

Hemiplegic Shoulder

Power Point for staff education sessions

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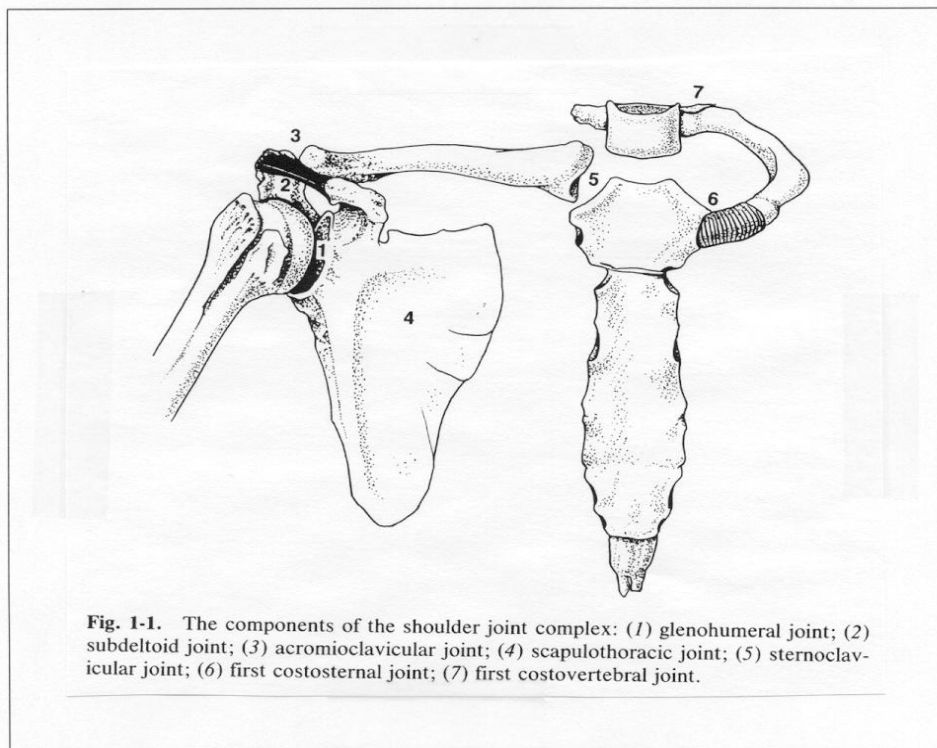
Acknowledgements

- Maria Lung BSc (PT), MSc
 - Train the Trainer Sessions 2003.
- Tips and Tools “Mobility PowerPoint”
 - Presented by therapists in Hamilton

Overview

- Anatomy of Shoulder Complex
- Low Tone Shoulder
- High Tone Upper Limb
- Hemiplegic Shoulder Pain
- Practical Session

The Shoulder Joint Complex



The glenohumeral joint is the major site for movement.

1. Glenohumeral Joint
2. Subdeltoid Joint
3. Acromioclavicular Joint
4. Scapulothoracic Joint
5. Sternoclavicular Joint
6. 1st Costosternal Joint
7. 1st Costovertebral Joint

