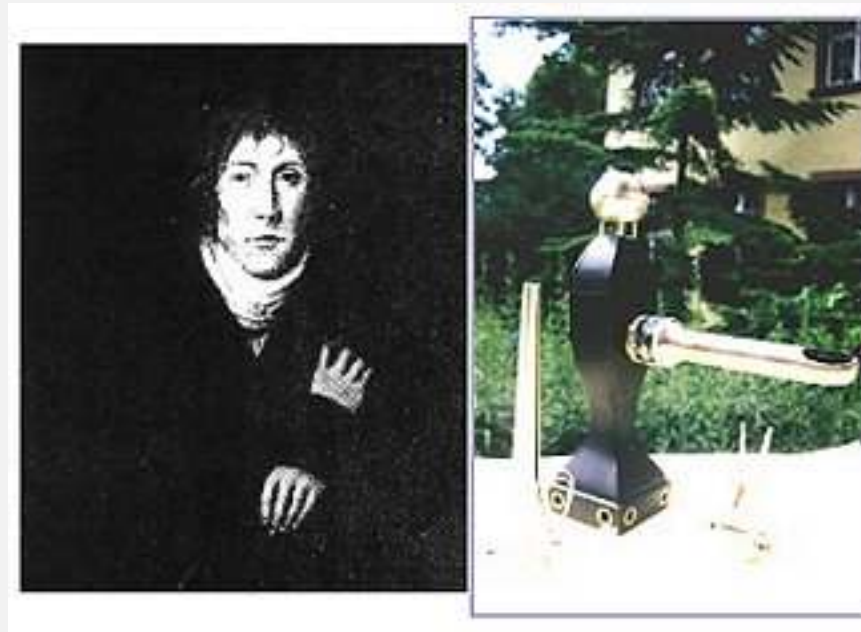


Introduction  
to  
Shoulder Arthroscopy

Rajesh Nanda  
SpR Northern Deanery

# History of Arthroscopy



Bozzini, in 1806, presented his “Lichtleiter” to the Rome Academy of Medicine

# History of Arthroscopy

- 1853 - A.I. Désormaux  
“gazogene endocystoscope”- Turpentine
- 1886 - Nitze and Leiter  
“cystoscope” - Incandescent bulb
- 1912- Dr. Severin Nordentoft  
Jacobaeus Laparoscope - examine knees  
41st Congress German Surgical Society,  
Berlin

# History of Arthroscopy

- Professor Kenji Takagi,  
1918,  
cystoscope to examine  
tuberculous knees



# History of Arthroscopy



Masaki Watanabe, MD

University of Tokyo

- 1959 Watanabe # 21- first production scope
- 1967 Watanabe #22-first fibre optic scope
- 1970 Watanabe #25-ultra thin fibre optic arthroscope

# History of Arthroscopy



1964 - Robert W. Jackson

1969 – Richard O'Connor

1<sup>st</sup> & 2<sup>nd</sup> AAOS Instructional  
courses

# History of Shoulder Arthroscopy

- 1931 – Burman – Cadaveric joints
- 1965 – Andren et al – Clinical reports
- 1979 – Conti
- 1980 – Wiley & Older
- 1970's -80's – Watanabe
  - Osteochondral #; loose bodies; Labral lesions; Biceps brachii
  - Clarified position of portals

# Shoulder Arthroscopy

- Arthroscopic Subacromion decompression
- Arthroscopic Acropmioplasty
- Arthroscopic Rotaor cuff Surgery
  - one row
  - double row
- Capsular Release
- Arthroscopic AC resection arthroplasty
- Arthroscopic AC instability reconstruction



# Shoulder Arthroscopy

## Instability Surgery

- Arthroscopic Bankart repair
- Capsular shift
- Arthroscopic Latarjet procedure
- Rotator interval closure
- Repair of HAGEL lesion
- Repair of SLAP lesion

# Shoulder Arthroscopy

- Suprascapular nerve release
- Brachial plexus nerve release
- Axillary nerve release
- Quadrilateral and triangular space release
  
- Latissimus dorsi transfer for rotator cuff deficiency, irreparable tears

# Basic Instrument



Arthroscope - 30° and 70° scopes

# Basic Instrument



- Arthroscope sheath with matching sharp and blunt trochars
- Punches, Graspers, Seizers, Probes

