4.SCAPULAR REGION

DELTOID MUSCLE (SE)

Origin

Anterior Fibers - Anterior border of lateral 1/3rd of clavicle
Acromial Fibers/middle fibers - Lateral border of acromion (multipennate)
Posterior Fibers- Lower lip of crest of spine of scapula

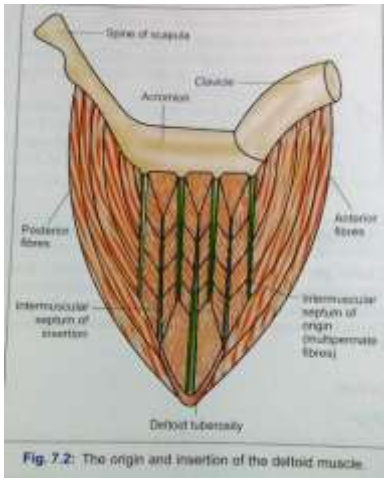


Fig. 7.2: The origin and insertion of the deltoid muscle.

Insertion

Deltoid tuberosity of humerus

Nerve supply

Axillary nerve (C5, C6)

Actions

Acromial fibres- powerful abductors of arm (15- 90 degree)
Anterior fibres – flexor and medial rotators of arm
Posterior fivers- extensor and lateral rotators of arm

Applied anatomy

Deltoid is the preferred place to give intramuscular injections in the arm.
Injection should be given in the middle of the muscle to prevent injury to Axillary nerve

DELTOID – NERVE SUPPLY AND ACTION (SA)

Nerve supply of deltoid- axillary nerve (C5,C6)

Action

Anterior fibers - flexor and medial rotator of arm
Middle fibers- strong abductor of shoulder (15- 90 degree)
Posterior fibers – extensor and lateral rotator of arm.

CLINICAL IMPORTANCE OF DELTOID MUSCLE (SA)

Deltoid muscle is the powerful abductor of shoulder joint
It is the preferred muscle to give intramuscular injections in the upper limb.
Injection must be given to the middle of the muscle to avoid injury to Axillary nerve.

AXILLARY NERVE- MUSCLES SUPPLIED & CLINICAL IMPORTANCE (SA)

Axillary nerve supplies
Deltoid muscle and Teres Minor muscle.

Clinical importance

Axillary nerve may be damaged in,
Dislocation of shoulder joint and fracture of surgical neck of humerus

Effects of injury

Paralysis of deltoid muscle
Inability to abduct shoulder (15- 90 degree)
Loss of rounded contour of shoulder
Loss of sensation over lower half of Deltoid muscle.

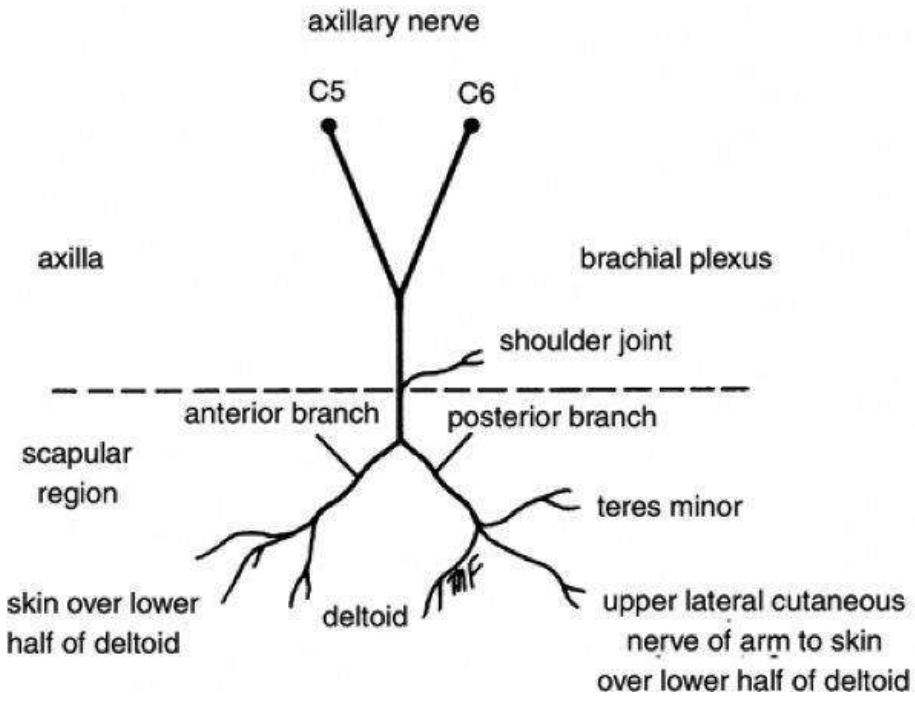
AXILLARY NERVE (LE)