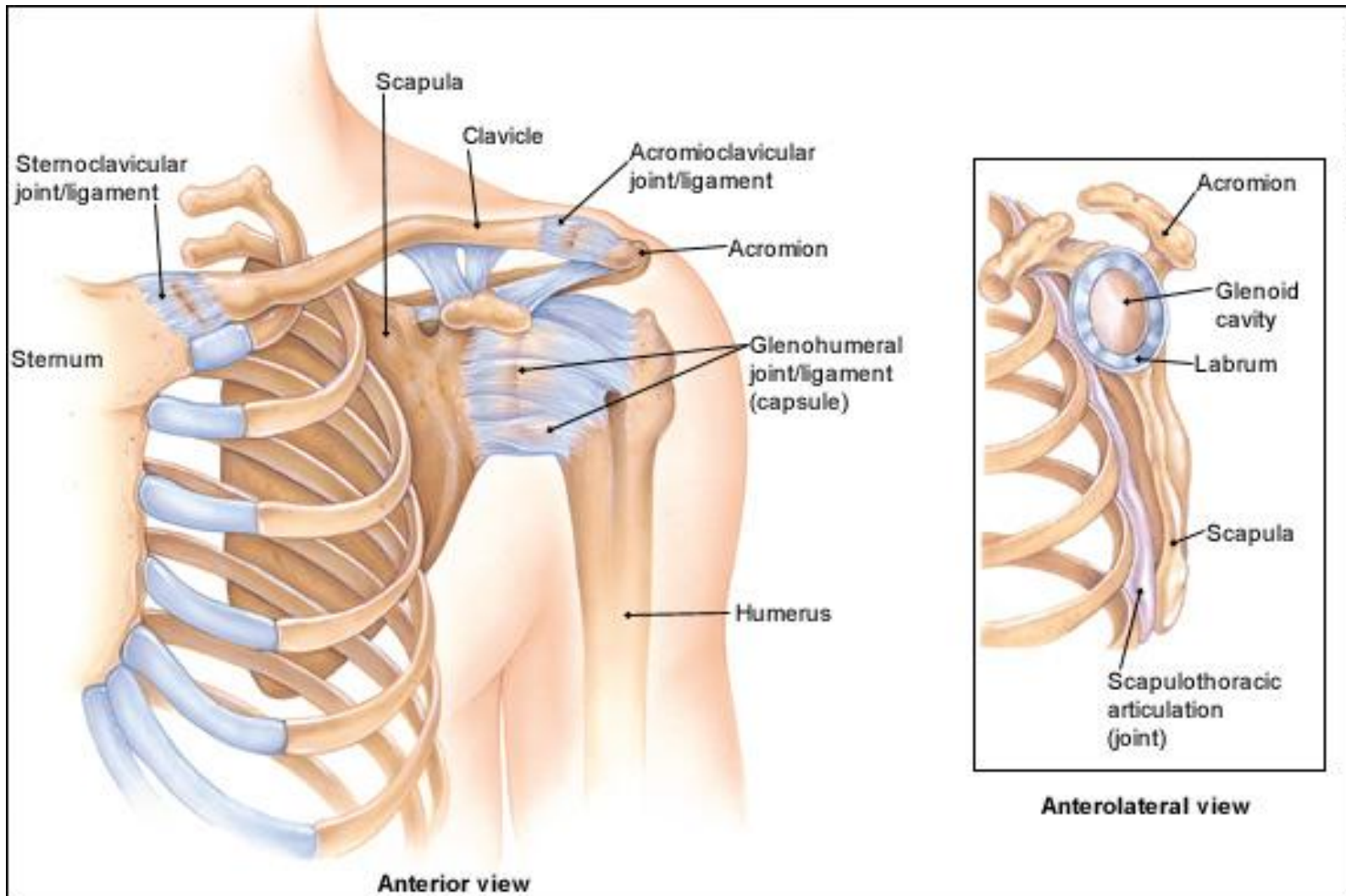
Anatomy: Glenohumeral Joint

- Ball and socket joint.
- Stability sacrificed for mobility.
- Only 1/3 of humeral head in contact with glenoid fossa at any time during movement.

Anatomy: Glenohumeral Joint

- Static Stabilizers
 - Glenoid Labrum
 - Ligaments
 - Glenohumeral
 - Coracohumeral