# The Stack



# Arthroscopy Equipment

## Fluid Management System



# Arthroscopy Equipment- Shaver



# Arthroscopy Equipment

Arthroscopy Electrocautery System -  
Radiofrequency

- **ArthroCare® Coblation**
- **VAPR, Depuy Mitek**





# Instrumentation



# Anchor Sutures

- Metal Anchor Suture
- Bio Anchor Suture
- Knotless Anchor Suture

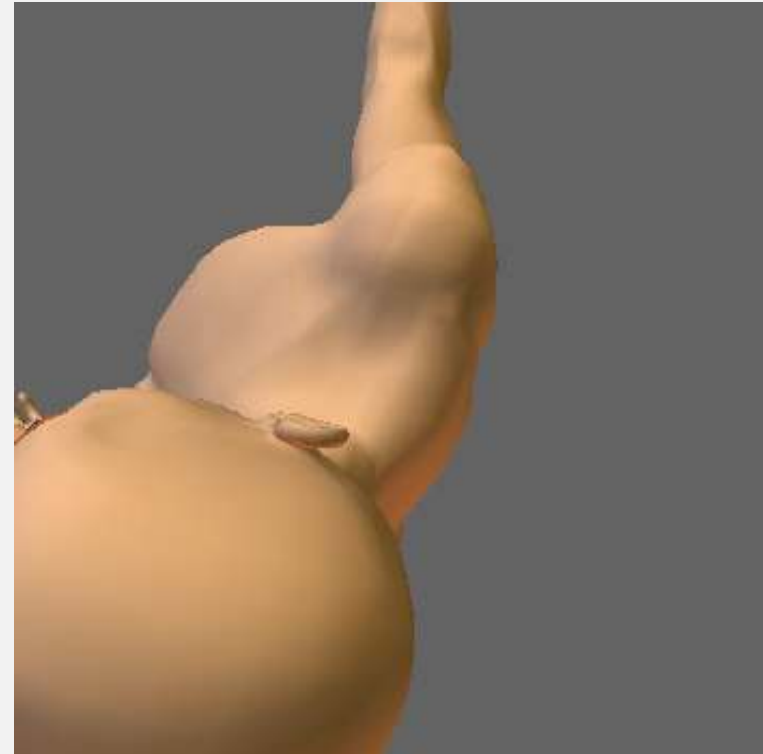


# Lateral Position



## Advantages

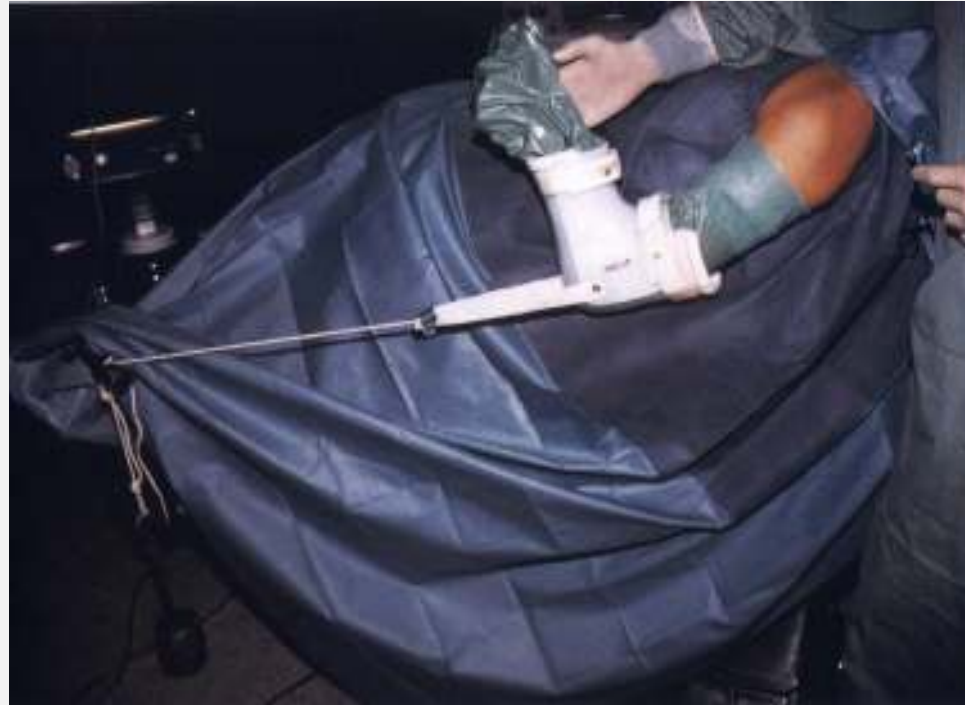
- Comfortable for beginners
- Easy tool switching
- GlenoHumeral Procedures



## Disadvantages

- Difficult Cuff repairs
- To convert to open procedure

# Beach Chair Position



## Advantages

- Gleno-Humeral Procedures
- Easy Cuff Repair
- Easy conversion to Open procedure

## Disadvantages

- Less comfortable for beginners
- Difficult Tool Switching











# Shoulder Arthroscopy portals

- Identify major Subcutaneous Landmarks
- Humeral Head
- Gleno – Humeral Joint
- Localisation of the Joint Plane

