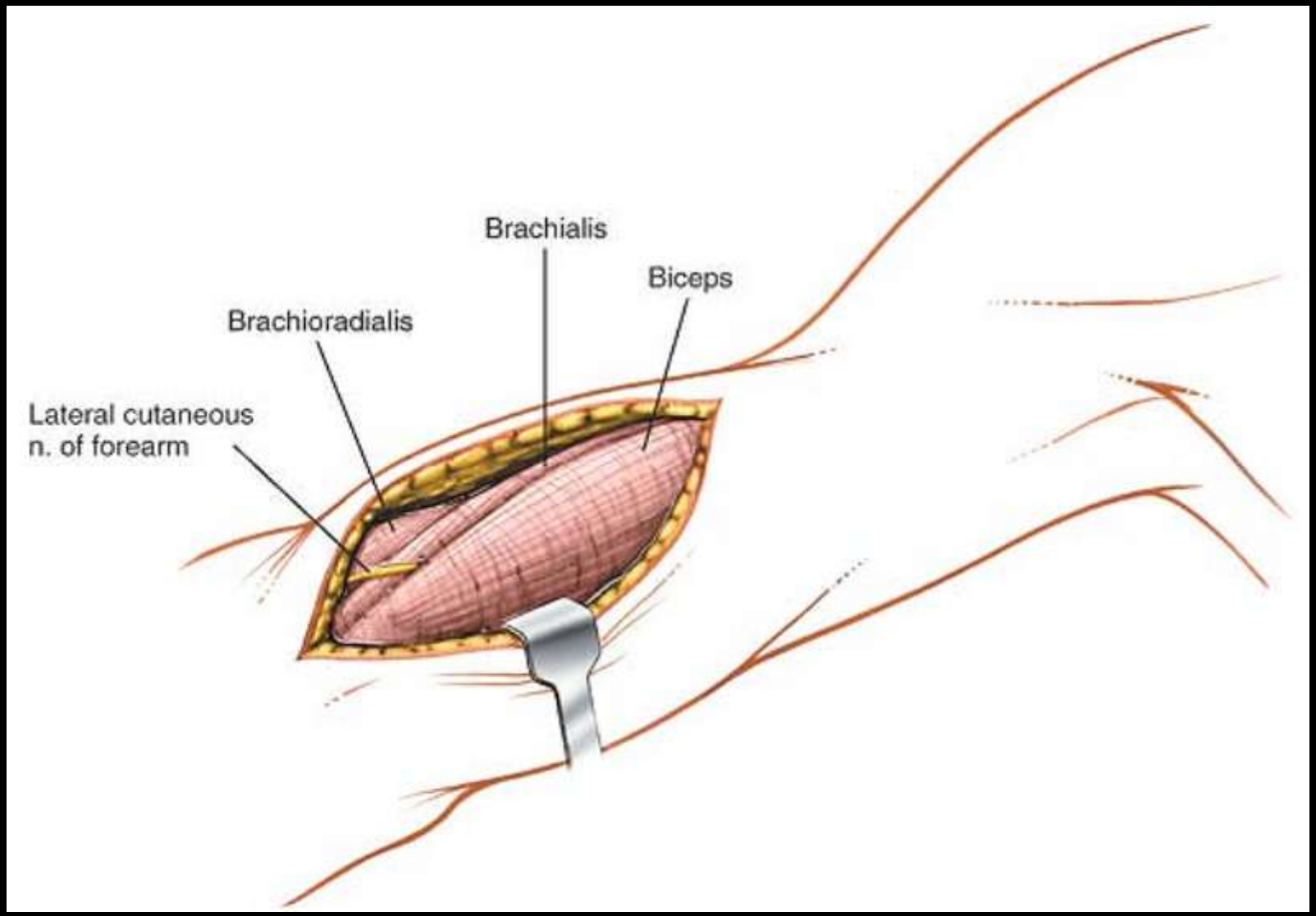
Locate Cephalic vein

Locate distal insertion of deltoid

Incise the deep fascia over Biceps & brachialis



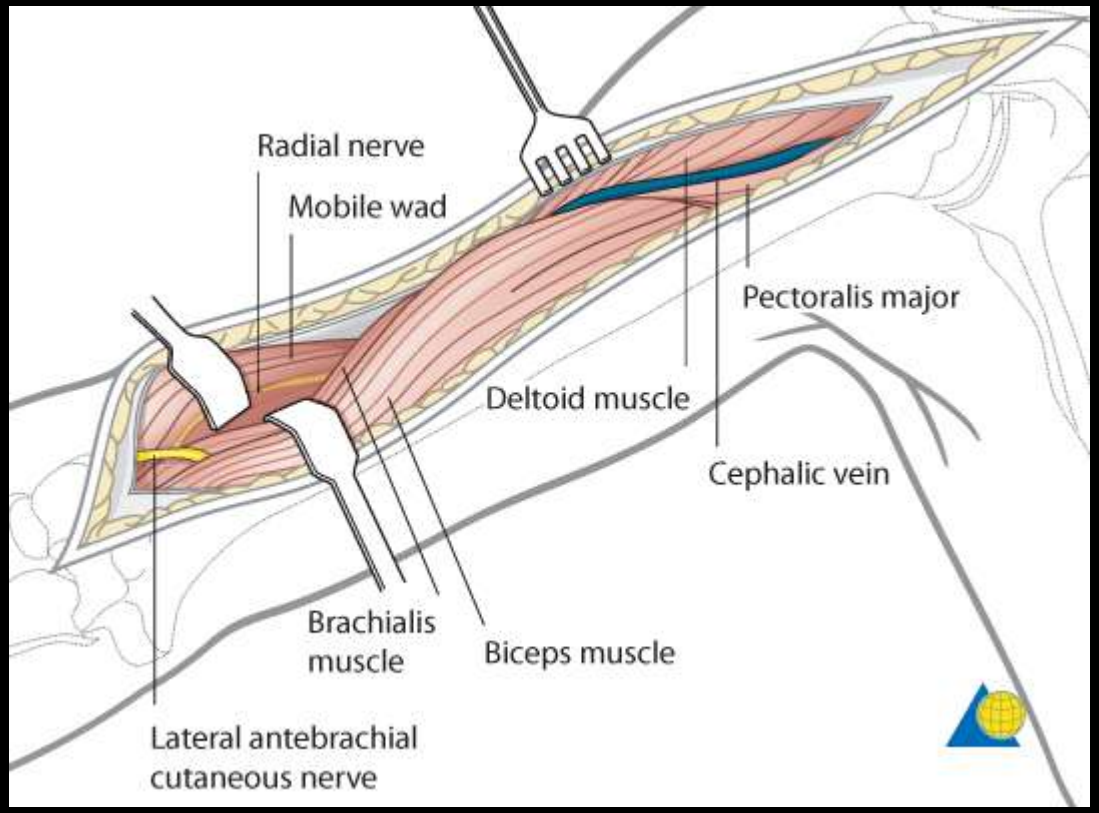
Use the part you need



Deep Dissection

Proximally:
Develop DP interval
Take Cephalic Vein
Laterally
Work between
Biceps and brachialis

