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The Shoulder: An Arthroscopic Odyssey #3713  
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Arthroscopic Portals and Visualization  
For Instability and Labral Repairs  
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Introduction

- Variety of useful portal positions for visualization and repair steps
  - It's all about optimizing field of view
- Specific locations and "recommended" measured positions are general reference points
  - Use outline of bony landmarks for further reference
    - Consider marking these on each and every case
  - Exact portal position will vary based on body habitus
  - Exact portal position may vary based on pathology being addressed
- Portal Incisions
  - Size to accommodate cannula
    - Larger than needed will allow for fluid more extravasation
  - Consider incisions in Langer's lines
    - They all turn into circles, anyway
    - Use #11 blades
  - Consider local with epinephrine injection at portal locations
- Beach chair vs. Lateral decubitus
  - Lateral decubitus portals are usually more lateral and distal on the skin
    - Avoid tendency to place portals too medial when in lateral decubitus
- Glenohumeral Joint (GHJ) entry
  - Consider fluid distension of GHJ
    - Injecting 40-60 ml of saline from posterior
    - Separates glenoid and humeral articular surfaces
      - Decreases risk for skiving/damaging articular surfaces
    - Confirms entry into glenohumeral joint with backflow of fluid
  - Recommend blunt tipped trocars
- Outside-in vs. Inside-out portal placement
  - Outside-in localization with spinal needle preferred by me
  - Inside-out limited to anterior portal placement with Wissinger rod
    - Overall, less precise portal placement

### Posterior Portal

- All cases start here, the standard
  - From posterolateral corner of acromion, approximately:
    - Beach chair: 2 cm inferior and 1-2 cm medial
    - Lateral decubitus: 3 cm inferior
  - Passes thru “soft spot” between infraspinatus and teres minor
  - Palpate the coracoid process tip and aim for this point to enter GHJ
  - Blunt tip of trocar can be used to help feel for the humeral head and joint line
    - Manually distract the surfaces if having difficulty identifying joint line
  - Controlled entry through posterior capsule to avoid plunging
    - Plan for resistance, though usually limited in instability cases
  - Lateral to joint line is optimal
- Begin diagnostic arthroscopy
  - Assess for placement of additional portals
- Can be used as working portal if its location provides appropriate access

### Anterior Instability

- Two cannulas will occupy space in the rotator interval triangle
  - Anterior superior and anterior inferior portals are most commonly used
    - Neuro structures when lateral to coracoid and superior to subscapularis
    - Insure ~2 cm of skin between cannulas
      - Helps to reduce crowding of cannulas inside
  - Standard anterior portal centrally placed in triangle will not suffice
  - Posterior portals for viewing, anterior portals for working
  - Use anterior superior portal for viewing
    - Assess preparation of glenoid rim, or approach to anterior inferior capsule
    - Also used for viewing when posterior inferior plication stitch planned
- Anterior superior portal (aka, superoanterior, anterosuperior, anterior superior lateral)
  - Used for initial tissue preparation and suture management when scope posterior
    - When used for viewing, posterior portal can be for suture management
    - Should be utilized every case, at least to take a look, to confirm
  - Anterior lateral to acromion and just anterior to supraspinatus, often just above biceps
    - Often at, or just lateral to, anterolateral corner of acromion
      - More lateral entry will allow more space for anterior inferior cannula
        - Easier to place lateral with more laxity/instability present
        - Try slightly more superior with more laxity/instability present
      - Avoids CA ligament
      - Can be used for rotator interval closure, if lateral enough
      - Medial placement decreases access to anterior glenoid rim
    - Cannula is positioned anterior to biceps
  - Also available for superior labral approaches

