

## **Acromioclavicular Joint Reconstruction Clinical Practice Guideline**

**Surgeon: Salvatore Frangiamore, MD, MS**

Acromioclavicular (AC) joint separations have been one of the most documented injuries seen from athletic participation. When stability has been compromised, increased grade of injury is present, and conservative measures of treatment have failed reconstruction of the AC joint is typically performed. Several procedures for reconstruction can be dated that include AC & coracoclavicular repairs, excision of the distal clavicle, and dynamic muscle transfer. Or in some cases may entail a combination of approaches. Considerations for post-operative treatment should consider the procedure at hand with the optimal goal of maintaining stability. Progression through this guideline is time dependent on tissue healing as well as criterion-based concerning patient demographics and clinical assessment.

### ***General Precautions:***

1. Sling use for 4-6 weeks
2. Arthroscopic procedure: AAROM for ER & IR only for 4 weeks (neutral humeral positioning with arm supported with towel roll underneath)
3. Open procedure: No ROM for 4 weeks
4. Avoid downward pulling or traction to arm

***Autograft/allograft tendon reconstruction precautions*** (e.g. semitendinosus graft): soft-tissue grafting can be used by passing around the underside of the coracoid and up through 2 bone tunnels drilled into the clavicle. Tissue healing must consider tendon healing in a bone tunnel/graft maturation.

1. Sling use for 6-8 weeks
2. Passive ROM 6-8 weeks, with Active ROM beginning at 8 weeks
3. Refrain from all strengthening until 12 weeks
4. If autograft, consider secondary site and progress routine accordingly for lower extremity exercise

**Phase 1: Protected Motion (0-4 weeks)**

**GOALS:**

- Maximally protect the surgical repair
- Initiate ROM exercises
- Patient education on postoperative restrictions
- Minimize shoulder pain & inflammatory response
- Minimize effects of immobilization

**PRECAUTIONS:**

- Limit use of UE/avoid lifting arm in early post-operative phase
- Towel roll placed underneath arm during ROM for support
- Use of sling for 4-6 weeks with proper use in neutral positioning (discharged by physician, set-up weaning schedule)
- ROM should be gradual and never forced
- Refrain from horizontal abduction & adduction ROM
- Avoid downward pulling or traction to arm

<i>Post-Operative to 4 weeks</i>	<i>Weeks 4 to 6</i>
<p><i>PROM &amp; AAROM</i></p> <ul style="list-style-type: none"> <li>▪ Supine ER &amp; IR with elbow supported (in scapular plane/30 degrees abd) -Do NOT perform if open procedure</li> </ul> <p><i>Scapular Postural Reeducation</i></p> <ul style="list-style-type: none"> <li>▪ No resistance</li> <li>▪ No humeral AROM, neutral humeral positioning</li> </ul> <p><i>No Isometric or Isotonic Strengthening</i></p> <p><i>Elbow/Wrist/Hand AROM as tolerated</i></p> <p><i>Modalities/cryotherapy PRN</i></p> <p><i>No Formal physical therapy</i></p>	<p><i>Initiate Formal Physical Therapy</i></p> <p><i>PROM /AAROM/AROM</i></p> <ul style="list-style-type: none"> <li>▪ Forward elevation</li> <li>▪ Continue shoulder ER &amp; IR in neutral -Progress to 90 degrees abduction</li> <li>▪ Wand exercises: flex/scaption, abd, ER, IR</li> <li>▪ Shoulder assisted pulleys- flexion</li> <li>▪ Start with gravity eliminated positions -Progress into gravity resisted positions -Ex: Lawnchair progression -Avoid compensatory patterns of movement (normalize scapulohumeral rhythm)</li> </ul> <p><i>Strengthening</i></p> <ul style="list-style-type: none"> <li>▪ Shoulder ISOM in neutral: ER, IR, abd, ext -Submaximal contractions</li> <li>▪ Scapular postural reeducation</li> <li>▪ Stationary bike &amp; Isotonic hamstring, hip abduction, hip extension (avoid if semitendinosus autograft &amp; avoid UE weight bearing)</li> </ul> <p><i>Wrist/hand AROM as tolerated</i></p> <p><i>Modalities/cryotherapy PRN</i></p>

**MILESTONES TO PROGRESS TO PHASE 2:**

1. Proper sling use
2. Minimal pain or tenderness (<3/10)
3. Physician clearance for sling discharge
4. Nearly full ROM that is pain-free (~160 degrees flexion)
5. Able to perform submaximal contraction for ER, IR, and Abd

