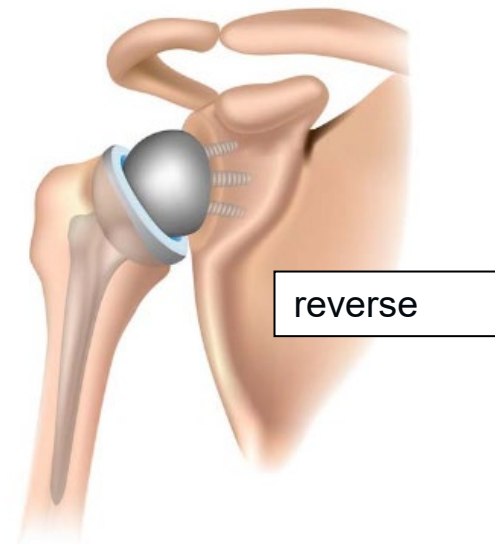
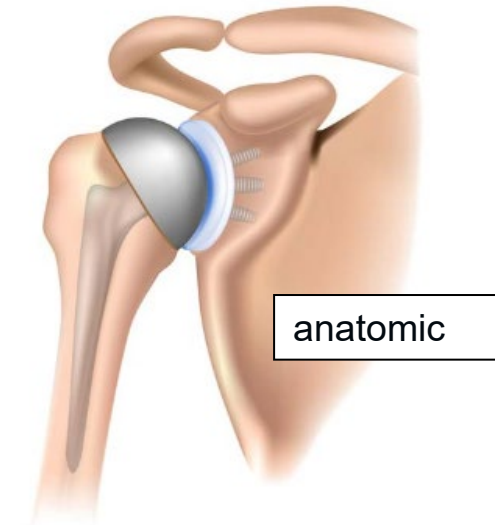


Total Shoulder Arthroplasty using Subscapularis- Sparing Technique

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Total Shoulder Arthroplasty Basics

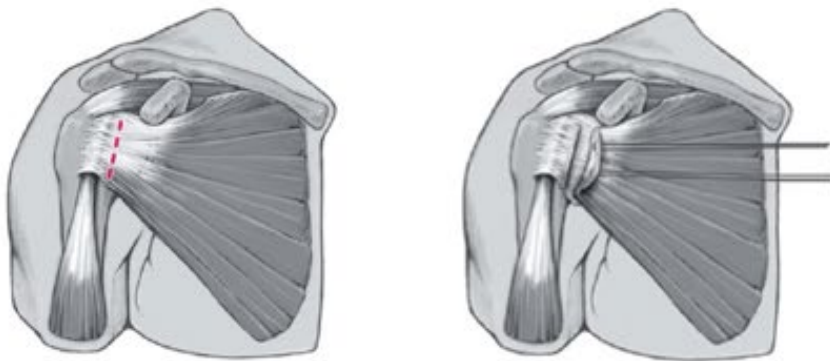
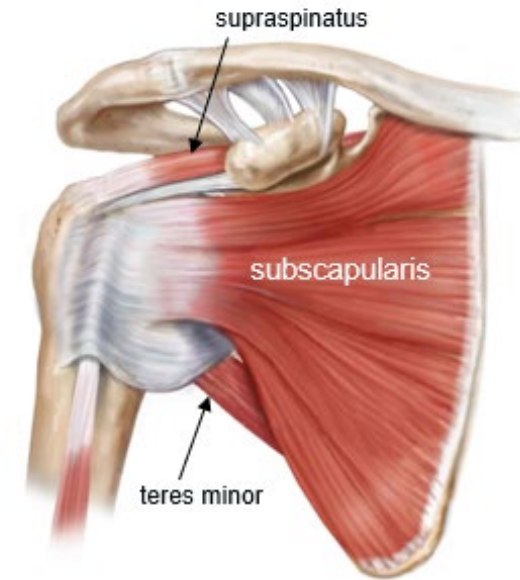
- Total shoulder arthroplasty is most commonly performed for severe arthritis (osteoarthritis, rheumatoid, posttraumatic) and osteonecrosis
- The procedure replaces both surfaces of the joint:
 - ✓ the humeral head is removed and replaced with a metal implant
 - ✓ the glenoid surface is prepared and replaced with a shallow implant, typically polyethylene/plastic
- The implants may be placed anatomic or reverse
- Over 100,000 shoulder joint replacements are performed each year in the US