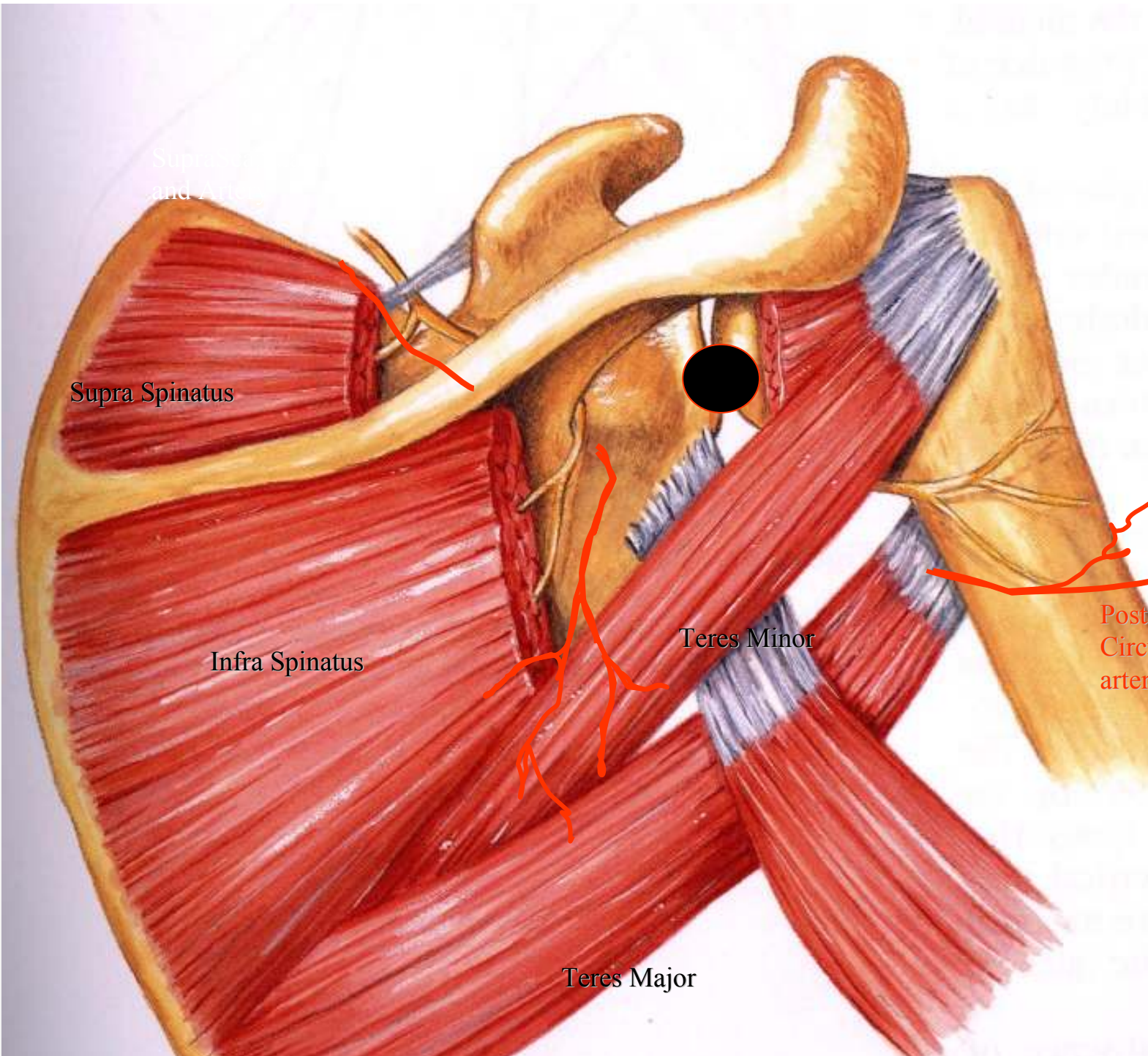




# Posterior Portal

## Posterior Portal – Soft spot

- 2 cm inferior and 2 cm medial to the posterolateral corner of the acromion
- Passage to the posterior one-third of the deltoid and an interval between infraspinatus and teres minor
- Structures at risk
  - Quadrangular space - posterior humeral circumflex artery and axillary nerve
  - Triangular space - scapular circumflex artery
  - Both spaces are 7-8 cm inferior to the posterior border of the acromion