Axillary Nerve is a branch of posterior cord of Brachial plexus.
Root Value: C5,C6

Course and Distribution

In the Axilla –

Axillary nerve is located posterior to third part of Axillary artery.
It leaves Axilla by passing through the quadrangular space.
It is accompanied with posterior circumflex humeral vessels.
Here it is related to medial aspect of surgical neck of humerus.
It gives a branch to shoulder joint.
Then divides into 2 divisions - anterior and posterior



Distribution (Branches):

Trunk- articular twig to shoulder joint

Anterior division

Supplies deltoid muscle and skin over lower part of deltoid.

Posterior division-

Supplies Teres minor and gives upper lateral cutaneous nerve of arm

Applied anatomy

Axillary nerve may be injured by
, Dislocation of shoulder joint
Fracture of surgical neck of humerus

Effects of injury to Axillary nerve-

Rounded contour of shoulder is lost

DESCRIBE THE ROOT VALUE, FORMATION, COURSE, RELATIONS AND BRANCHES OF AXILLARY NERVE. GIVE ITS APPLIED ANATOMY. WHAT ARE EFFECTS OF INJURY AT SURGICAL NECK OF HUMERUS (LE).

Root value:

Its root value is ventral rami of 5^{th} and 6^{th} cervical segments of spinal cord (**C5, C6**)

Formation:

The axillary nerve arises from the *posterior cord* of the brachial plexus near the lower border of subscapularis.

Course:

Runs backwards on subscapularis the enter the quadrangular space and terminates into anterior and posterior branches

Relations:

In the lower part of axilla:

The nerve runs downwards behind the third part of axillary artery

Lies on the subscapularis muscle and related

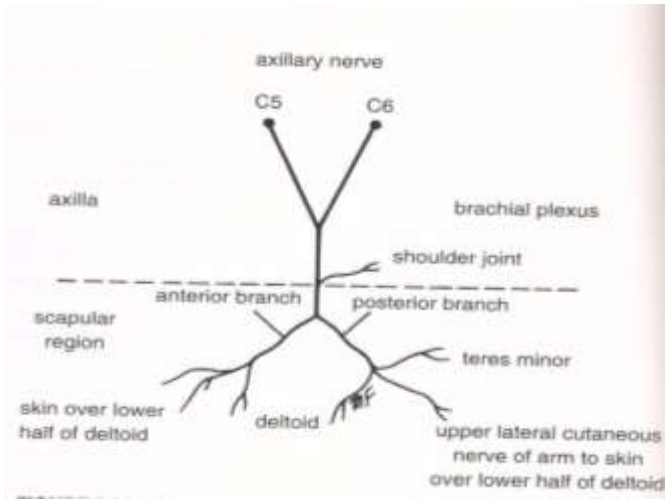
Medially - median nerve

Laterally - coracobrachialis

The nerve leaves the axilla by winding round the lower border of subscapularis and enters quandrangular space.

In the quandrangular space:

Here it is accompanied by posterior circumflex humeral vessels.



Relations

Superiorly:

Subscapularis

Lowest part of capsule of the shoulder joint

Surgical neck of humerus

Inferiorly:

Teres major

Medially:

Long head of triceps brachii

In the quandrangular space,the nerve divides into anterior and posterior branches in relation to the deltoid muscle.

Branches:

Anterior branch:

Accompanied by posterior circumflex humeral vessels.

Winds around surgical neck of humerus

Supplies the deltoid and skin over its anteroinferior part

Posterior branch:

Supplies teres minor and posterior part of the deltoid and continues as upper lateral cutaneous nerve of the arm.

The nerve to teres minor bears a pseudoganglion

Applied anatomy:

Intramuscular injections are often given into the deltoid. They should be given in the middle of the muscle to avoid injury to the axillary nerve.

The axillary nerve may be damaged by dislocation of the shoulder or by the fracture of surgical neck of humerus.

Effects of injury at surgical neck of humerus:

Rounded contour of shoulder is lost, greater tubercle of humerus becomes prominent.

