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Arthroscopic Anterior Plication Protocol

Use this protocol for the overhead athlete in which ROM may need to be progressed more quickly or more conservatively for cases in which there is history of multiple dislocation, macrolaxity, or AMBRI. The range of motion is dependent upon joint laxity/capsular end-feel.

I. Phase I – Immediate Postoperative Phase “Restrictive Motion”

- Goals:** Protect the anatomic repair
Prevent negative effects of immobilization
Promote dynamic stability
Diminish Pain and inflammation

ROM LIMITS SHOULD BE ADJUSTED ACCORDING TO PATIENT RESPONSE AND END FEEL. IF THE PATIENT CONSISTENTLY HAS AN EMPTY END FEEL (MAY HAVE HISTORY OF EXTREME LAXITY), SLOW THE PROTOCOL LIMITS DOWN BY 1 TO 2 WEEKS. IF THE PATIENT IS TIGHT, HAS DIFFICULTY OBTAINING PROTOCOL ROM LIMITS, AND HAS A CAPSULAR END FEEL, EMPHASIZE STRETCHING TO ROM ALLOWED BY PROTOCOL, AND ADD CAPSULAR MOBILIZATIONS IN THE DIRECTION NEEDED.

Patient education: Do not get stitches wet. Do not try to actively move/raise arm outside the limits your physical therapist instructs you in so that you do not stretch out your repair. Use sling. Bend over to let arm hang to bathe under arm, get shirt on. Do not use arm for activities of daily living or carrying objects. Use ice at home 3-4 times/day. When lying down, place a pillow or towel under upper arm to increase comfort. May be more comfortable in a recliner chair the first week. Stitches out approximately 7 days. May start recumbent bike in sling after 2 weeks – no jogging or any activity that will cause movement/jolt arm until 8 weeks post-op. If SLAP repair – no active shoulder motion for 4 weeks, and no bicep work for 7 weeks.

Week 0-2 (days 1-14)

- Sling for 3 weeks during day
- Sleep in immobilizer for 4 weeks
- Elbow/hand AROM – (Elbow ROM palm down assisted by other hand if there is also a SLAP repair)
- Hand gripping exercises
- Shoulder shrugs/squeezes – with only scapula movement not arm
- cervical ROM, lateral flexion
- Passive and gentle active assistive ROM exercise

- Flexion and elevation in the scapular plane (scaption) to 70 degrees week 1, 90° week 2
- ER/IR with arm in 20-30 degrees of abduction
- ER to 10 degrees
- IR to tolerance
- Submaximal isometrics for shoulder musculature – shoulder in neutral, elbow flexed do not pass plane of body (place a towel roll between arm and body)
- Cryotherapy, modalities as indicated – for electrical stimulation – take to sensory only, no muscle contraction

Week 2 add:

- Rhythmic stabilization ER/IR with arm supported on a towel roll, elbow bent
- Pulley to 90° flexion/scaption
- Scapular PNF – hand contacts on scapula- depression, elevation, protraction, retraction
- Table top exercises: scapular patterns - may use a ball – elevation/depression, protraction, retraction, weight shifts

Week 3-4 (days 15-28)

- Discontinue use of sling during the day after 3 weeks completed. Discontinue sling for sleeping after 4 weeks complete.
- May use immobilizer for sleep (physician decision)
- Continue scapular PNF and table top exercises
- Wall supported scapular patterns
- Ball roll closed chain exercises within ROM limits
- Continue isometrics shoulder flexion, abduction, ER, IR, extension, adduction, and bicep/tricep (can do in unilateral stance to increase core work) – NO bicep isom if SLAP II
- Continue RS ER/IR, work to unsupported, add 90° flexion (NOT if SLAP II), RS drills arm supported on wall – may use ball to increase difficulty
- Tubing ER/IR with arm at side, and sidely ER **within ROM limits**, towel roll between arm and body (may need end ROM assist to achieve ROM limit). Keep scapula retracted
- Lower trapezius table lift (standing with table at side, push back on table with palm and stick chest out)
- Lower trapezius theraband bilateral ER with scapular retraction (Hold 20° ER and pull scapula down and back) – towel roll between arm and body bilaterally
- Prone extension & row to plane of body
- Lawn mower – (squat with ext/add, to rise with low row)
- Bicep/tricep dumbbell, theraband with arm by side (NO bicep if SLAP II repair)
- Continue use of cryotherapy
- Supine wand exercise to ROM limits (flexion, scaption, ER/IR) – no elevation with SLAP II repair)
- Sidely ER to ROM limit
- Week 3 A/AROM & PROM:
 - Flexion/Scaption to 90-100 degrees
 - ER in scapular plane to 10-25 degrees
 - IR in scapular plane to tolerance (at least 50 degrees)
- Week 4 A/AROM & PROM:
 - Flexion/scaption to 120 degrees, scaption to 90 degrees
 - ER in scapular plane to 25-30 degrees
 - IR in scapular plane – 45, 60, 90 degrees abd to tolerance

- Sidely IR sleeper stretches-if IR limited

Week 4 add:

- Supine AROM flexion to 90°

****NOTE: RATE OF PROGRESSION BASED ON EVALUATION OF THE PATIENT. IF PATIENT IS TIGHT/CAPSULAR END FEEL CONSULT WITH MD – THIS PATIENT MAY NEED TO BE PUSHED HARDER, STRETCHING AND CAPSULAR MOBILIZATION. WITH EMPTY END FEEL/LAXITY – SLOW ROM DOWN!**

Week 5-6 (Day 29-42)

- Week 5 A/AROM & PROM:
 - Flexion 120-145 degrees, scaption/abduction 90-120 degrees.
 - ER at 45 & 60 degrees abduction to 50-55 degrees
 - IR at 90 degrees abduction: to tolerance – aim for 60 degrees – post capsular mobilization as needed

At week 5 :

- UBE
- Supine AROM flexion, D2 with dumbbell to ROM limits, progressing to standing flexion, scaption, abduction to 90° as tolerated
- add prone horizontal abduction with palm down to plane of body – may need assist to get to plane of body, and prone flexion (at 145 degree angle) to 135-140 degrees ROM (may need assist)
- wall push up plus (elbows stay straight – scapular movement only) – may progress to table if easy
- wall washes to ROM limits
- Progress tubing ER/IR and sidely ER to new ROM limits
- Bilateral row – incorporate kinetic chain – squat with trunk flexion, to upright with row.
- Bilateral shoulder extension with theraband – can incorporate core/LE with theraband on ankle, hip extension with shoulder extension and core stabilization

At week 6:

- progress ROM:
 - Flexion/Scaption/Abduction to 155-160 degrees
 - ER 50-70°/IR 60 - 65° in 45, 60 and 90 degrees of abduction
 - Add prone chicken wing stretch if IR remains tight – towel under ant shoulder
- add prone horizontal abduction thumb down, progress prone flexion (at a 145° angle) to 160° of ROM (continue to provide end ROM assist as needed) – may progress to bilaterally overball
- Progress weight on supine flexion and D2 and increase ROM to limit
- Progress standing flexion/scaption from 90 to ROM limit – prevent scapular hiking

Week 7-9 (Day 43-63)

- Gradually progress ROM:
 - Flexion/Scaption/Abduction to WNL 165-180 degrees
 - ER at 90 degrees of abduction: 75 degrees, progressing to 90 degrees ER by week 9. Continue ER stretching at side and 45 degrees
 - IR at 90 degrees of abduction: WNL – at least 60-65 degrees
 - Continue inferior/posterior capsular mobilization as needed to decrease impingement if needed to decrease impingement, may use wedge under scap with posterior mobs or stabilize glenoid for inferior mobs
 - Week 7-8 add hangs, lat pull stretch if elevation limited (monitor signs of impingement);
 - May initiate jogging once 7 weeks are complete – no sprinting
- Continue to progress isotonic strengthening program
 - Scapular strengthening
 - punches/protraction/retraction manuals
 - serratus “dynamic hug” – with theraband attached behind patient – “hug a tree” – arms in 45 degrees abduction
 - pushup plus – progress to quadruped, over a ball, on a dyna disc
 - prone flex to 160 degrees
 - continue extension to plane of body palm forward (ER shld) to increase infraspinatus activation
 - horizontal abduction with neutral, IR, progress to ER week 8 – may need assistance end ROM to get to plane of body
 - week 8 add prone row with external rotation (watch ROM limits) – start active, then active assistive then with weight
 - Progress rhythmic stabilization with proprioception activities – in open and closed chain – in multiple degrees of elevation, diagonal patterns, and abd/ER positions – supine and standing
 - Placing varied positions in 90 degree flexion, and scapular plane weight bearing shifts (caution with post laxity/post shrinkage)
- PRE’s flexion/scaption working to 160 degrees, and abd to 90 degrees
- D2 PNF standing with weight – progressing to tubing
- Week 8 bodyblade ER/IR with towel roll by side, and 90 degrees flexion and scaption. Impulse ER/IR, may progress to impulse horiz abd
- Week 8 add 90/90 tubing ER/IR – may need a bolster for support- progress to unsupported as tolerated (may need overpressure to attain desired ROM)
- Week 9 add light manual resistive exercises, -patient should be able to lift 2-3# through the ROM with exercise in order to start manuals (ER, D₂ PNF conc/conc within ROM limits, prone: horizontal abduction palm down, thumb up, thumb down, flex at 145 angle, row)
- Continue cardiovascular activity and strength/conditioning for trunk/LE, core stabilization exercises, elbow, wrist, forearm, and hand strength and modalities
- Core work: plank “iso abs” routine on bilateral forearms, work to sidelying if no impingement, lunge matrix with overhead/rotational/floor reaches, medicine ball trunk rotations

Week 9-10 (Day 64-70)