Supra  
and

Supra Spinatus

Infra Spinatus

Teres Minor

Teres Major

Axillary  
Nerve

Posterior  
Circumflex  
artery





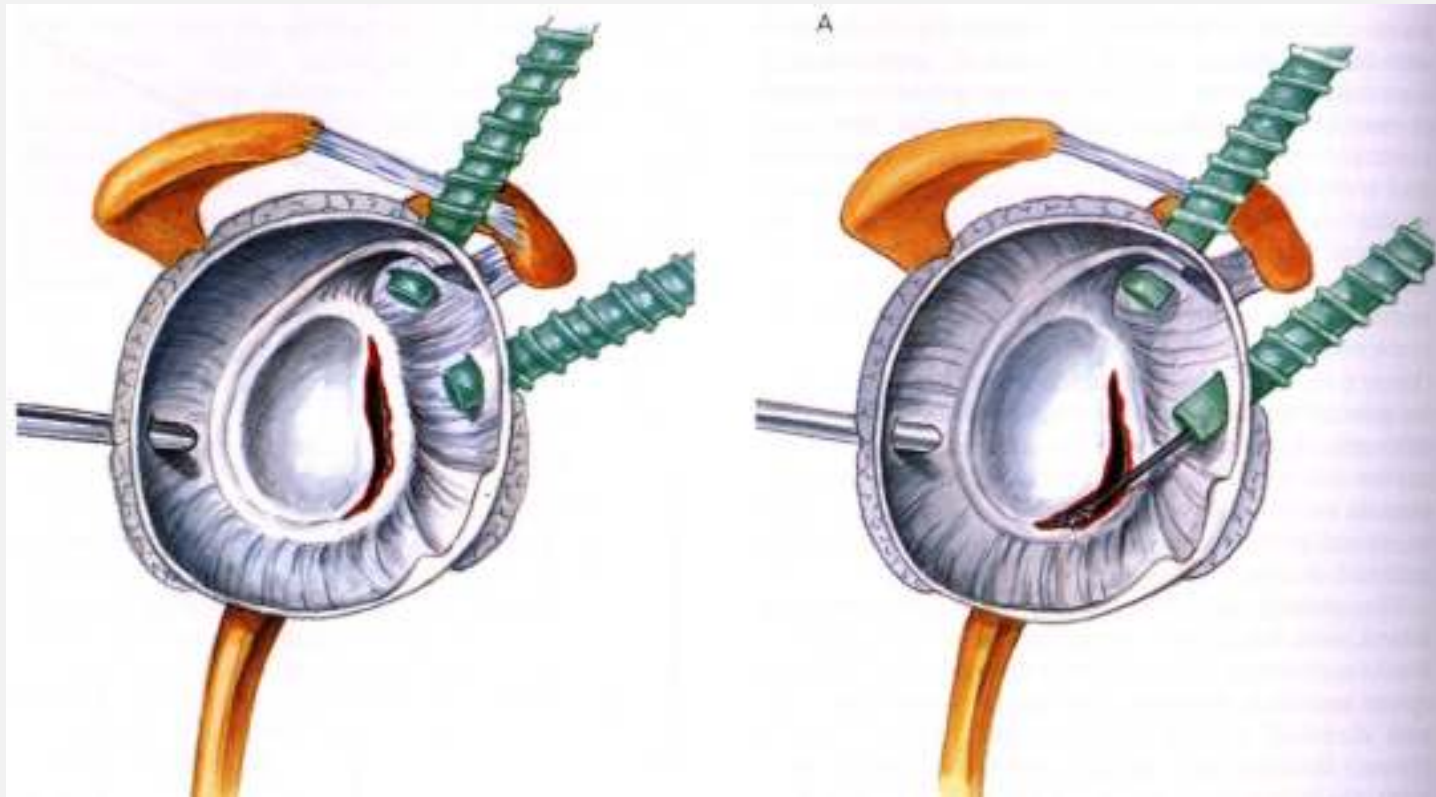


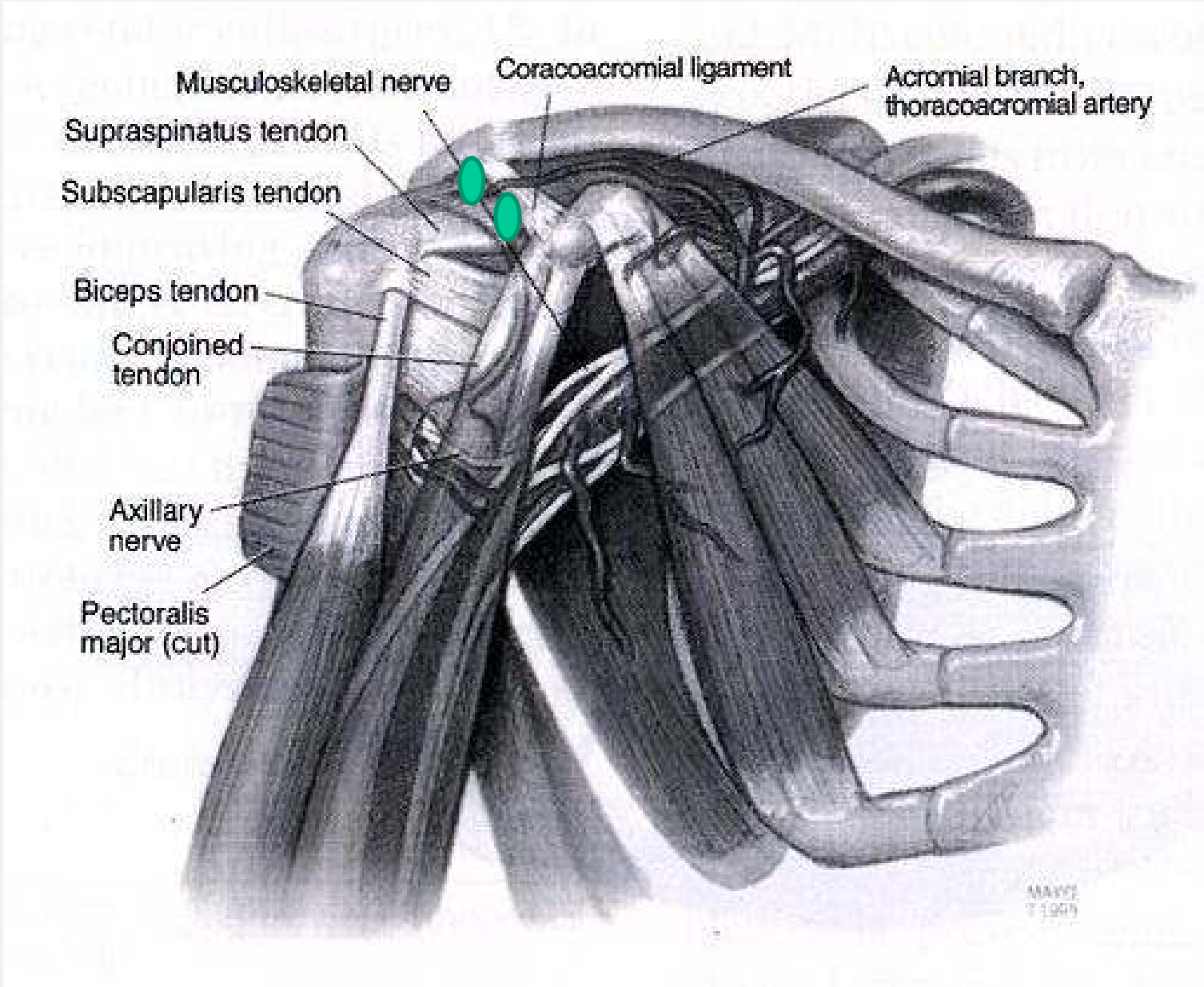
# Anterior Portal – High Anterior

- Located one-half the distance between the coracoid process and the anterolateral edge of the acromion
- Passage through the skin subcutaneous tissue and the anterior one-third of the deltoid
- Structures at risk
  - Musculocutaneous nerve, normally located 3 cm inferior and just medial to the coracoid process