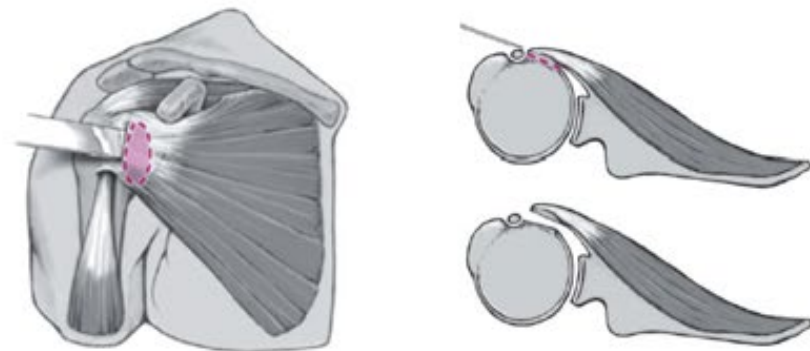
Disruption of Rotator Cuff

In anatomic total shoulder arthroplasty, the rotator cuff is surgically divided:

- To visualize and access the glenohumeral joint, the subscapularis muscle must be detached from the humerus
- After implant placement, the subscapularis muscle is repaired or reattached



tenotomy with mobilization of subscapularis muscle



osteotomy of lesser tuberosity of humerus

Challenges with Anatomic TSA

Patient recovery

- Subscapularis disruption is a key factor in lengthy patient recovery:
 - ✓ sling immobilization for 4-6 weeks
 - ✓ ROM and lifting restrictions for 6-12 weeks

Risk of long term subscapularis dysfunction

- Up to 47% of conventional shoulder arthroplasties are complicated by postoperative subscapularis dysfunction, including:
 - ✓ severe pain and decreased ROM
 - ✓ fatty infiltration of the subscapularis muscle with weakness
 - ✓ potential for revision surgery

Subscapularis-Sparing TSA

- In this technique for total shoulder arthroplasty, the rotator cuff is not disrupted
- Rather than being detached, the subscapularis is spared (preserved) either partly or completely
- Preserving the subscapularis significantly limits visualization and access to the glenohumeral joint
- The surgeon must use specialized techniques to access the joint spaces, deploy instruments and tools, and place the implants

Rather than completely exposing the glenohumeral joint, most or all of the surgical work is performed via intervals

Intervals

- Intervals are anatomic spaces found between muscles, tendons, and bones
- Three intervals are essential to supraspinatus-sparing total shoulder arthroplasty:

Deltopectoral interval

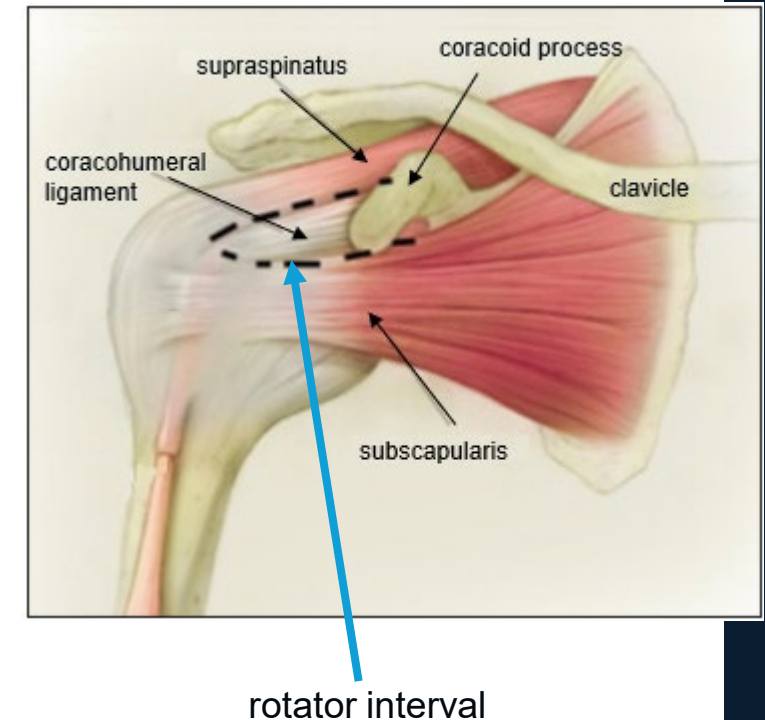
- ✓ between the deltoid and pectoralis muscles