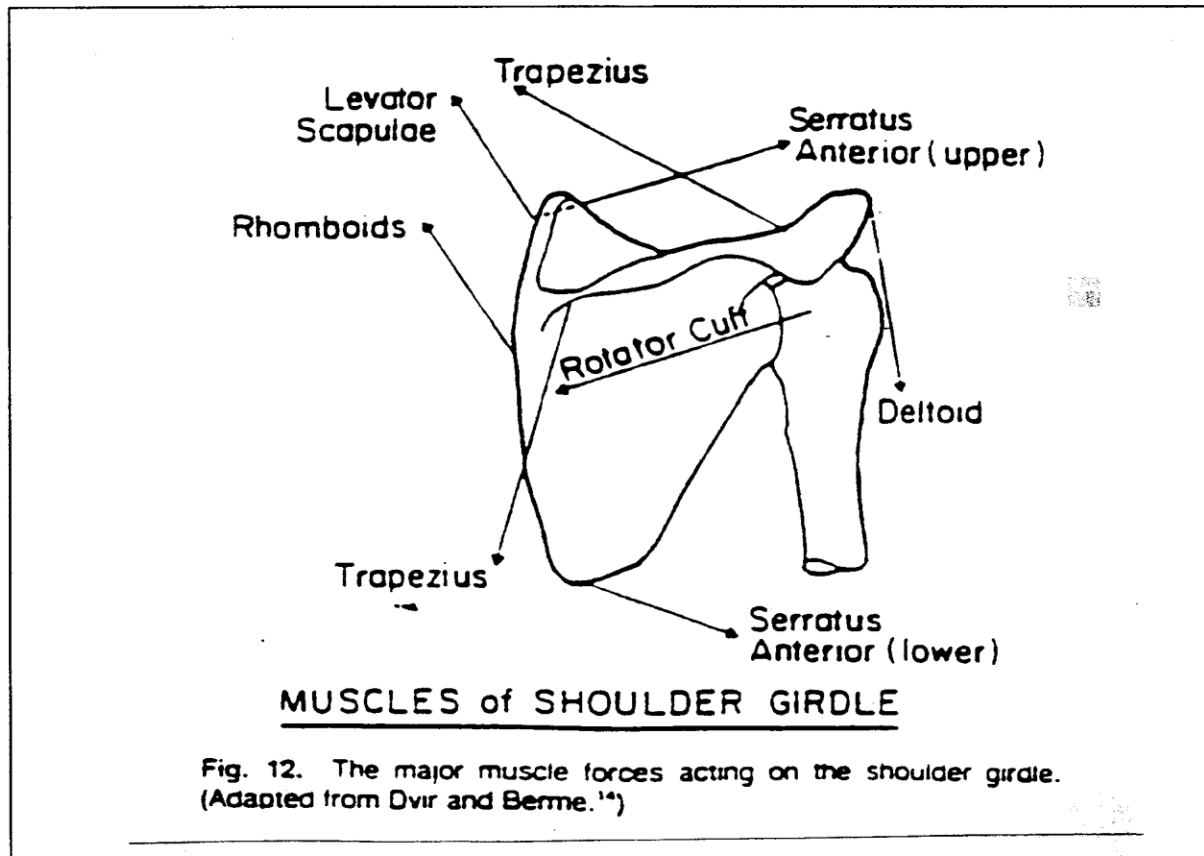
Anatomy: Glenohumeral Joint



Anatomy: Glenohumeral Joint

- Dynamic Stabilizers
 - Rotator Cuff Muscles
 - Deltoid causes superior translation of humeral head during arm elevation
 - Rotator cuff muscles play a very important in “steering” humeral head in glenoid fossa
 - Deltoid and rotator cuff muscles work in a fine balance to elevate the arm
 - Supraspinatus muscle is important in stabilizing shoulder when arm dependent (by side)