Distally
Watch for Lat.
Antebrachial
Cutaneous nerve
Good marker for the
Radial Nerve

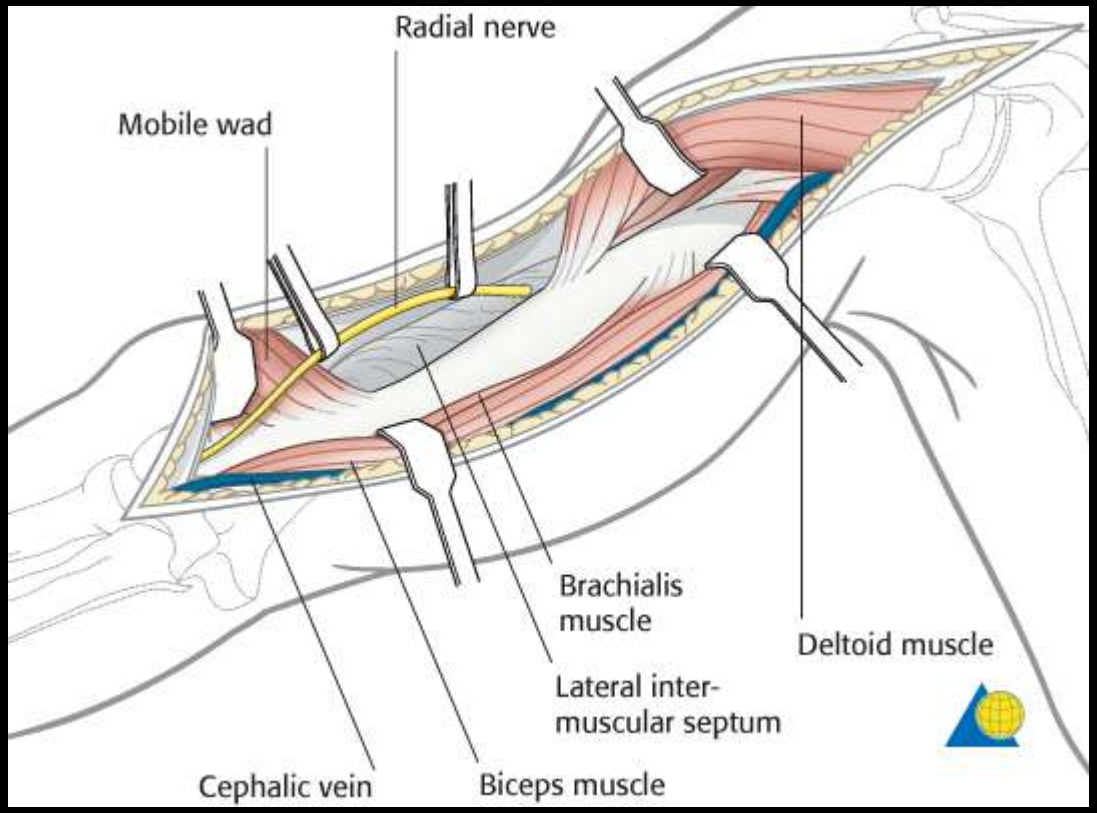


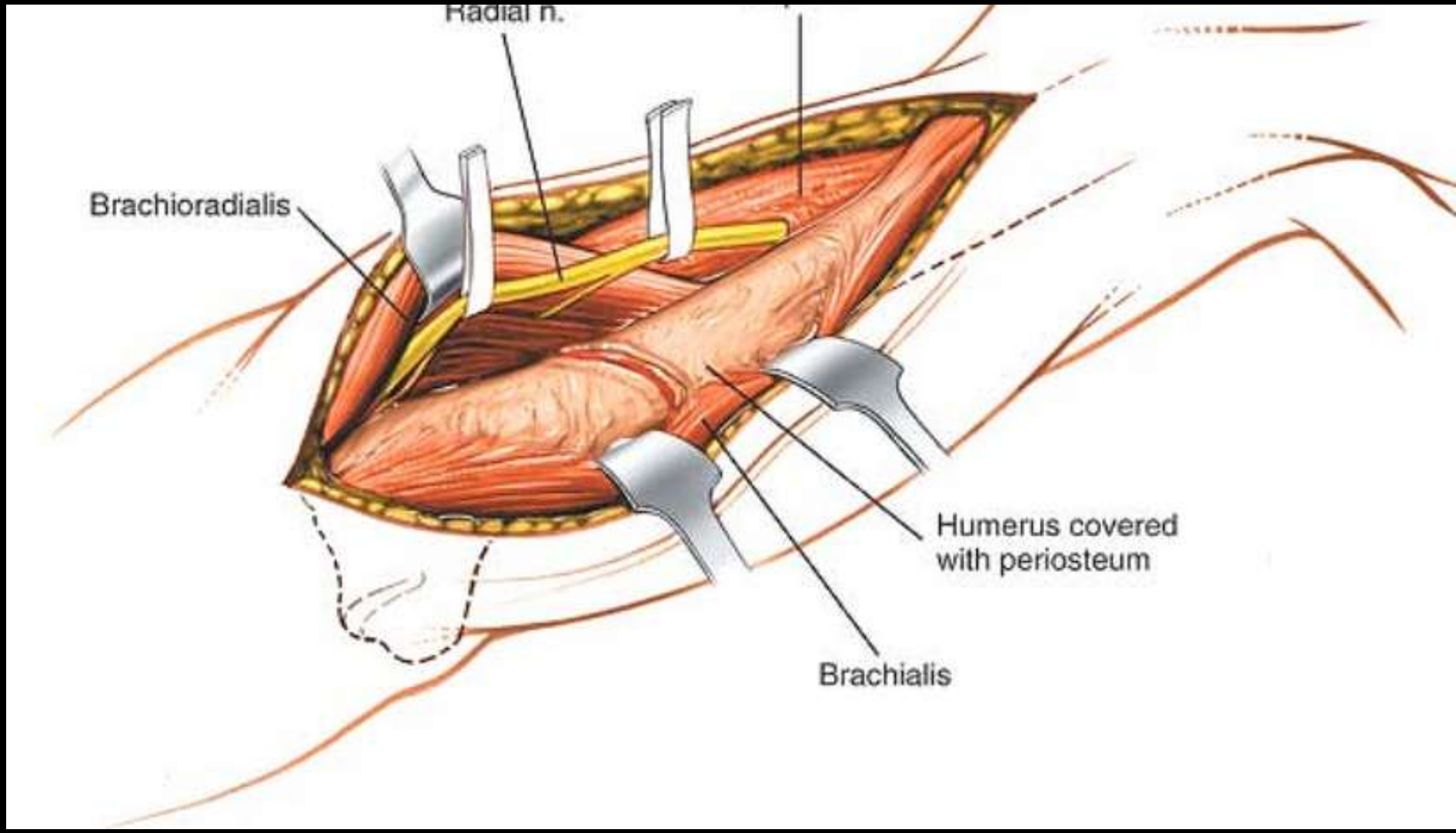
Deep Dissection

Radial Nerve
Easiest to find distally
Between Brachialis and Mobile Wad
Trace it back up to where it emerges through IM Septum

Proximally
Pec Major and Deltoid insertion
These can be lifted off for access

Distally
Retract biceps and brachialis medially & MW laterally




Radial n.
Brachioradialis
Humerus covered
with periosteum
Brachialis

Case 2

- 70 year old male