**Phase 2: Intermediate Phase/Initial Strengthening (6-12weeks)**

**GOALS:**

- Gradually regain full ROM
- Improve rotator cuff and scapular strength
- Normalize scapulohumeral rhythm
- Increase neuromuscular control

**PRECAUTIONS:**

- Towel roll placed underneath arm during ROM for support
- ROM should be gradual and never forced
- No shoulder press, bench press, or peck deck exercises

<i>Post-Operative weeks 6 to 8</i>	<i>Weeks 8 to 12</i>
<p><i>ROM</i></p> <ul style="list-style-type: none"> <li>▪ Continue previous ROM exercises</li> <li>▪ Address terminal ROM                             <ul style="list-style-type: none"> <li>-ER &amp; IR at 90 degrees abduction</li> </ul> </li> </ul> <p><i>Strengthening</i></p> <ul style="list-style-type: none"> <li>▪ Initiate isotonic strengthening (light resistance)                             <ul style="list-style-type: none"> <li>-Shoulder ER, IR, extension</li> <li>-Elbow flexion &amp; extension</li> <li>-Horizontal abduction (initiate gravity eliminated)</li> <li>-Prone rows and shoulder extension</li> <li>-Initiate light resistance in flexion/scaption</li> </ul> </li> <li>▪ Continue LE strengthening                             <ul style="list-style-type: none"> <li>- Begin leg press and mini lunges (if semitendinosus autograft)</li> <li>- avoid UE weight bearing or holding weights</li> </ul> </li> </ul> <p><i>Neuromuscular Reeducation:</i></p> <ul style="list-style-type: none"> <li>▪ Rhythmic stabilization training                             <ul style="list-style-type: none"> <li>-Supine in 90 degrees flexion</li> <li>-ER to IR in neutral</li> </ul> </li> </ul> <p><i>Modalities/cryotherapy PRN</i></p>	<p><i>ROM</i></p> <ul style="list-style-type: none"> <li>▪ stretching as needed</li> </ul> <p><i>Strengthening</i></p> <ul style="list-style-type: none"> <li>▪ Continue previous PREs                             <ul style="list-style-type: none"> <li>-Lat pulldowns</li> <li>-Seated row machine</li> <li>-PNF D2 patterns of movement</li> </ul> </li> <li>▪ Continue LE strengthening                             <ul style="list-style-type: none"> <li>- Begin resisted hamstring exercise (if semitendinosus autograft)</li> <li>- avoid UE weight bearing or holding weights</li> </ul> </li> </ul> <p><i>Neuromuscular Reeducation:</i></p> <ul style="list-style-type: none"> <li>▪ Rhythmic stabilization overhead</li> <li>▪ Manually Resisted PNF D2 patterns of movement</li> </ul> <p><i>Modalities/cryotherapy PRN</i></p>

**MILESTONES TO PROGRESS TO PHASE 3:**

1. Full nonpainful ROM
2. No pain or tenderness
3. Strength at 70% bilateral symmetry (MMT 4/5)
4. Involved extremity ER to IR ratio >66% (isokinetic or handheld dynamometry testing)

### Phase 3: Dynamic Strengthening Phase (12-16 weeks)

#### GOALS:

- Improve rotator cuff and scapular strength & muscular endurance
- Increase reactive neuromuscular stabilization
- Prepare athlete for overhead requirements

#### PRECAUTIONS:

- Do not increase stress to shoulder in a short period or uncontrolled manner
- Do not progress into activity-specific training until full ROM and strength are achieved
- Gradually load UE CKC (weight bearing) activity per below guidelines
- If patient does not perform velocity dependent tasks during work/sport/ADLs do not perform plyometrics

<i>Post-Operative weeks 12 to 16</i>
<i>ROM</i> <ul style="list-style-type: none"><li>▪ Continue previous ROM/stretching as needed</li></ul>
<i>Strengthening</i> <ul style="list-style-type: none"><li>▪ Initiate standing UE CKC weight bearing at wall (fixed distal segment, no elbow flex)</li><li>▪ Advance isotonic PREs (ex: Thrower's Ten Program: T's, Y's, ER/IR at 90° abd)</li><li>▪ Core &amp; lower extremity strengthening (if semitendinosus autograft consider graft site)</li></ul>
<i>Neuromuscular Reeducation</i> <ul style="list-style-type: none"><li>▪ Reactive training: ball drops, wall dribbles, etc..<ul style="list-style-type: none"><li>-sidelying ER</li><li>-prone horizontal abd</li></ul></li></ul>
<i>Functional Activity</i> <ul style="list-style-type: none"><li>▪ Initiate light aerobic activity (elliptical, stairmaster)</li><li>▪ Per physician clearance can start a walk to jog progression program<ul style="list-style-type: none"><li>-Ensure proper hamstring strength if semitendinosus autograft used</li></ul></li></ul>