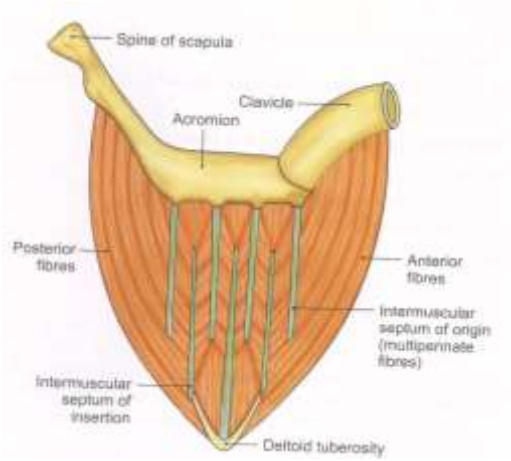
Deltoid is paralysed with loss of power of abduction upto 90° at the shoulder.

There is sensory loss over the lower half of deltoid in a badge like area called **regimental badge.**

DELTOID MUSCLE – LOCATION, ATTACHMENTS NERVE SUPPLY AND ACTIONS (LE)

Location:

It is a scapulohumeral muscle



Attachments:

Origin:

The anterior clavivular part

Lateral third of clavicle – upper surface and anterior border

The middle acromial part:

Acromion – lateral margin and upper surface

The posterior spinous part:

Spine of scapula – lower lip of the crest of the spine

Insertion:

"V " shaped deltoid tuberosity

Nerve supply:

Axillary nerve (C5, C6)

Actions:

Clavicular fibres – flexors and medial rotators

Spinous fibres - extensors and lateral rotators

Acromial fibres - strong abductor of the arm 15° to 90°

ROTATOR CUFF OF SHOULDER (SE)

Rotator cuff/***musculotendinous*** cuff of the shoulder is the fibrous sheath formed by the tendons of

Supraspinatus

Infraspinatus

Teres minor

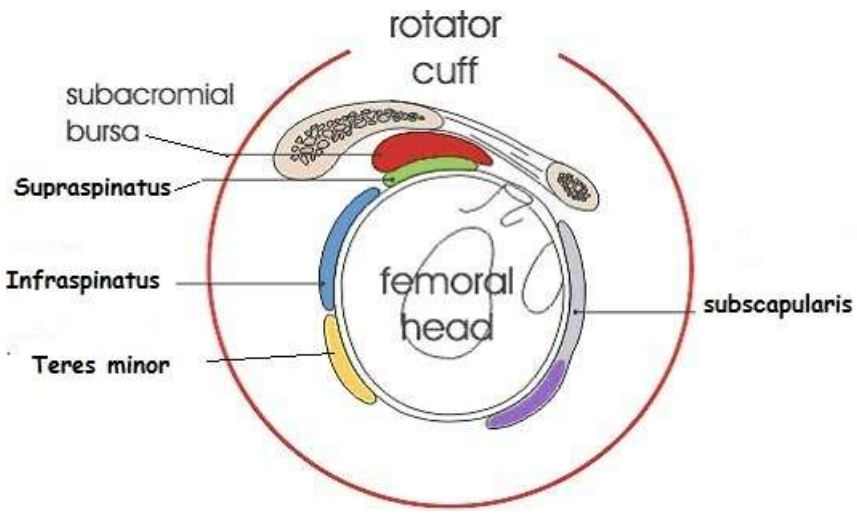
Subscapularis

They arise from scapula gets inserted into humerus and blend with the capsule of the shoulder joint.

Tendon of supraspinatus fuse superiorly

Tendon of infraspinatus and teres minor fuse posteriorly

Tendon of subscapularis fuse anteriorly



Functions:

Stabilizes shoulder joint

Grasp the relatively large head of humerus and hold it against the smaller, shallow glenoid cavity.

QUADRANGULAR AND TRIANGULAR SPACES (SE).

