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TOTAL SHOULDER ARTHROPLASTY with LESSER TUBEROSITY OSTEOTOMY

**Adjunctive exercises

ROM Goals	PFE	PER at 20° abd	PER at 90° abd	AFE
POW 1	140°	40	NA	NA
POW 3	160°	60°	60	NA
POW 6	180°	WNL°	90	140°
POW 9	WNL	WNL	WNL	WNL

Phase I (Protective Phase)

Goals: Maintain stable prosthesis
 Minimize pain and inflammatory response
 Achieve staged ROM goals
 Establish stable scapula
 Initiate pain free rotator cuff and deltoid strengthening

Days 1 to 3

- i. Elbow, wrist and hand AROM (EWH)
- ii. Supine passive forward elevation in plane of scapula (PFE) to tolerance
 1. **10-20 reps, 2 x day**
 2. Supine PFE by family member or using opposite arm
- iii. Supine passive external rotation (PE) to tolerance
 1. T-stick in 0-20° flexion and 20° abduction
 2. 5-10 reps, 2x day
- iv. Codman's pendulum exercises
- v. C-spine AROM
- vi. Ice
- vii. **Positioning full time in sling**
- viii. Cautions:
 1. Assure normal neurovascular status
 2. No lifting of involved arm
 3. Shoulder extension is limited. Elbow not to go behind midline of body
 4. Protect the subscapularis repair

Weeks 1 to 4

- i. Continue EWH
- ii. Shoulder shrugs and retractions (no weight)
- iii. **PFE for the first 4 weeks**
 1. **Do not start AROM until 4 weeks**
- iv. Continue T-bar PER at 20° abduction

- v. Isometrics, keeping elbow flexed to 90° (sub maximal, pain free)
- vi. **Manual scapula strengthening
- vii. **Pain control modalities PRN / Polar Care
- viii. **Aquatics PROM, AROM activities (pain free)
- ix. Complications/Cautions:
 - 1. If pain level is not dissipating, decrease intensity and volume of exercises
 - 2. Continue to limit shoulder extension past midline of body
 - 3. Protect the subscapularis

Weeks 4 to 6

- i. Heat/Ice PRN to help obtain motion
- ii. **D/C sling as comfortable at week 4 and start AFE**
- iii. Achieve staged PROM goals in FE
- iv. Achieve staged PROM goals in ER at 20° abduction
- v. Theraband scapula retractions
- vi. Progressive serratus anterior strengthening (isolated)
- vii. **AAFE (pulleys)**
- viii. Continue isometric abduction
- ix. **Pain control modalities PRN
- x. **Trunk stabilization/strengthening
- xi. Cautions:
 - 1. Do not initiate dynamic rotator cuff strengthening
 - 2. Assure normal scapulohumeral rhythm with AAFE
 - 3. Protect the subscapularis

Phase II (Progressive Strengthening)

Goals: Maintain stability of prosthesis
 Achieve staged ROM goals
 Eliminate shoulder pain
 Improve strength, endurance and power

Weeks 6 to 9

- i. Theraband ER strengthening (pain free, elbow by side) week 7 or after. Very light with high repetitions. **No IR strengthening until 12 weeks.**
- ii. Continue self stretching all planes to obtain PROM WFL
- iii. Advance scapula strengthening
- iv. **Mobilizations PRN
- v. **Aquatics
- vi. **Trunk stabilization/strengthening
- vii. Cautions:
 - 1. Strengthening program should progress only without signs of increasing inflammation
 - 2. Strengthening program should emphasize high repetitions, very light resistance and should be performed a maximum of 2 x day

Weeks 9 to 12

- i. Continue stretches PRN for PROM WFL

- ii. Advance theraband strengthening of cuff and scapula below shoulder level
 - 1. May begin IR strengthening at 12 weeks
- iii. Initiate isotonic dumbbell exercises for deltoid, supraspinatus
 - 1. Up to 2 lbs max (once nearly full AFE achieved)
- iv. **Mobilizations PRN
- v. **Trunk stabilization/strengthening
- vi. Cautions:

Phase III (Return to activity/Advanced conditioning)

Goals: Maintain stability of prosthesis
 Normalize strength, endurance and power for age
 Return to full ADL's and recreational activities

Months 3 to 6

- i. Begin IR strengthening
- ii. Light PFN or manual resistance for cuff/deltoid/scapula
 (rhythmic stabilization or slow reversal hold) in pain free and comfortable range
- iii. Stretching PRN
- iv. Continue deltoid/cuff/scapula strengthening with the following progressions *if needed*:
 - 1. Decreasing amounts of external stabilization provided to shoulder girdle
 - 2. Integrate functional patterns
 - 3. Increase speed of movements
 - 4. Integrate kinesthetic awareness drills into strengthening activities
 - 5. Decrease in rest time to improve endurance
 - 6. Transition to maintenance deltoid/cuff/scapula strengthening program
 - 7. Once met D/C strength criteria
 - 8. Upon obtaining 85% of normal active ROM and MMT of a least 4/5 for rotator cuff and deltoid, modified sports activities are allowed (short irons and putting for golf, and ground strokes in tennis)

Discharge/Return to sport criteria

- 1. PROM WFL for ADL's/work/sports
- 2. MMT 5/5 shoulder girdle
- 3. Successful return to functional activities