Force Couples in Shoulder Girdle

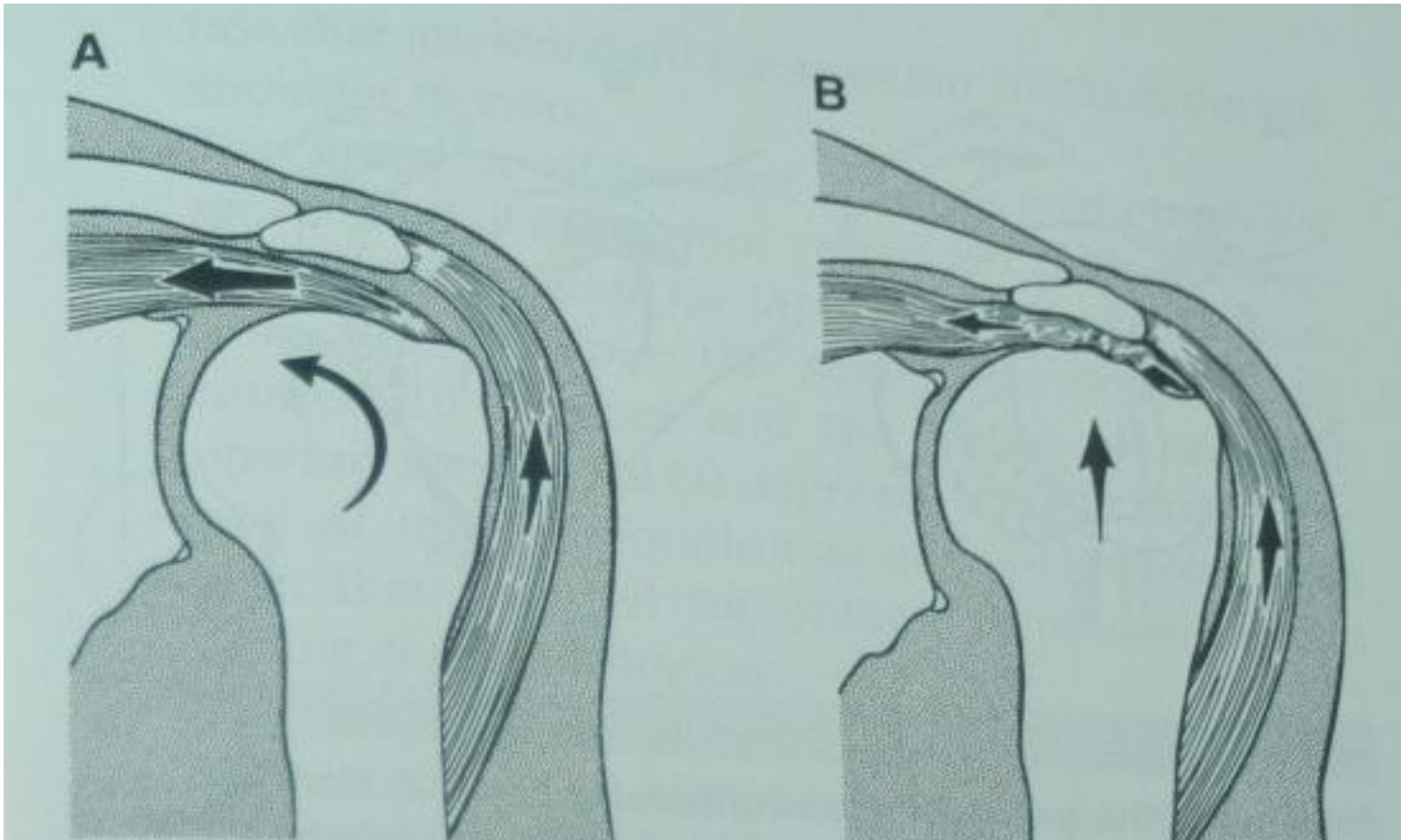


These muscles work synergistically to control the stabilization and motion of the scapula.

Anatomy: Arm Elevation

- 0-30 degrees
 - Setting of scapula
 - Primarily glenohumeral movement
- 30-150 degrees
 - Scapulohumeral rhythm (2:1 GH:scapula)
 - External rotation and depression of humeral head to clear acromial arch
- Beyond 150 degrees
 - Thoracic extension to complete elevation

Supraspinatus impingement



Source: The physiology of the joints, Vol I Upper Limb. 5th ed. (p.35) by IA Kapankji. 1982, Edinburgh, Churchill Livingstone

Low Tone Shoulder

- Most common in initial stages following stroke.
- Results from damage to the motor pathways innervating the upper limb muscles.
- Low tone shoulders are highly susceptible to damage of the structures surrounding the shoulder (muscles, tendons, ligaments).
- Preventing subluxation is crucial in the early stages of stroke recovery- critical role for all team members

Low Tone Shoulder

- Pathoanatomy of Subluxed Shoulder
 - Flaccid or low tone muscles at shoulder and trunk lead to altered alignment of scapula and humerus.
 - Dynamic stabilizers not present
 - Reliance on static stabilizers which overstretch due to weight of arm in dependent position.
 - Inferior subluxation is most common

Shoulder Subluxation

- Consequences of shoulder subluxation:
 - Irreversible stretching of ligaments, tendons and capsule leading to instability at the joint.
 - Structural changes hamper recovery of muscle activity in shoulder complex.
 - Traction injury to brachial plexus neurovascular bundle.