Quadrangular space:

Boundaries:

Superior:

Subscapularis anteriorly

Teres minor posteriorly

Capsule of the shoulder joint

Inferior:

Teres major

Medial:

long head of triceps brachii

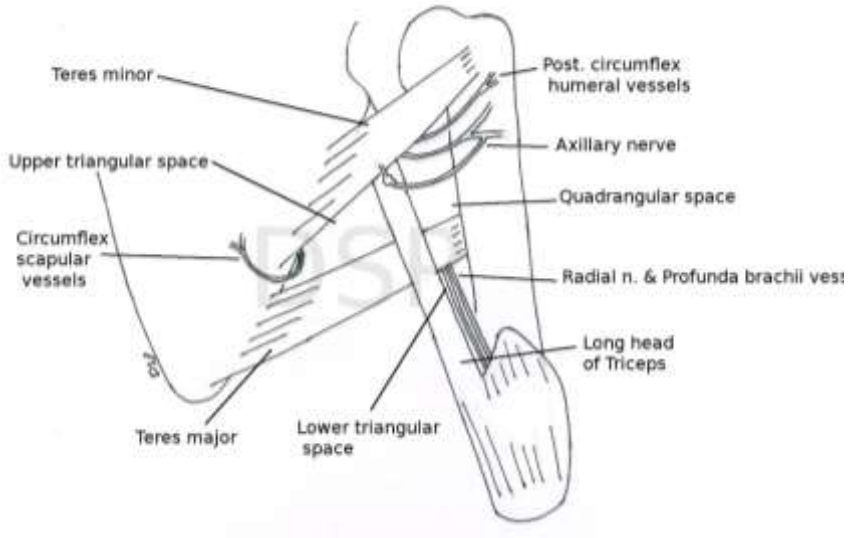
Lateral:

surgical neck of humerus

Contents:

Axillary nerve

Posterior circumflex humeral vessels



Upper triangular space:

Boundaries:

Medial:

teres minor

Lateral :

long head of triceps

Inferior:

teres major

Contents:

Circumflex scapular artery

Lower triangular space:

Boundaries:

Medial:

long head of triceps

Lateral:

shaft of humerus

Superior:

teres major

Contents:

Radial nerve
Profunda brachii vessels

AXILLARY NERVE (CIRCUMFLEX NERVE) (SE)

Root value:

Its root value is ventral rami of 5^{th} and 6^{th} cervical segments of spinal cord

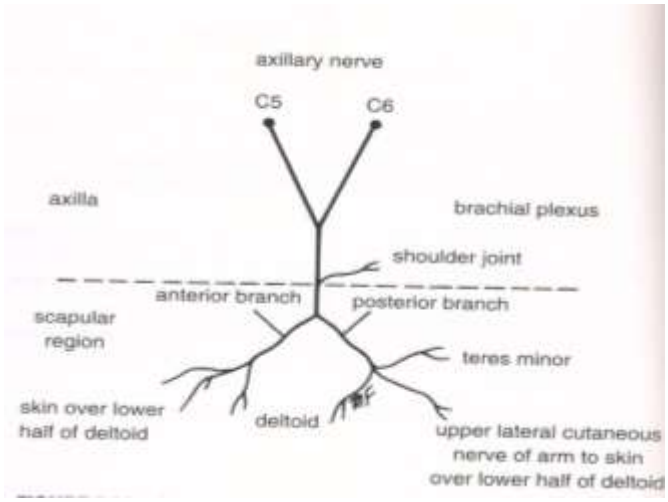
(**C5, C6**)

Formation:

The axillary nerve arises from the posterior cord of the brachial plexus near the lower border of subscapularis.

Course:

Runs backwards on subscapularis, then enters the quadrangular space and terminates into anterior and posterior branches



Branches:

Anterior branch:

Accompanied by posterior circumflex humeral vessels.

Winds around surgical neck of humerus

Supplies the deltoid and skin over its anteroinferior part

Posterior branch:

Supplies teres minor and posterior part of the deltoid and continues as upper lateral cutaneous nerve of the arm.

The nerve to teres minor bears a pseudoganglion

ANASTOMOSIS AROUND SCAPULA(SE)

Arterial anastomoses - **subclavian artery & axillary artery**

Sites:	**1st part of subclavian artery**	**2nd part of axillary artery**	**3rd part axillary artery**
Body of scapula	• **Supra scapular artery &** • **Deep branch of transverse cervical artery.**		**Circumflex scapular**
Acromion process	**Acromion branch of supra scapular artery.**	**Thoraco acromion artery**	**Posterior circumflex humoral artery.**

NERVE SUPPLY AND ACTION OF DELTOID(SA)

Nerve supply:

Axillary nerve (C5, C6)

Actions:

Anterior/Clavicular fibres – flexors and medial rotators

Posterior/Spinous fibres - extensors and lateral rotators

Middle/Acromial fibres - strong abductor of the arm 15° to 90°

MUSCLES ATTACHED TO GREATER TUBERCLE OF HUMERUS WITH NERVE SUPPLY(SA)

Upper impression - supraspinatus

Middle impression - infraspinatus

Lower impression - teres minor

ROTATOR CUFF (MUSCLES FORMING IT)(SA)

Rotator cuff/musculotendinous cuff of the shoulder is the fibrous sheath formed by the tendons of

Supraspinatus
Infraspinatus
Teres minor
Subscapularis.