#### MILESTONES TO PROGRESS TO PHASE 3:

1. Adequate strength of scapular stabilizers & rotator cuff: MMT 4/5 to 4+/5 (70-80% bilateral comparison with handheld dynamometer)
2. Involved extremity ER to IR ratio >66% (isokinetic or handheld dynamometry testing)
3. Pain-free ADLs and with previous strengthening
4. Minimum 3 weeks of multi-plane activity at increased speed of movement with reactive training

#### Phase 4: Advanced Strengthening & Return to Sport (>16 weeks)

##### GOALS:

- Improve rotator cuff and scapular strength, power & muscular endurance
- Increase reactive neuromuscular stabilization
- Prepare athlete for overhead requirements

##### PRECAUTIONS:

- Do not increase stress to shoulder in a short period or uncontrolled manner
- Do not progress into activity-specific training until full ROM and strength are achieved
- Gradually load UE CKC (weight bearing) activity per below guidelines
- If patient does not perform velocity dependent tasks during work/sport/ADLs do not perform plyometrics

<i>Post-Operative weeks 16+</i>
<i>ROM</i> <ul style="list-style-type: none"><li>▪ ROM/progress all terminal stretches PRN</li></ul>
<i>Strengthening</i> <ul style="list-style-type: none"><li>▪ Continue with UE isotonic PREs Initiate prone CKC UE progression -Progression: plank hold (fixed distal segment, no elbow flexion), modified, then progress into push-up</li><li>▪ Initiate weight training if desired</li></ul>
<i>Neuromuscular Reeducation</i> <ul style="list-style-type: none"><li>▪ Progress into a UE plyometric progression program (once above criteria met) -Start with double-arm exercises (ex: chest pass) -Progress into single-arm exercises (ex: ball catch &amp; toss drills)</li></ul>
<i>Functional Activity</i> <ul style="list-style-type: none"><li>▪ May begin interval sports progression program once below criteria is met</li></ul>

#### MILESTONES TO INITIATE INTERVAL PROGRESSION PROGRAMS (e.g. throwing)

1. Clearance from physician
2. Muscular strength >80% bilateral comparison for rotator cuff & scapular stabilizers (handheld dynamometer) MMT 4+/5 or greater
3. Involved extremity ER to IR ratio  $\geq 75\%$  (isokinetic or handheld dynamometry testing)
4. Full functional ROM with appropriate scapulohumeral rhythm (see appendix for overhead athlete)
5. Completion of a UE plyometric progression program

**Appendix:**

<b>The Overhead Athlete:</b>	<b>Side to side differences (throwing arm vs non-dominant arm)</b>
Total rotational ROM at 90° abd (ER plus IR)	< 5 degrees
Shoulder flexion	≤ 5 degrees
Shoulder ER	5 degrees more
Horizontal Adduction	<15 degrees

References:

Beitzel K, Cote MP, Apotolakos J, et al. (2013). Current concepts of acromioclavicular joint dislocations. *Arthroscopy: The Journal of Arthroscopic and Related Surgery*; 29(2): 387-397.

Simovitch R, Sanders B, Ozbaydar M, et al. (2009). Acromioclavicular joint injuries: Diagnosis and management. *J Am Acad Orthop Surg*; 17: 207-219.

PY ho J, Faizal A, & Sivpathasundarm N. (2013). Acromioclavicular reconstruction using autogenous semitendinosus tendon graft and the importance of postoperative rehabilitation: A case report. *Malaysian Orthopedic Journal*; 7(4): 30-32.

Cote MP, Wojcik KE, Gomlinski G, & Mazzocca AD. (2010). Rehabilitation of acromioclavicular joint separations: Operative and nonoperative considerations. *Clin Sports Med*; 28: 213-228.

**Author:** Ryan Monti, PT, DPT, SCS

**Physioforce, LLC**  
Sports Physical Therapy  
6285 Promler St NW  
North Canton, OH 44720

**[www.thewarehousecanton.com](http://www.thewarehousecanton.com)**  
(330) 307-8648  
[Rmonti07@jcu.edu](mailto:Rmonti07@jcu.edu)

**Completed Date:** 07/18/2018