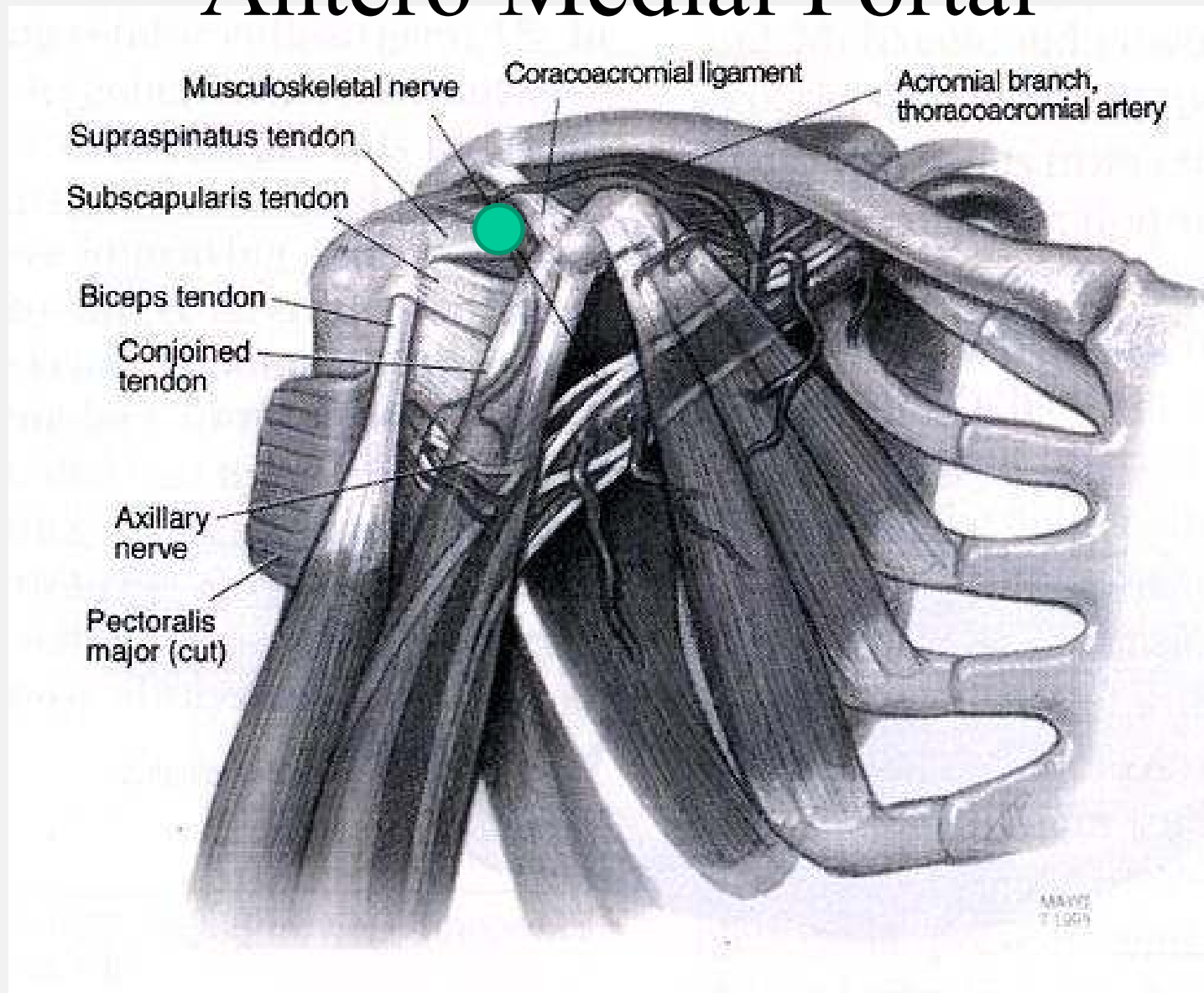


# Portals for Anterior Instability Surgery





# Antero Medial Portal



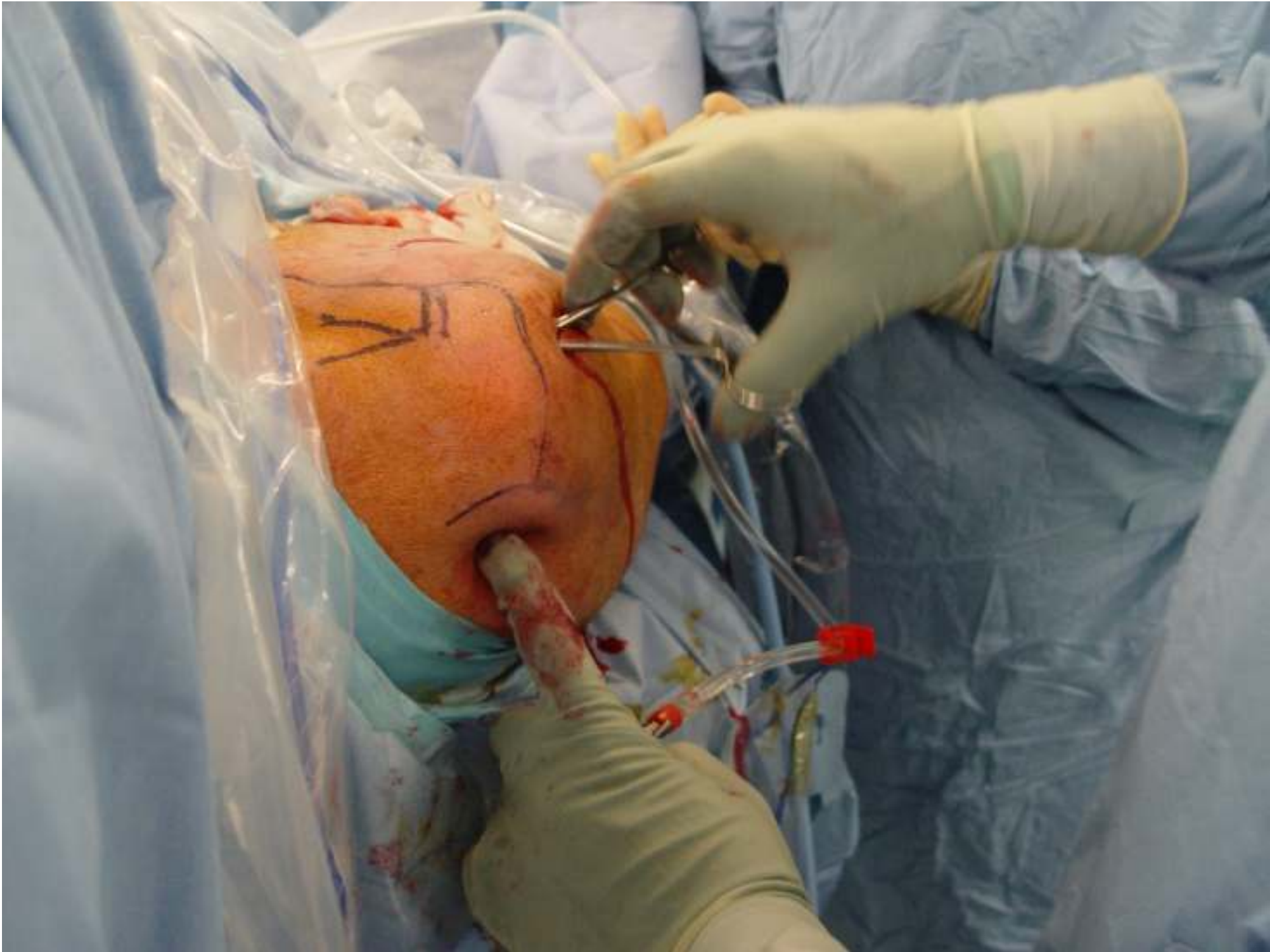


# Lateral Portal

- 2-3 cm distal to the lateral border of the acromion
- Passage through the deltoid muscle
- Structures at risk:
  - Axillary nerve