Management of Low Tone Shoulder

- Positioning
 - Support low tone arm at all times:
 - Use pillows, slings, lap trays
 - Slings should be worn during transfers or ambulation only. They should be removed during sitting or in bed.
 - In sitting, position shoulder in slight flexion, abduction and external rotation; forearm in pronation and hand in open weightbearing position.
 - Pay attention to position of pelvis and trunk alignment when sitting.

Side-Lying on the Unaffected Side

- Shift person to far side of bed before rolling.
- Protract hemiplegic arm and support on pillows.
- Support hemiplegic leg on pillows.
- Place one pillow at back.



Lying on Hemiplegic Side

- Move person to far side of bed.
- Protract hemiplegic shoulder (glide scapula forward) and gently move hemiplegic arm away from body.
- Roll onto hemiplegic side.
- Readjust position as needed so person is not on the tip of the shoulder.
- Place pillow between knees and at back.
- Place other supports (pillows or folded flannels) as needed.



Sitting in a Chair

- Remember the 90 rule.
- Hips should be back and centred in the chair.
- Use a lap tray or arm trough to support the affected arm.
- Keep the affected arm in line with the thigh.



Management of the Low Tone Shoulder

- Handling
 - Be gentle
 - Avoid lifting through axilla or pulling on arm to move patient. Instead grasp upper trunk near scapula to move person.
 - Support both the humerus and hand when moving the affected limb to position or dress patient.
 - Do not move arm beyond 90 degrees elevation unless have shoulder external rotation and scapular rotation.
 - Dressing Rule for hemiplegia: “First on; last off”.
- NOTE: Shoulder pain occurs more frequently in patients who are dependent for transfers.

High Tone Upper Limb

- Frequently occurs later post stroke.
- Causes of high tone are multifactorial:
 - Altered CNS-> reflexive contractions
 - Altered musculotendinous properties->stiffness
 - Position dependent.
- Consequences of high tone:
 - Impaired skin care (axilla and hand)
 - Impaired ADLs (dressing)
 - Impaired range of motion
 - Shoulder pain

High Tone Upper Limb

- “Flexor Pattern”
 - Scapular retraction
 - Shoulder internal rotation and adduction
 - Elbow flexion
 - Forearm pronation
 - Wrist and finger flexion

Management of the High Tone Upper Limb

- Positioning
 - Promote position that is opposite to flexor pattern
 - Position for extended periods of time (up to 1 hour or more) to promote lengthening of the tight muscles
 - Use pillows, airsplints, thermoplastic splints or casting as required

Management of the High Tone Upper Limb

- Pharamcological Management:
 - Baclofen or Tizanidine
 - CNS depressants that can decrease tone.
 - Botox
 - Blocks neuromuscular junction to cause relaxation at the muscle
 - Lasts for 3 months

Hemiplegic Shoulder Pain

- Incidence of Shoulder Pain
 - Up to 70% of stroke patients will have pain.
- Signs and Symptoms
 - Pain located in shoulder, may radiate down arm.
 - Pain worse with movement especially ext rotn, abduction and flexion of GH joint.
 - Pain may be present constantly and interfere with sleep.

Hemiplegic Shoulder Pain

- Treatment
 - Respect the pain
 - Use NSAIDs and analgesics as indicated
 - Use modalities: heat, ice or TENS
 - Support the arm in position of comfort
 - Gentle range of motion exercises in painfree range with correct biomechanics (no overhead pulleys!)

Practical Session

- Putting on hemi-sling
- Positioning in bed:
 - On hemiplegic side
 - On non-hemiplegic side
 - Upright in bed
- Two person front-back transfer