- Progress ROM:
- Flexion/Scaption/Abduction WNL, ER progress to 90-110 degrees (if sport requires), IR 65 degrees
- Progress rhythmic stabilization/proprioceptive activities:
 - Rhythmic stabilize in standing multi D2 ROM
 - Rhythmic stabilize in standing abduction/ER position
 - Rhythmic stabilize activities in closed chain position in various planes
 - UE proprioceptive activities: BAPS, ball rolls, UE on stairmaster.
 - Slideboard
- Continue cardiovascular, trunk, and LE conditioning
- add prone row with ER manual
- add D2 flex conc/ecc manual
- incorporate kinetic chain: theraband unilat stance D2 with squat, unilateral and bilateral ER incorporating lunges and squats, rows and lawnmower on dynamic surfaces – incorporate trunk and hip flexion/extension with exercise
- Add 90/90 and D2 bodyblade week 10
- Seated press up
- Lat Pull Down to chest, Row

III. Phase III – Minimal Protection Phase

Goals: Establish and maintain full ROM
Improve muscular strength, power and endurance
Gradually initiate functional activities

CRITERIA TO PROGRESS TO ADVANCED STRENGTHENING PROGRAM

1. Negative pain and impingement symptoms
2. Good scapulo-humeral control
3. ROM limits attained per protocol guidelines without pain or impingement
4. Strength good grade (4/5) or better
5. Satisfactory stability

Week 10-11 (Day 71-77)

- ER at 90 degrees of abduction, progress to 115 degrees of ER if sport requires
- IR at 90 degrees of abduction to 60-70 degrees
 - Goal of pitcher is total motion ER to IR = 180 degrees
- May initiate slightly more aggressive strengthening
- Impulse at 90 degrees abduction
- Progress isotonic strengthening exercises
- Continue all stretching exercises

**Progress ROM to functional demands (i.e. overhead athlete)

(optional if available) ** Start Biodex ER/IR isokinetics in scapular plane- start submax (180,240,300 degrees/sec)

- may initiate light weight training with anterior instability precautions (see handout) – Bench, incline, flies, push up (arms stay in front of plane of body)

Week 12-16 (Day 78-112)

- Continue all stretching exercises (capsular stretches)
- Continue strengthening exercises:
 - PNF Manual Resistance – concentrate on eccentrics
 - Endurance training
 - Initiate light plyometric program (if above criteria met) – weeks below are based on strength – use earlier week if strong/no impingement – and later week (or later) if above criteria not met - start 2 handed and progress to 1 handed

Week 12-13: chest, rotation, woodchop, forward and backward toss (simulate forehand and backhand swing for tennis), tricep, overhead

Week 13-14: wall dribble- semicircle and 90/90, kneeling D2 and ER/IR at 90 degrees theraband plyo, and bicep theraband plyo, ER flip if AROM ER limited

Week 14-15: 15' form throw to wall plyos

Week 15:

- Restricted sport activities (light swimming, half golf swings)
- Initiate hitting: start with dry swings at 50%, progress to a tee, (no batting cage until week 18) – see interval hitting program

Week 16-20

- Continue all exercise listed above
- Week 16-18 – Microfet and Biodex test (biodex at 180 and 300 degrees/sec)
- Initiate interval sport program (throwing, etc) if attached criteria are met and M.D. clears – see long term ITP

IV. Phase IV – Advanced Strengthening Phase

Goals: Enhance muscular strength, power and endurance
Progress functional activities
Maintain shoulder mobility

Criteria to enter Phase IV

- 1) Full non-painful ROM (180 degrees total motion ER/IR, and at least 160 elevation for pitchers)
- 2) Satisfactory static stability
- 3) Muscular strength 100% of contralateral side MMT's and meet criteria for Microfet/Biodex 75-80%
- 4) No pain or tenderness

Week 20-24

- Continue flexibility exercises
- Continue isotonic strengthening program
- PNF manual resistance patterns
- Plyometric strengthening
- Progress interval sport programs

V. Phase V – Return to Activity Phase (Month 6.5 to 9)

Goals: Gradual return to sport activities
Maintain strength, mobility and stability

Criteria to enter Phase V:

- 1) Full functional ROM
- 2) Satisfactory isokinetic test that fulfills criteria (see attached)
- 3) Satisfactory shoulder stability
- 4) No pain or tenderness

Exercises:

- Gradually progress sport activities to unrestricted participation (see return to sport criteria)
- Continue stretching and strengthening program

CRITERIA TO INITIATE AN INTERVAL SPORT PROGRAM

1. Good tolerance to overhead motion – full, functional painfree ROM
2. Negative impingement signs
3. 85 –90% strength of external and internal rotation compared to the opposite upper extremity
4. External/Internal strength ratio at least 58-62%
5. Microfet criteria met (at least low average)

DISCHARGE/CRITERIA TO RETURN TO SPORT

1. Isokinetic Testing:
 - External/Internal rotation ratio at least 65% dominant arm, 75% non-dominant arm
 - Peak Torque to body weight ratio at 300 degrees per second ER at least 14 and IR at least 20
 - Peak Torque to body weight at 180 degrees per second ER at least 15 and IR at least 19
 - ER and IR strength at least 90% of uninjured UE
2. Completed interval sport program without symptoms
3. 5/5 MMT all shoulder and scapular groups
4. Able to perform all daily activities without restrictions
5. Clearance from MD
6. Microfet normal

Generally no return to contact sports for at least 6 months