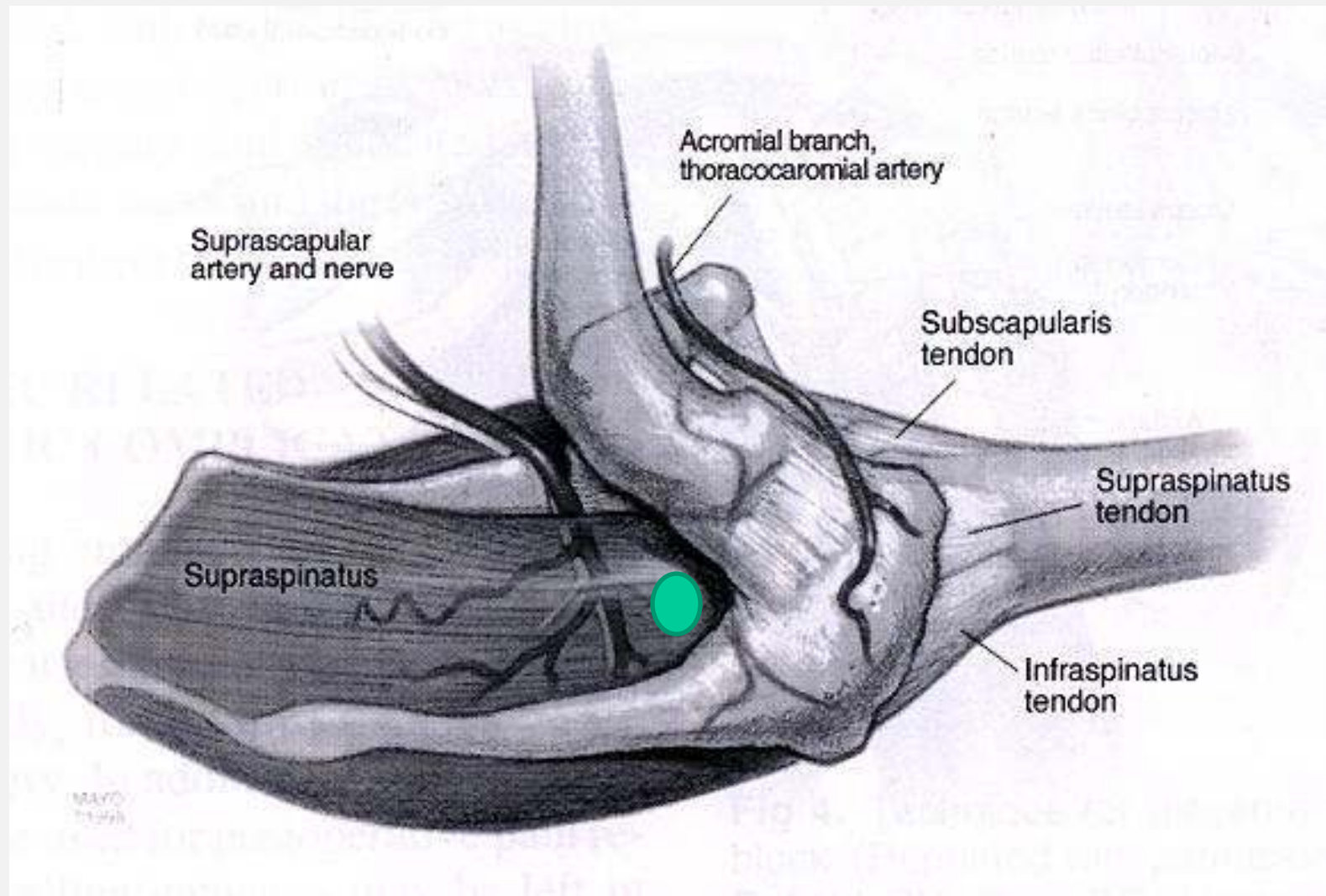


# Supraspinatus fossa portal (of Neviasser)

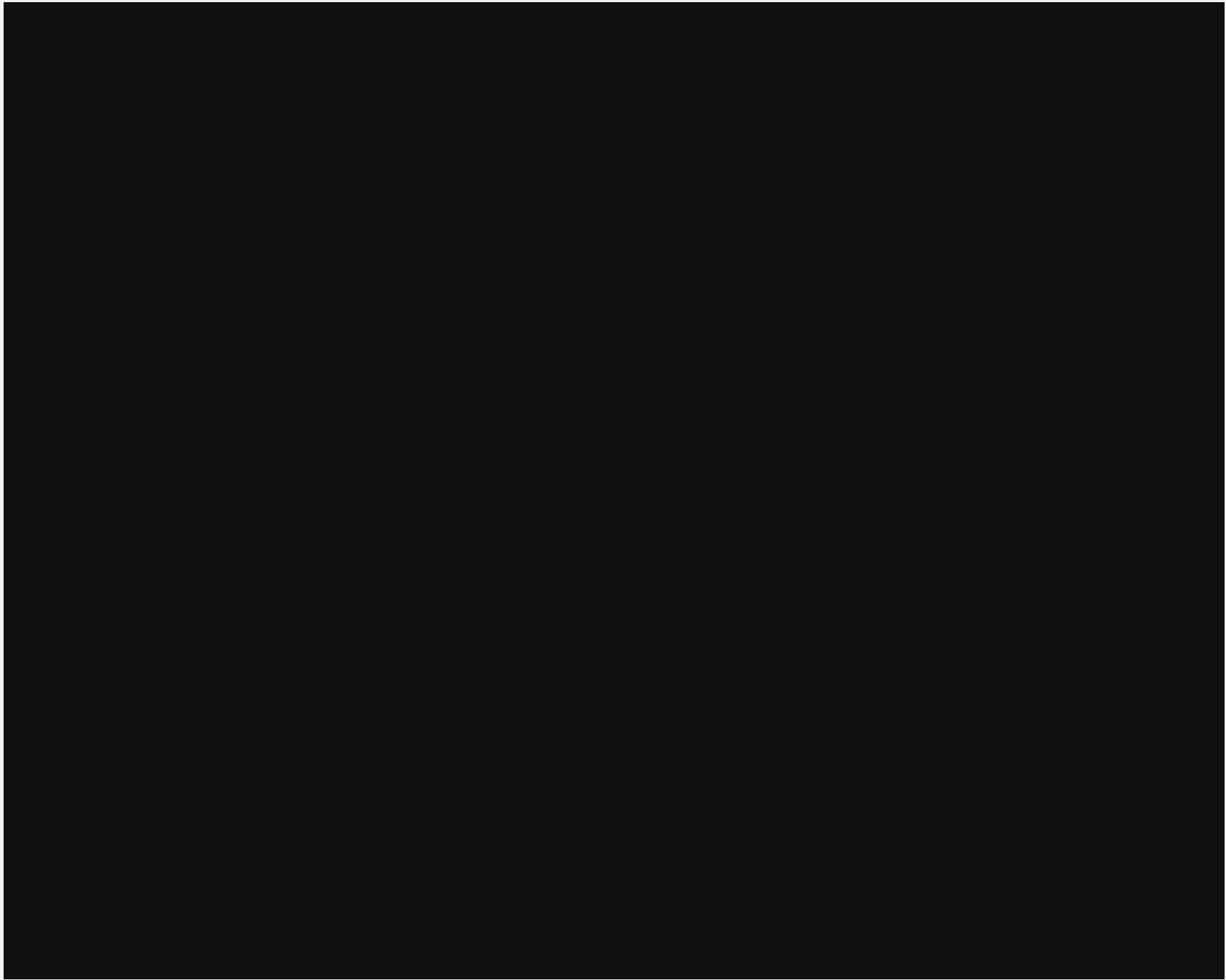
- Soft spot bordered anteriorly by the posterior margin of the clavicle, lateral by the medial border of the acromion, posteriorly by the scapular spine
- Passage through the trapezius and the muscle belly of the supraspinatus
- Structures at risk
  - Suprascapular nerve and artery
  - Located in the fossa approx. 3 cm medial to the portal

