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Anatomic Total Shoulder Arthroplasty (TSA) Protocol

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Critical Precautions: The Subscapularis Rule

The subscapularis muscle is detached and repaired during surgery. To protect this repair, the following restrictions apply for the first **6 weeks**:

- **No Resisted Internal Rotation:** No pushing off with the operative arm or pulling against resistance.
- **No Excessive External Rotation:** Do not exceed the range specified in Phase I.
- **No Extension:** Do not allow the elbow to travel behind the plane of the body.

Phase I: Immediate Post-Operative / Protection (Weeks 0–4)

Goals: Protect the subscapularis and prosthetic interface; initiate passive mobility.

- **Sling Use:** Continuous wear (including sleep) for weeks 0–4. Remove only for hygiene and exercise.
- **Range of Motion (Passive Only):**
    - **Passive Forward Elevation (Supine):** Goal of 120 degrees by week 4.
    - **Passive External Rotation (Scapular Plane):** Limit to 30 degrees to protect the subscapularis repair.
    - **Passive Internal Rotation:** Limit to the waistline (do not stretch).
- **Exercises:**
    - **Distal AROM:** Active wrist, hand, and elbow motion (no weights).
    - **Pendulums:** Gentle circular motion out of the sling 3 to 4 times daily.
    - **Towel Roll:** When lying supine, place a towel under the elbow to prevent shoulder extension beyond neutral.

Phase II: Early Active / Transition Phase (Weeks 4–8)

Goals: Discontinue sling and initiate active-assisted and active movement.

- **Sling: Discontinue at the start of Week 4** for light daily activities at waist level.
- **Motion Progression:**
    - **Active-Assisted ROM (AAROM):** Begin using a wand or cane for forward elevation and external rotation.
    - **Active ROM (AROM):** Begin supine active forward elevation. Progress to standing active motion as strength allows.
    - **External Rotation Goal:** Gradually increase to 45 degrees by week 8.
- **Strengthening:**
    - **Scapular Stabilization:** Rows, shrugs, and retractions with light resistance.
    - **Rotator Cuff Isometrics:** Submaximal, pain-free isometrics for Internal Rotation (Week 6+), External Rotation, and Abduction.

Phase III: Initial Strengthening (Weeks 8–12)

Goals: Restore functional strength and endurance; achieve near-full AROM.

- **Criteria to Start:** Full passive ROM achieved; pain levels stable.
- **Motion Progression:**
    - Achieve full Active Forward Elevation (goal of 140 to 160 degrees).
    - Initiate gentle internal rotation stretching behind the back (reaching for the spine).
- **Strengthening (Isotonic):**
    - **Resistance Bands:** Progress from yellow to red bands for Internal and External Rotation.
    - **Towel Roll ER:** Perform external rotation with a towel roll under the arm to improve infraspinatus recruitment.
    - **Core Integration:** Incorporate weight-shifting and balance exercises to support the shoulder girdle.

Phase IV: Advanced Strengthening & Functional Return (Weeks 12–16+)

Goals: Maximize strength and return to recreational activities (Golf, Tennis, Swimming).

- **Advanced Loading:**
    - **Dynamic Exercises:** PNF (diagonal) patterns with resistance.
    - **Closed-Chain Exercises:** Progress from wall push-ups to table-top "push-up plus" to engage the serratus anterior.
- **Recreational Guidelines:**
    - **Golf:** Putting/Chipping at week 12; Full swing at week 16 to 20.
    - **Tennis:** Doubles tennis at 4 to 6 months.
- **Discharge Criteria:**
    - Pain-free AROM consistent with the patient's underlying pathology.
    - Strength at 80 to 90 percent of the uninvolved side.

Evidence-Based Clinical Pearls

1. **Avoid Pulleys in Phase I:** Modern research suggests that pulleys can lead to inadvertent active muscle guarding. Strict therapist-led or wand-assisted motion is preferred.
2. **The Subscapularis Fail:** Most failures in anatomic TSA occur at the subscapularis repair. If the patient has sudden weakness in internal rotation or increased anterior pain, notify the surgeon.
3. **Posterior Capsule Tightness:** If the patient struggles to reach behind their back in Phase III, emphasize the "Sleeper Stretch" or cross-body adduction to address posterior capsule restrictions.