QUADRANGULAR SPACE – BOUNDARIES AND CONTENTS(SA)

Boundaries:

Superior: Subscapularis anteriorly

Teres minor posteriorly

Capsule of the shoulder joint

Inferior: Teres major

Medial: long head of triceps brachii

Lateral: surgical neck of humerus

Contents:

Axillary nerve

Posterior circumflex humeral vessels

CONTENTS OF INFERIOR TRIANGULAR SPACE OF ARM(SA)

Radial nerve
Profunda brachii vessels

AXILLARY NERVE – MUSCLES SUPPLIED AND CLINICAL IMPORTANCE.(SA)

Muscles supplied:

Anterior branch: deltoid

Posterior branch: deltoid and teres minor

Clinical importance:

(1) Intramuscular injections are often given into the deltoid. They should be given in the middle of the muscle to avoid injury to the axillary nerve.
(2) The axillary nerve may be damaged by dislocation of the shoulder or by the fracture of surgical neck of humerus.

CLINICAL IMPORTANCE OF DELTOID MUSCLE(SA)

Intramuscular injections are often given into the deltoid. They should be given in the middle of the muscle to avoid injury to the axillary nerve.

- **Paralysis of deltoid:** produced by any damage to the axillary nerve

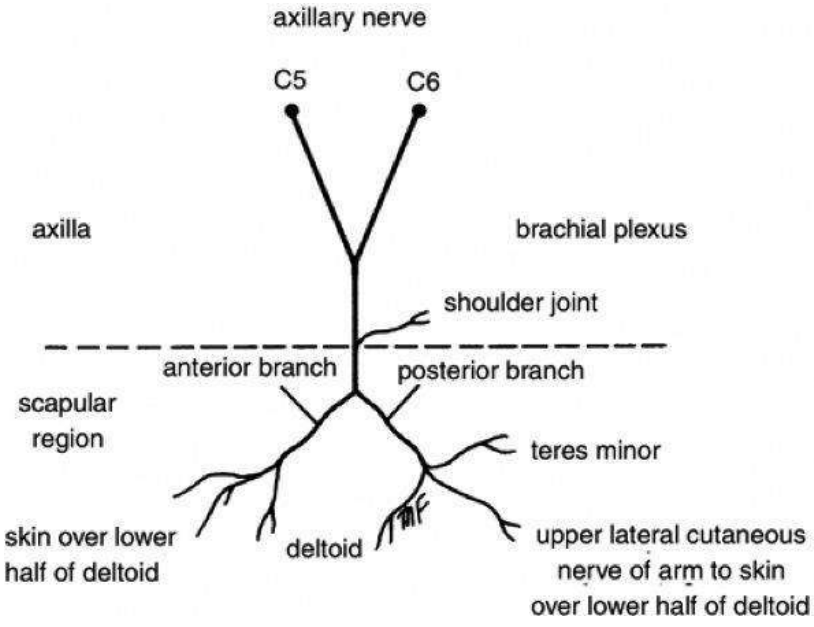
Resulting in loss of power of abduction upto 90° at the shoulder.

Paralysis of Deltoid muscle (inability to abduct the shoulder)

Sensory loss over the lower half of deltoid (regimental badge anaesthesia)

AXILLARY NERVE (SE)

Axillary Nerve is a branch of posterior cord of Brachial plexus.
Root Value: C5,C6



Distribution (Branches):

Trunk- articular twig to shoulder joint

Anterior division –

Supplies deltoid muscle and skin over lower part of deltoid.

Posterior division-

Supplies Teres minor and gives upper lateral cutaneous nerve of arm

Applied anatomy-

Axillary nerve may be injured by Dislocation of shoulderjoint
Fracture of surgical neck of humerus

Effects of injury to Axillary nerve-

Rounded contour of shoulder is lost
Paralysis of Deltoid muscle (inability to abduct the shoulder)
Sensory loss over the lower half of deltoid (regimental badge anaesthesia).