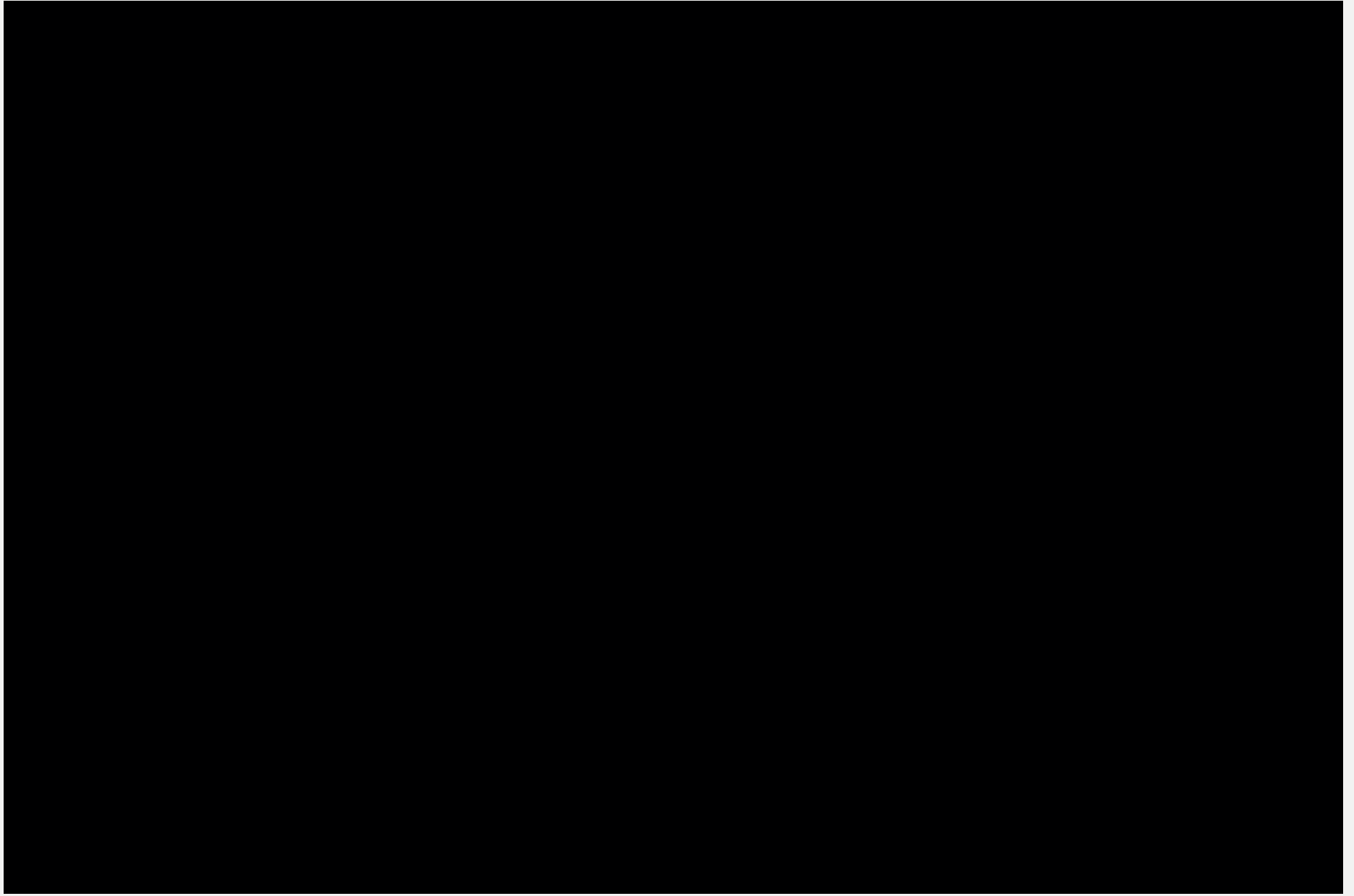
# SLAP Repair

## Cuff Repair

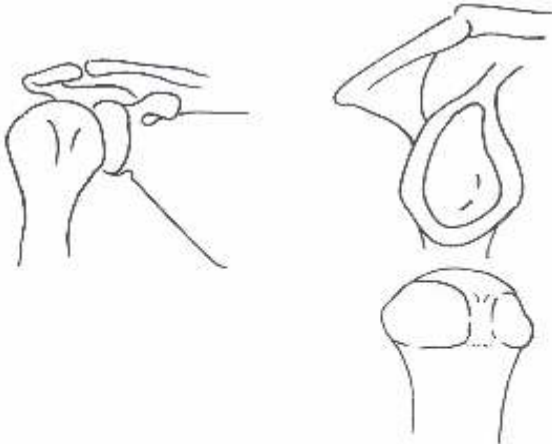








# Documentation

Operation : <input type="text"/>		Op Code : <input type="text"/>		<b>Glenohumeral Joint</b>	
Patient Name <input type="text"/>		Surgeon <input type="text"/>		Labrum <input type="text"/>	
Patient DOB <input type="text"/>		Anaesthetist <input type="text"/>		LHB <input type="text"/>	
Patient Number <input type="text"/>		Assistant <input type="text"/>		Normal <input type="text"/>	
Type of anaesthetic <input type="text"/>		Position <input type="text"/>		Capsule <input type="text"/>	
GA Alone <input type="text"/>		deck chair <input type="text"/>		Normal <input type="text"/>	
Date <input type="text"/>		3 Jan 2010 <input type="text"/>		Rotator Interval <input type="text"/>	
Indication <input type="text"/>				Recess:	
Portals <input type="text"/>		Aux <input type="text"/>		Loose body <input type="text"/>	
Examination		Range of movement <input type="text"/>		No <input type="text"/>	
External Rotation <input type="text"/>		Forward Elevation <input type="text"/>		HAGL <input type="text"/>	
Abduction <input type="text"/>		Anterior instability <input type="text"/>		SGHL/ MGHL/ IGH <input type="text"/>	
		<b>Rotator Cuff</b>			
		Supraspinatus <input type="text"/>		Normal <input type="text"/>	
		Size of tear <input type="text"/>		Shape of tear <input type="text"/>	
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Infraspinatus <input type="text"/>		Normal <input type="text"/>			
Size of tear <input type="text"/>		Shape of tear <input type="text"/>			
n/a <input type="text"/>		n/a <input type="text"/>			
Subscapularis <input type="text"/>		Normal <input type="text"/>			
Size of tear <input type="text"/>		Shape of tear <input type="text"/>			
n/a <input type="text"/>		n/a <input type="text"/>			
<b>DRAWING TOOLBOX</b>				<b>Subacromial Space</b>	
<input checked="" type="radio"/> Spray Can <input type="radio"/> Pencil <input type="radio"/> Anchor suture				Acromium <input type="text"/>	
<input type="button" value="Grade I"/> <input type="button" value="Grade II"/>				Impingement? <input type="text"/>	
<input type="button" value="Grade III"/> <input type="button" value="Grade IV"/>				None <input type="text"/>	
<input type="checkbox"/> Subscapularis <input type="checkbox"/> LHB				<input type="text"/>	
<input type="checkbox"/> Supraspinatus <input type="checkbox"/> Infraspinatus				Supraspinatus - from above <input type="text"/>	
<input type="button" value="Clear drawings"/>				Bursa <input type="text"/>	
				Normal <input type="text"/>	
<b>Closure &amp; Post Op</b>				Acromioclavicular Joint <input type="text"/>	