- Fall at home


AP
R


2: humerus Rt lateral LAT (Series 3)
R

- How are you going to manage this fracture?

Posterior Approach to Humeral Shaft

- Distal to middle third shaft fractures
- Triceps - split or elevated off shaft
- Radial nerve

Posterior Approach to Humeral Shaft

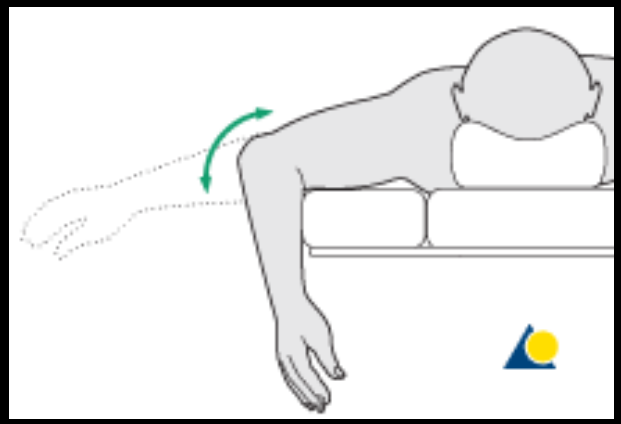
Benefits:

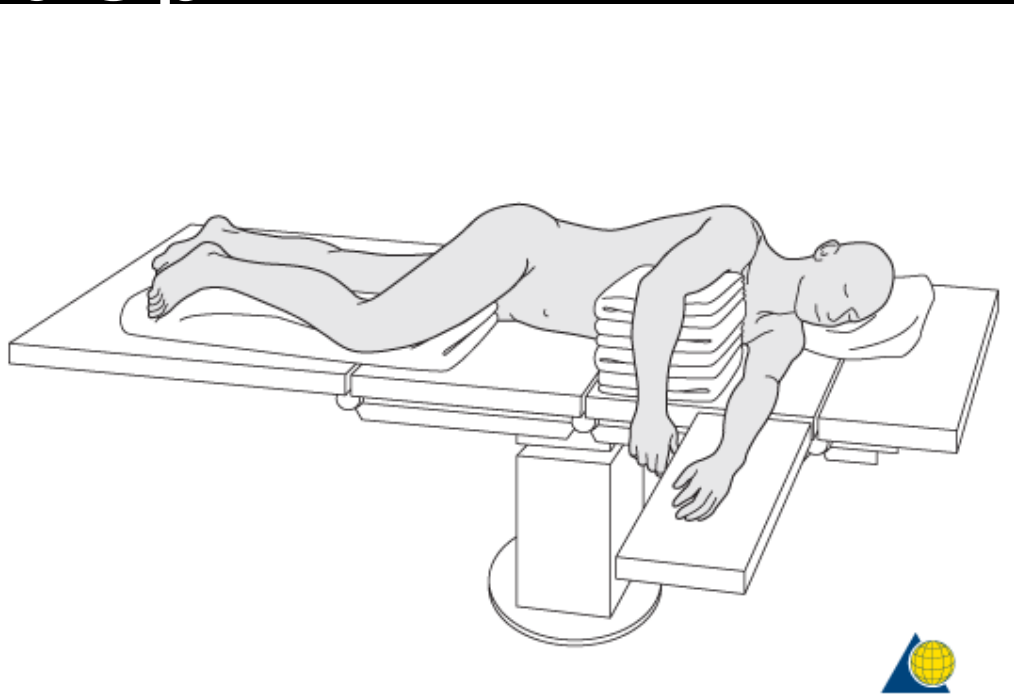
- Direct exposure of the radial nerve
- Allows application of a broad plate to flat surface of distal humerus for distal third fractures

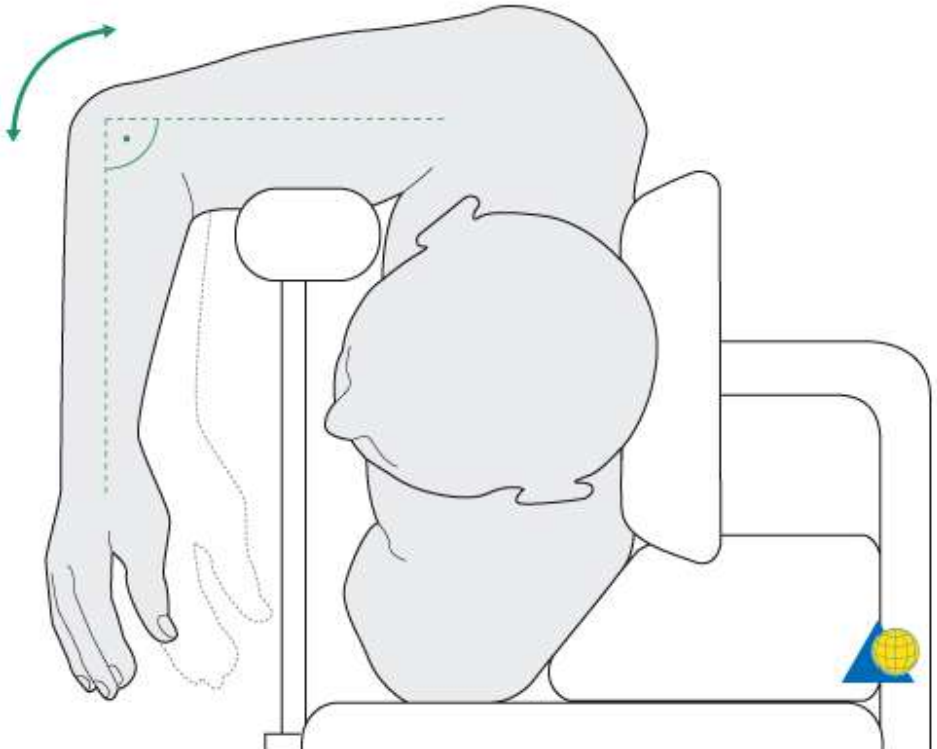
Drawbacks:

- Requires lateral or prone positioning which may be problematic for polytrauma patient
- Requires Radial nerve mobilisation for plate application, ? Increase risk of iatrogenic palsy

Set Up



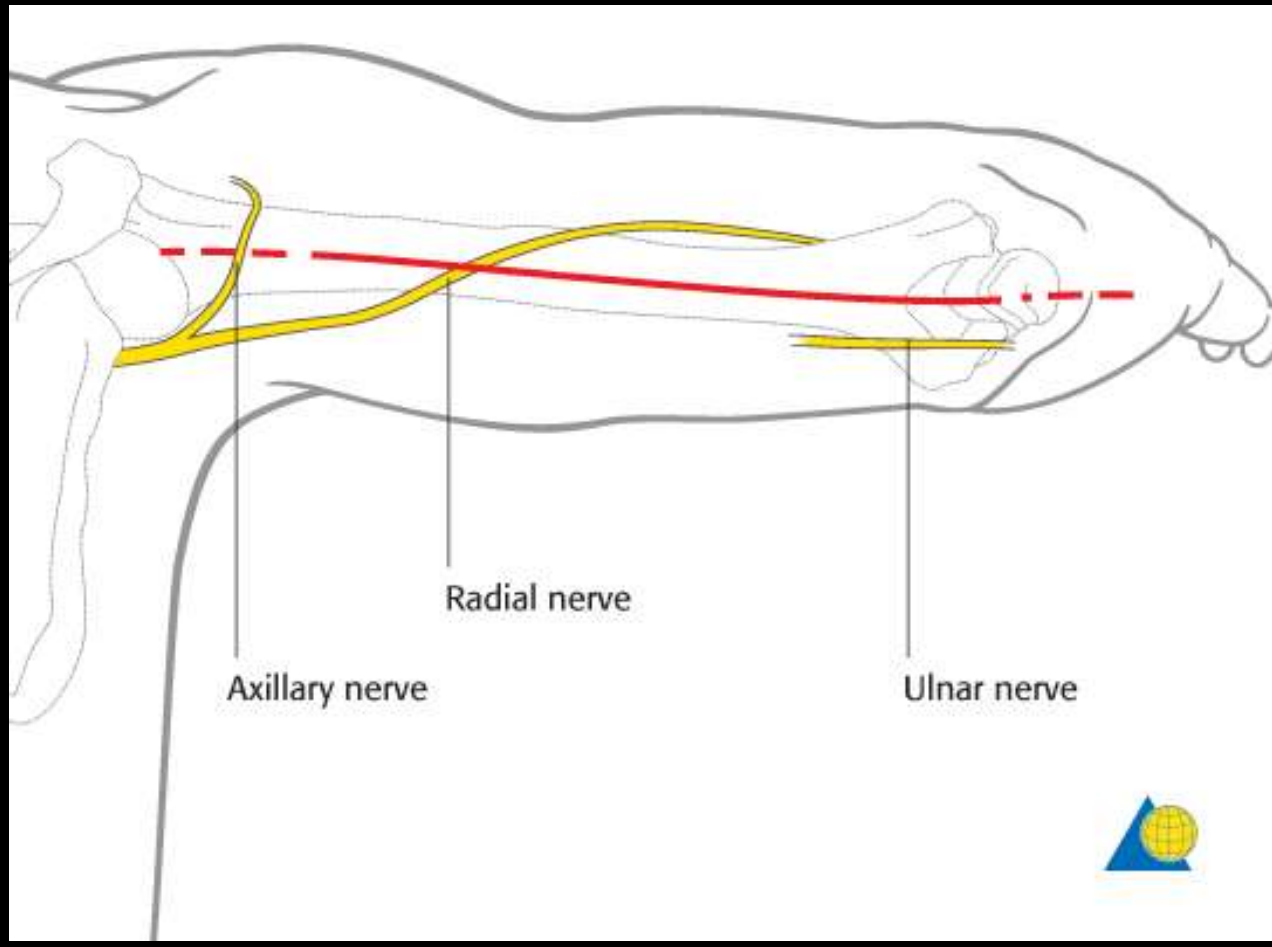




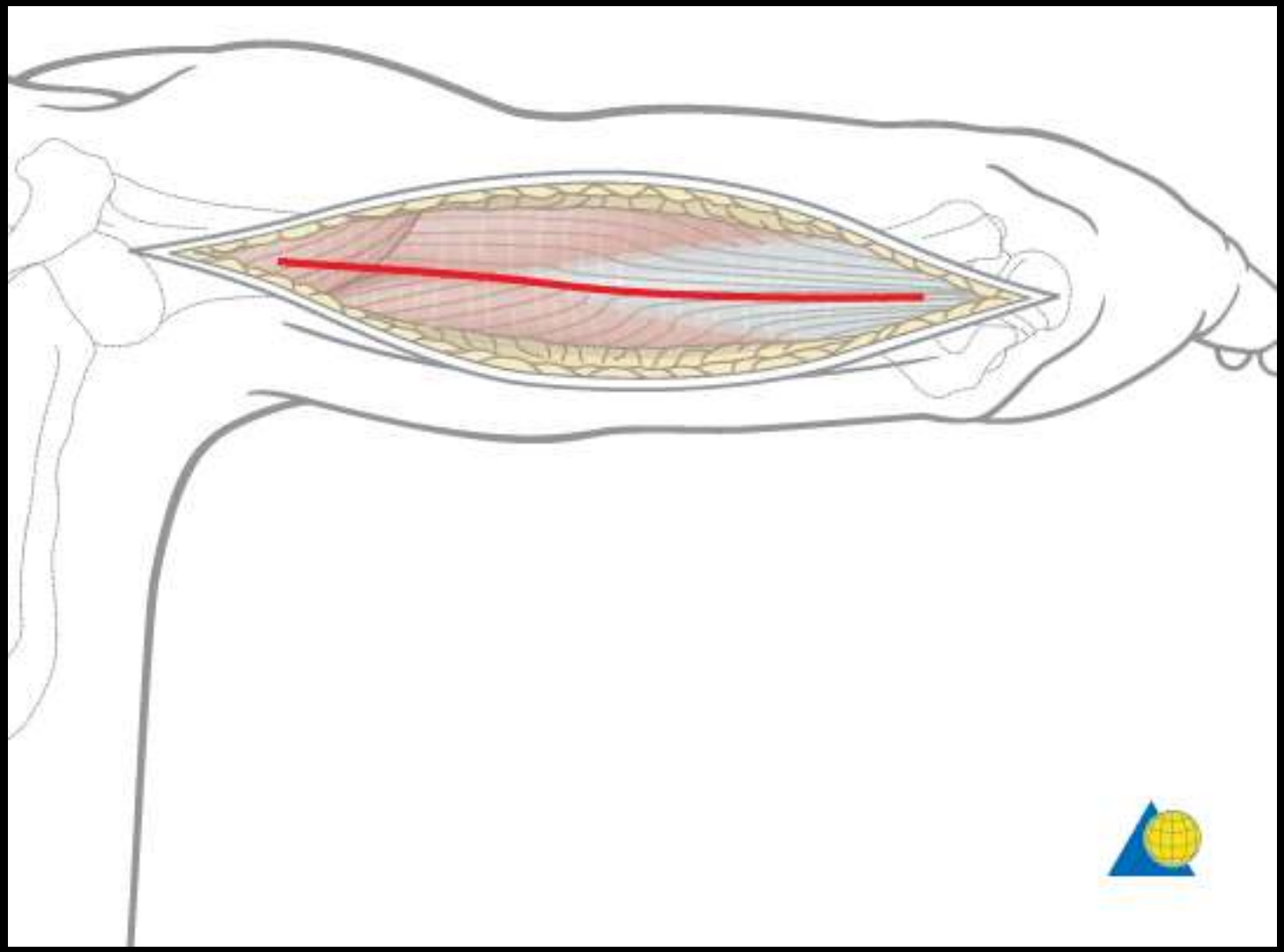
Incision

Landmarks:
Olecranon
Posterior acromion

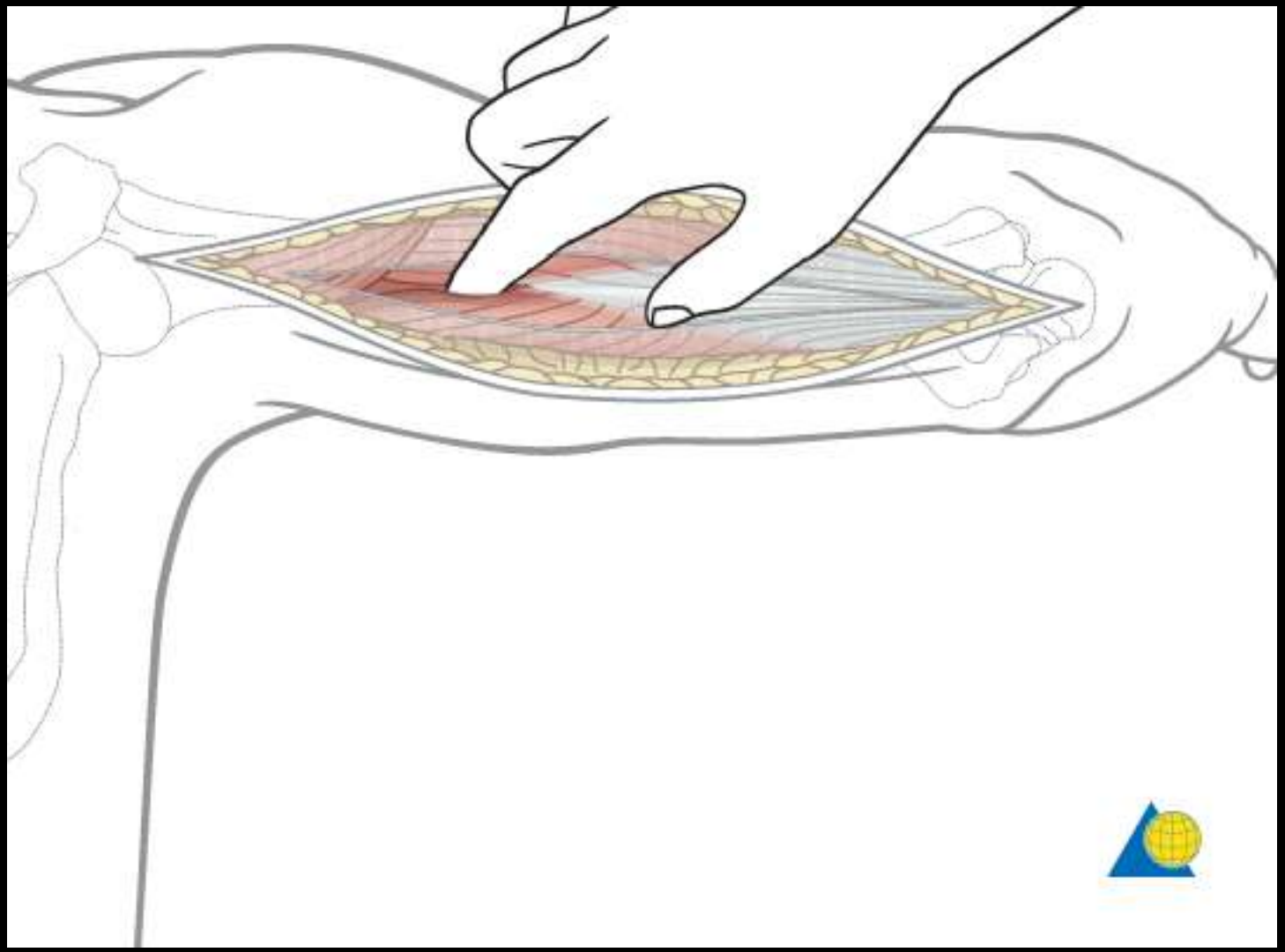
Longtudinal midline incision
Where depends on #