- Can be posterior to biceps
  - Take care not to have sutures for repair on both sides of tendon
- Smaller cannula used, 5.5 - 7 mm
- Anterior inferior portal (aka, low anterior, anteroinferior, anterior midlateral, anterior midglenoid)
  - Used for tissue preparation, anchor or suture placement, and knot tying
    - Establish initially, or when needed to complete preparation and begin repair
    - Must allow for access to glenoid rim for most inferior anchor for Bankart
      - Approach angle is inferior and medial
    - Must allow for instrument to capture inferior capsule for plication
    - Access inferiorly can be facilitated with lateral distraction of arm
  - Lateral to coracoid process, at or just inferior (depending upon subscapularis)
    - Enters GHJ at superior rolled edge of subscapularis
    - ~1 cm lateral to glenoid surface
      - If too lateral, instruments could skive off rim medially to NV structures
    - Maintain cannula lateral to MGHL
    - Cannula often depresses superior edge of subscapularis slightly
  - Larger cannula used, 7 - 9 mm
    - Screw-in preferred
- Anterior inferior 5 o'clock portal
  - Trans-subscapularis, upper portion
  - Lateral and inferior to level of coracoid process
    - ~2cm from musculocutaneous and axillary nerves
    - ~1cm from cephalic vein
  - Alternate approach to access anterior inferior glenoid rim
- Anterior inferior 5:30 o'clock portal
  - Trans-subscapularis, lower portion
  - In axillary fold, 8-10 cm distal to coracoid process, lateral to deltopectoral groove
    - ~1.4 cm from circumflex artery
    - ~2.4 cm from axillary nerve
  - Alternate approach to access inferior anterior glenoid rim, including fractures

#### Posterior Instability

- Single posterior portal approach
  - Posterior inferior portal (aka, accessory posterior)
    - Lateral and distal to standard posterior portal (~1-2 cm)
    - Spinal needle used for localization
      - Insure medial approach to rim when anchor placement planned
        - Remember - less bone at posterior rim c/w anterior rim
      - Insure inferior approach to axillary pouch for capturing capsule
    - Principal working portal
      - Large screw-in cannula, easier placement with cannulated trocar

- Anterior superior portal
  - Principal viewing portal
- Anterior inferior portal
  - Suture management portal
  - Can be used for viewing
- Double posterior portal approach
  - Standard posterior portal
    - Could be slightly lateral to standard portal position
      - Will be angled toward glenoid, not even with glenoid
    - Suture management portal, though can be working portal higher up rim
  - Posterior inferior portal
    - Lateral and distal to standard posterior portal (~1-2 cm)
    - Spinal needle used for localization under direct visualization
      - Insure medial approach to rim when anchor placement planned
      - Insure inferior approach to axillary pouch for capturing capsule
    - Principal working portal
      - Large screw-in cannula, easier placement with cannulated trocar
    - Has been reported in thermal applications
  - This approach may have advantages when progressing up posterior glenoid rim

#### Rotator Interval

- Often approached as part of other instability repair
  - Keep in mind when placing those initial portals
  - Requires access to middle glenohumeral ligament and anterior superior capsule
- Anterior superior portal
  - Medial to lateral plication
  - Inside suture tying, blind tying or tying in subacromial space
- Anterior inferior portal
  - Accessory use of spinal needles to capture superior capsular tissue
  - Subacromial or blind suture tying

#### SLAP Repairs

- Anatomy
  - Glenoid size variation
    - Male > female
  - Angle of anchor approach for optimal fixation
    - 45° suggested
    - 30° (with articular surface 0°) recommended based on anatomic study
      - Anchor more likely centered in available bone stock

- Posterior tears
  - Best repaired with Portal of Wilmington (aka, posterolateral, posterolateral acromial)
    - ~1cm anterior and 1cm lateral from posterolateral corner of acromion
    - Varies based on angle of approach
      - Localize with spinal needle
  - “Trans-cuff” vs. trans-muscle
    - Usually penetrates infraspinatus medially to tendinous portion
    - Often left unrepaired
  - Optimizes angle for anchor insertion into available bone posterior superior
  - Anterior portal
    - Used for suture passage and management
    - Can be as low in rotator interval as anterior inferior portal
      - Especially, if anterior superior lateral portal used
      - Also, if Bankart repair performed
  - Posterior portal used for visualization
- Anterior tears
  - Approach from anterior superior lateral portal for anchor placement
  - Work around biceps tendon
    - Angle may not be as ideal, though adequate
  - Anterior inferior portal placement similar to position in anterior instability noted above
  - Posterior portal used for visualization

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