Closure <input type="text"/>				Normal <input type="text"/>	
Dressings Only <input type="text"/>				Anchors used <input type="text"/>	
OPA <input type="text"/>				No <input type="text"/>	
2 weeks - nurse practitioner for wound <input type="text"/>				Anchors number <input type="text"/>	
Physio <input type="text"/>				n/a <input type="text"/>	
As per protocol <input type="text"/>				Anchors type <input type="text"/>	
				<input type="text"/>	
<b>Suggestions for long term treatment (optional)</b>					
<input type="text"/>					
<input type="checkbox"/> A copy has been sent to the GP <input type="checkbox"/> Photos or video have been taken					

# Complications of Shoulder Arthroscopy

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15. Ellman H. Arthroscopic subacromial decompression: Analysis of one to three year results. *Arthroscopy* 1987;3:173-181.
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# Complications

Small NC (Arthroscopy 1986)

- First report : 5.3% complication rate
- Relatively Safe procedure

**Review Articles – Early 90's**

Bigiliani et al (Orthop Rev. 1991)

Curtis et al (Arthroscopy 1992)

- 6.5 – 7 % complication rate

# Complications

## Review articles – Late 90's

- McFarland (J South Orthop Assoc 1997)
  - Neurologic comp 0-30%
  - Infection rate 0.04-0.23%
- Berjano (Arthroscopy 1998)
  - 179 patients - 9.49% complication rate

# Complications

These reviews have shown that the **Increased complexity** of the procedures performed correlates with **increased complication rates**

# General Complications

- Anaesthesia
  - Airway Compromise embolism
  - Related to Interscalene Blocks
- Infections : 0 - 4%
- DVT

# Complications

- Stiffness – Commonest - 2- 15 %

Contracted / Captured shoulder

Treat - Physiotherapy

– Arthroscopic capsular release

- Fluid Extravasation

– Soft tissue oedema

– Airway compromise

– Skin necrosis

– Neuropraxis

# Complications

- Nerve Injury
  - Secondary to traction or Contusion
  - Avoided by Careful Portal Placement & Arm manipulation
  - Cuff surgery – 1-2%
  - Instability Surgery – 1–8%

# Complications

- Muscle and Tendon Injury
  - Cuff Injuries
  - Deltoid detachment (over aggressive SAD)
  - Rare
- Osseous
  - Isolated cases of acromial #
  - Heterotrophic ossification

# Complications

- Hardware problems
  - Breakage
  - Pullout
  - Lysis
  - Synovitis / Foreign body reaction



# Complications

- Chondrolysis
  - Iatrogenic injury
  - Thermal injury
  - Bupivacaine induced

# Shoulder Arthroscopy

Awareness and understanding of potential complications help make shoulder arthroscopy a reliable and safe technique.

Thank You