Superficial Dissection



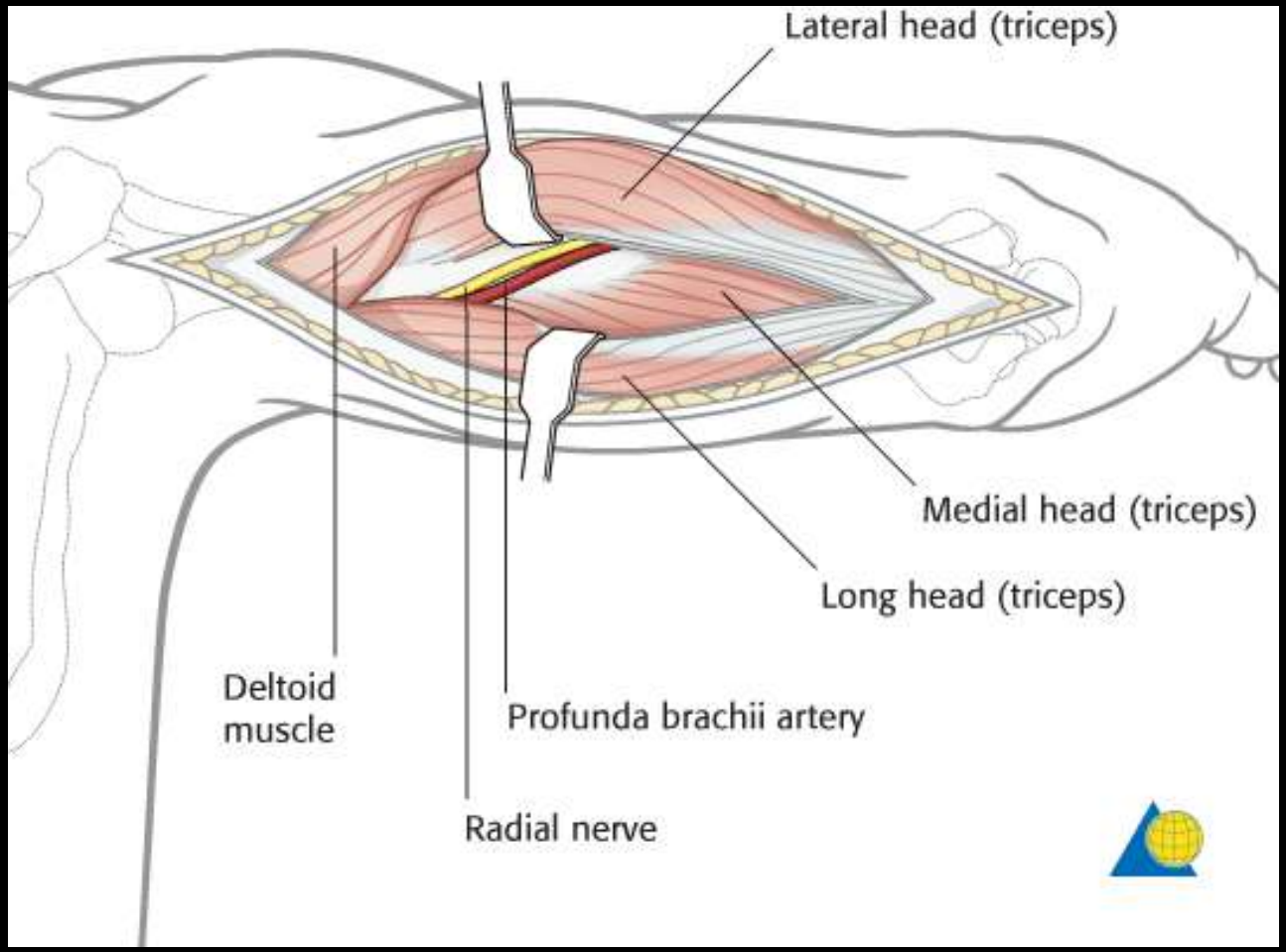
Find the Radial Nerve



Deep Dissection

Develop between long & lateral heads

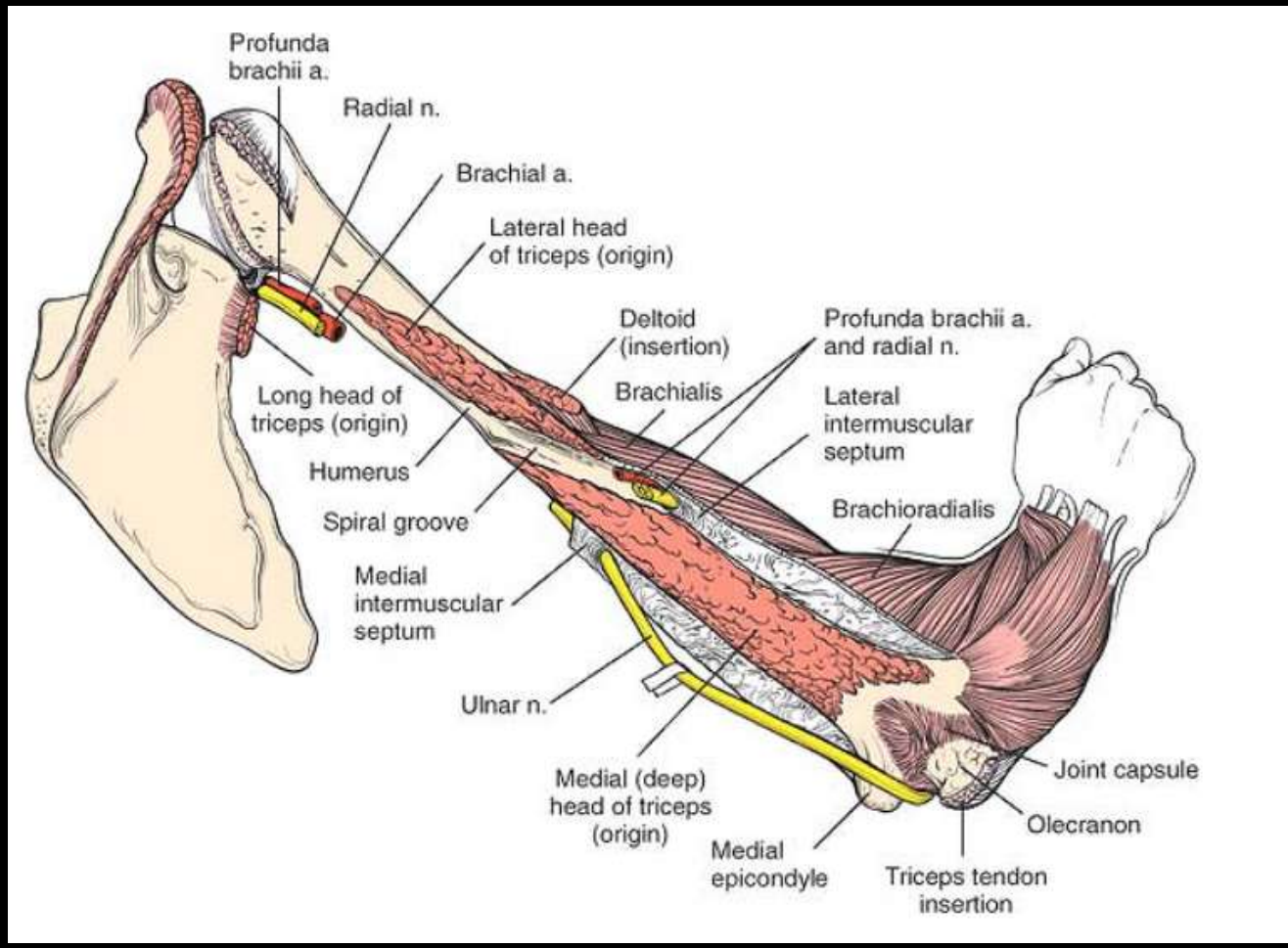
Find & protect Radial Nerve and Profunda Brachii Artery