Inferior window

- ✓ beneath and under the subscapularis lower edge

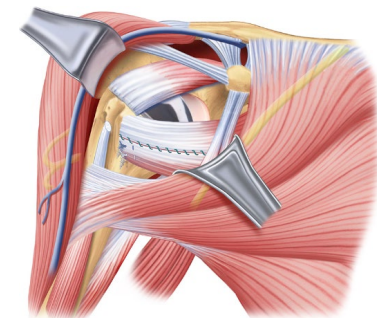
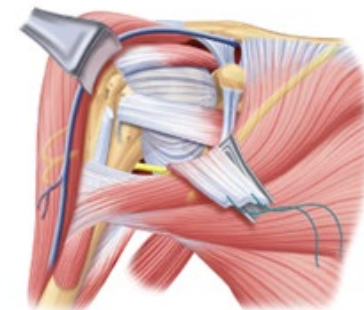
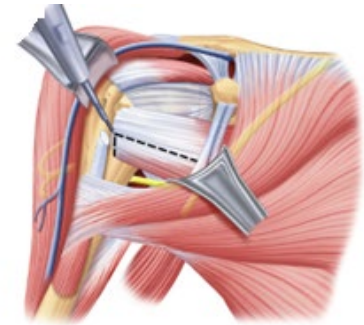
Rotator interval (superior window)

- ✓ between the subscapularis and the supraspinatus



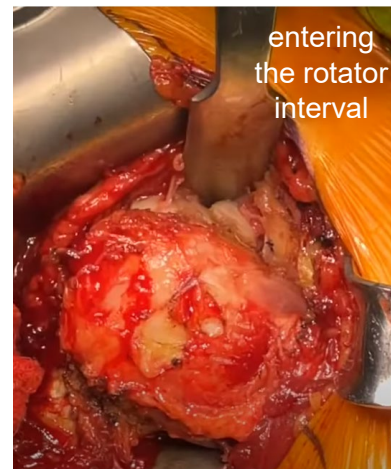
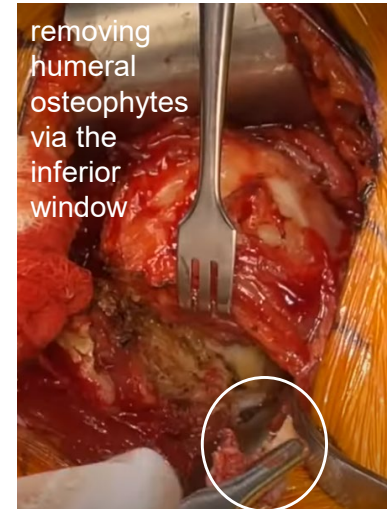
Subscapularis-Sparing Procedure: Partial

- The subscapularis is approached via the deltopectoral interval
- The lower subscapularis is incised and flipped back, while the upper portion with most strength and function is left intact
- With additional manipulation, the humeral head is exposed and reached via the inferior window to remove osteophytes
- The humeral head is removed and the implant is sized
- The intact portion of the subscapularis is retracted to expose the glenoid, the surface is prepared, and the implant placed
- The humeral implant is placed
- The lower subscapularis flap is returned to its place and reattached