Applied Anatomy

Radial Nerve
20-21cm Prox to ME

14-15cm Prox to LE

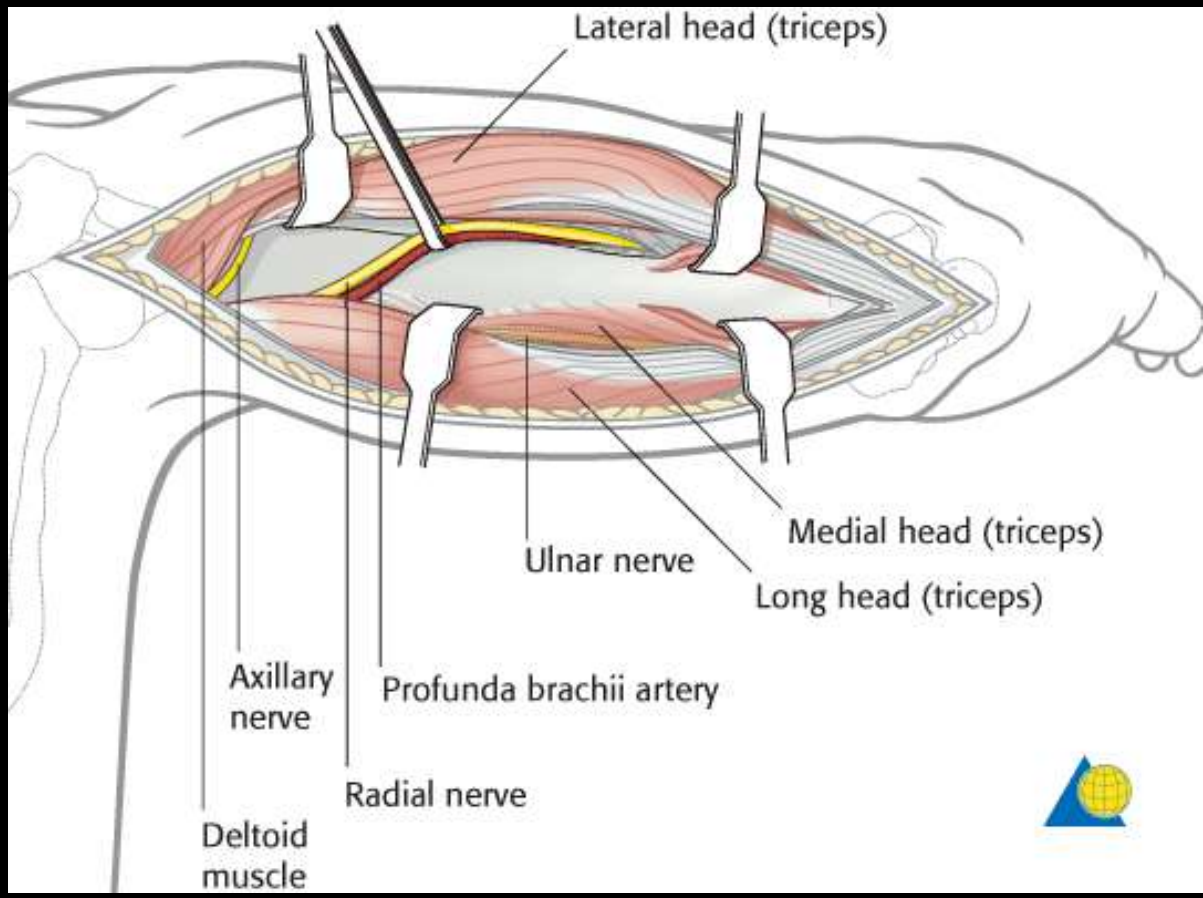


Deep Dissection

Split Medial Head longitudinally to bone

Elevate off back humerus

Don’t forget ulna nerve Medially



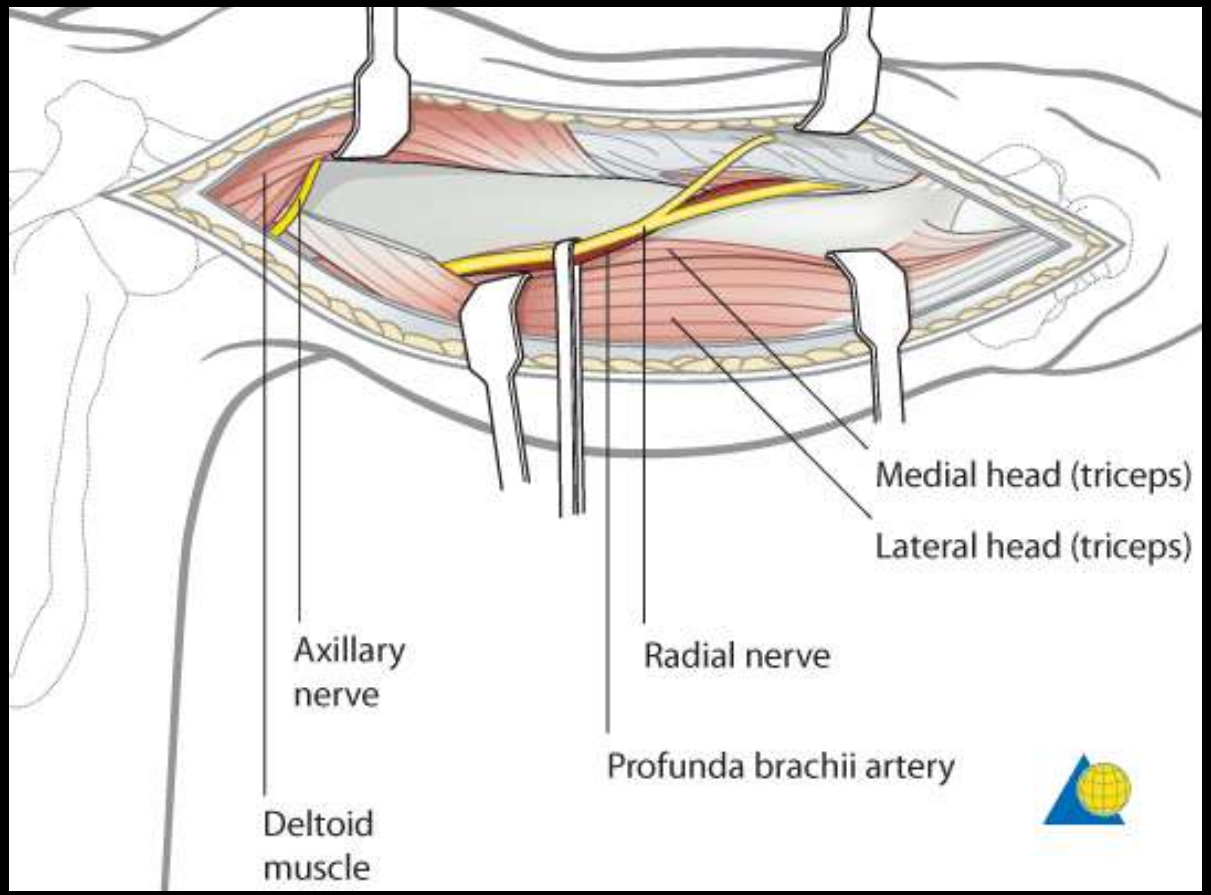
Extensions

Distally:
Further split of the triceps but limited

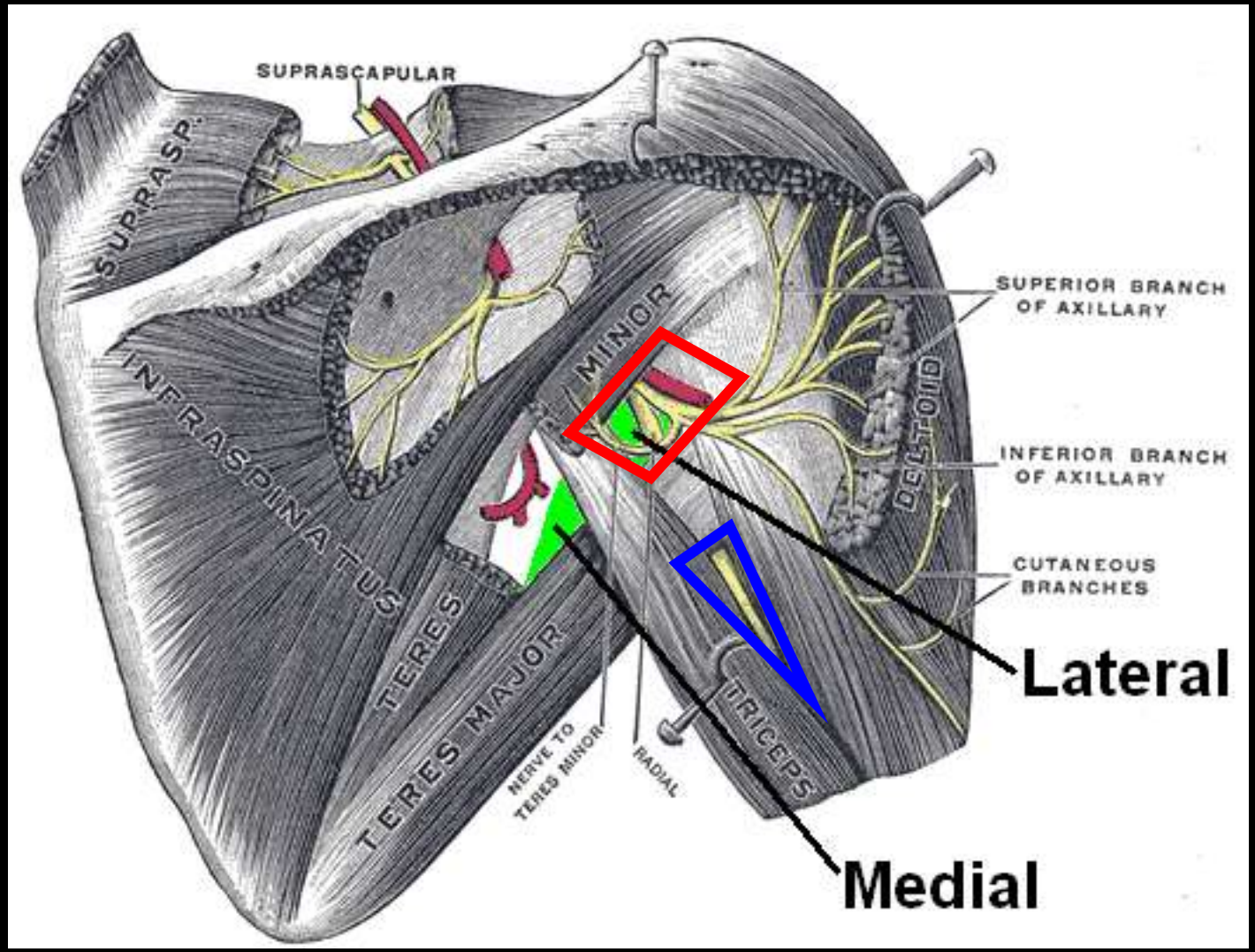
Proximally:
Continue between long & lateral heads

You will find Axillary Nerve

Remember your proximally spaces



Quadrilateral & Tringular Spaces



Proximal Spaces

- Quadrilateral
  - Teres Minor
  - Long Head Triceps
  - Teres Major
  - Humeral Shaft
- Contains
  - Axillary Nerve
  - Posterior Humeral Circumflex Artery
- Triangular
  - Teres major
  - Long head triceps
  - Lateral head triceps or humeral shaft
- Contains
  - Axillary Nerve
  - Profunda Brachii Arthery

Summary

- Proximal 1/3 to mid-shaft – Anterolateral
- Mid to distal 1/3 shaft – Posterior
- Remember your anatomy
- Unfamiliar territory for most
- Find & Protect nerves

Questions