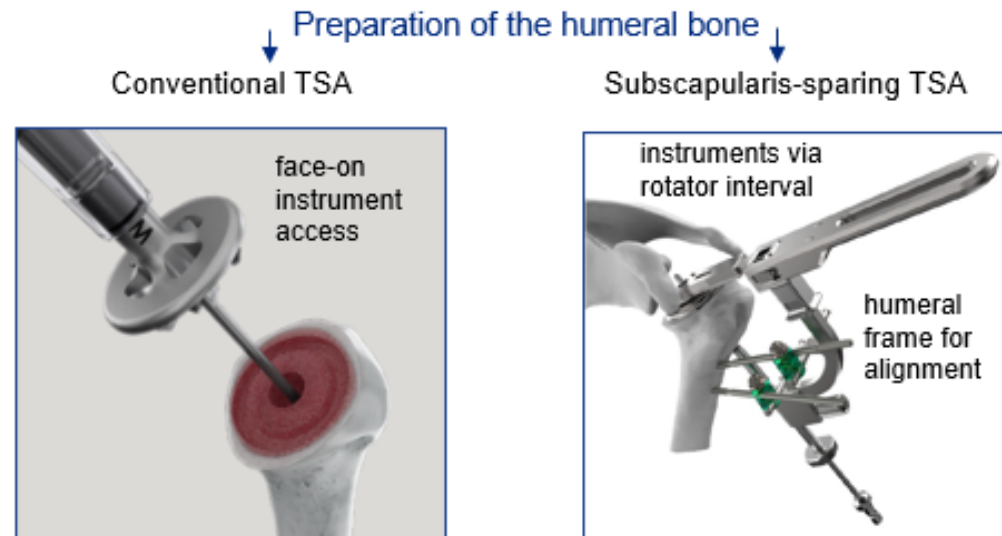
Subscapularis-Sparing Procedure: Full

- The subscapularis is reached via the deltopectoral interval
- The inferior window is accessed by retracting the subscapularis to visualize the humeral head, and osteophytes are removed
- The rotator interval is entered and is used to perform most of the procedure
- A saw is used to remove the humeral head, which also allows the glenoid to be visualized and accessed
- After sizing, the glenoid is reamed and the implant is cemented and impacted into place
- With subscapularis retraction and arm rotation for visualization, the humeral implant is sized and the surface is prepared
- The implant stem or base is impacted into place and the humeral head is attached



Other Procedural Points

- The subscapularis-sparing technique can be used for both anatomic and reverse total shoulder arthroplasty
- Although working through intervals is less invasive, subscapularis-sparing total shoulder arthroplasty is performed via open approach
- The subscapularis-sparing technique is used for initial total shoulder arthroplasty, but is not used in removal or revision procedures
- Specialized surgical tools unique to subscapularis-sparing total shoulder arthroplasty are in development



Documentation

- Procedure reports typically document “subscapularis-sparing” or “tissue-sparing” total shoulder arthroplasty
- Other terms may include:
 - ✓ **Savoie** or **modified Savoie** technique for partial subscapularis-sparing
 - ✓ **SWAT** (subscapularis-sparing windowed anterior technique) for full subscapularis-sparing
 - ✓ Use of **INHANCE Intact** tissue-sparing instruments for full subscapularis-sparing

Outcomes

The subscapularis-sparing technique differs substantially from the conventional total shoulder replacement technique, both in how the procedure is performed and in its outcomes:

- Patient recovery is accelerated, with little to no need for sling immobilization and far shorter ROM and lifting limitations
- Postoperative subscapularis dysfunction, a common complication of the conventional procedure, may be substantially reduced
- Strength and range of motion are preserved, reducing instability and the need for revision procedures

Total Shoulder Arthroplasty using Subscapularis- Sparing Technique

Clinical Questions?