Rehabilitation of a 38 year old male following an Arthroscopic Repair of a Type II Superior Labral Anterior Posterior (SLAP) Lesion

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Abstract
Rehabilitation of a 38 year old male following an Arthroscopic Repair of a Type II Superior Labral Anterior Posterior (SLAP) Lesion

Postoperative rehabilitation following arthroscopic repair of the Type II superior labral anterior posterior (SLAP) biceps lesions presents a challenge to the physical therapist due to limited evidence-based reviews available within the literature. This case report describes the postoperative rehabilitation of an arthroscopic Type II SLAP repair utilizing suture anchors. The interventions and the postoperative precautions are outlined and related to the emerging evidence. The patient described was a 38 year old male electrician who sustained a work-related SLAP lesion and was referred to physical therapy for postoperative rehabilitation. Following participation in a supervised structured plan of care, the patient developed adequate strength and range of motion required for job functions and ADLs. He achieved a score of 95% on the American Shoulder and Elbow Surgeons (ASES) functional test. Patient goals were met and he was released to full duty without restrictions at 5 months post-surgery.

Key Words: Shoulder rehabilitation, post operative management, Therapeutic exercise, SLAP lesion
Rehabilitation of a 38 year old male following an Arthroscopic Repair of a Type II Superior Labral Anterior Posterior (SLAP) Tear

Introduction

Shoulder pain is a common complaint and estimated to occur at a frequency of 11.2 per 1000 people in the United States; furthermore it is the third most common musculoskeletal complaint in the primary care setting, behind low back and neck pain (Brennan, Parent, & Cleland, 2010). Specific injuries to the shoulder involving the superior labral-biceps anchor have been projected to range from as low as 2-6% of all shoulder arthroscopies by Park, Lee, Wang, Noh, and Kim (2008) to as high as 26% by Kim, Queale, Cosgarea, and McFarland (2003). Since these patients will require rehabilitation, physical therapists may experience an increase in patients with this diagnosis as these arthroscopic restorations become more prevalent. Unfortunately there is limited evidence based guidelines in the literature to guide this rehabilitation.

Lesions to the superior labral-biceps anchor were first described in the literature in 1985 by Andrews, Carson, and McLeod, and were later coined by Snyder, Karzel, Del Pizzo, Ferkel, and Friedman (1990) as a superior labrum anterior posterior lesion, now commonly known as a SLAP lesion. SLAP lesions can decrease the compression stabilization or suction at the glenohumeral joint, decrease the joint surface area, and decrease structural stability, thus increasing the sense of instability, pain and loss of function (Wilk, Arrigo, & Andrews, 1997). Nonsurgical management of SLAP lesions demonstrates fair outcomes as noted in the limited available literature; while some currently believe that surgery is considered the best option of treatment (Brockmire, Voos, & Riley, 2009; Edwards et al., 2010; Keener & Brophy, 2009). With the advancement of shoulder arthroscopy, diagnosis and treatment have improved. An emerging surgical intervention in Type II SLAP repairs entails the arthroscopic technique of utilizing suture anchors to mechanically fixate the labrum back to the glenoid rim (Edwards et al., 2010; Gregush & Snyder, 2007).

Postoperative rehabilitation presents a challenge to the physical therapist due to limited evidence-based reviews available within the literature (Brennan et al., 2010). In a recent systematic review of outcomes for Type II labral repairs, Gorantla, Gill, and Wright (2010) found no level I or level II outcome studies. Guidelines are necessary to protect the patient during the postoperative healing phase, yet allow reasonable and safe passive mobility, and to prevent restrictions once the shoulder can be advanced actively. As the patient progresses to active and resistive activities, attentive gradual progression is necessary. Some recent articles have suggested guidelines for postoperative care, although they do not necessarily address specific Type II lesions (Dodson & Altcheck, 2009; Gaunt et al., 2010). Most studies regarding rehabilitation of the postoperative shoulder involve rotator cuff surgeries (Koo & Burkhart, 2010; Koo, Parsley, Burkhart, & Schoolfield, 2010; Parsons et al., 2010; United States Department of Labor, 2011) A Pub MED search in spring of 2010 revealed limited current research addressing postoperative rehabilitation of specific Type II SLAP lesions, and a search performed in the same time frame within Hooked on Evidence through the American Physical Therapy Association (APTA) utilizing the search terms “SLAP lesion, SLAP tear, labrum, labral tear” resulted in only one article associated with shoulders. These examples demonstrate the need for further evidence in supporting safe and effective rehabilitation. Additionally, most studies involve the population of overhead throwing athletes where this diagnosis was initially
identified. More recently SLAP lesions have been identified in the non-athlete and with workers involved in occupations which entail high upper extremity demands. The purpose of this case report is to describe the postoperative management of a 38 year old patient with an arthroscopic Type II SLAP repair.

**Case Description**

**Patient Description.**

The patient was a 38 year old, left-handed male with a BMI of 25.6% and who worked full time as an electrician. His job required a variety of activities and positional tolerances including but not limited to the following: walking and/or standing for approximately 80% of the work day, kneeling, squatting, crouching, bending, climbing ladders. Upper extremity activities including overhead work up to 50% of the time, forceful pushing and pulling, grasping, manipulation of tools, wires and electrical light fixtures weighing up to 40#. As defined by the United States Department of Labor’s (2011, 47-2111) Dictionary of Occupational Definitions. The patient had been working at his place of employment for more than five years and reported having good rapport with his supervisor.

The patient injured his left shoulder while carrying a light fixture, using his bilateral upper extremities with his forearms supinated. He tripped on a tool and fell onto his left side, striking his elbow and shoulder on the ground. He reported that he felt pain in the posterolateral aspect of his shoulder. He experienced pain up to 8/10 initially and attempted nonsurgical management. Although the baseline pain improved, he continued to note symptoms and he was subsequently referred to an orthopedic surgeon. Following evaluation, the surgeon ordered an MRI arthrogram which revealed a Type-II SLAP lesion. At that point, the surgeon recommended left arthroscopic SLAP lesion repair. Surgery revealed a complete disruption of the glenoid labrum from the anterior superior ¼ quadrant extending to the biceps anchor but not into the biceps anchor. All other structures were unremarkable. The labrum was subsequently repaired.

The patient was referred to physical therapy following the SLAP repair on postoperative day 7 in accordance with the standard procedure. His personal goals included returning to work full-time, initially with some restrictions but eventually to full duty, sleeping without pain, moving his arm fully, and resuming household chores and repairs such as completing the construction of a work shed.

The patient was married and had a supportive home and social situation. He smoked 5-7 cigarettes per day. Medications were listed as follows: MS Contin extended release 15 MG in which 1-2 may be taken every 12 hours for pain; Hydrocodone-acetaminophen 5-325 MG 1-2 tablets for pain to be taken every six hours or as needed for pain. A review of cardiovascular/pulmonary, musculoskeletal, neuromuscular and integumentary systems was unremarkable.

The patient ambulated on his own volition with his left shoulder in a sling. His wound appeared to be clean and dry, without visible drainage. Other than the slight joint effusion to the anterior aspect, there were no signs of infection. He demonstrated full functional cervical motion into flexion, extension and upon cervical quadrant testing. He moved his left elbow in a guarded fashion, yet he achieved full flexion, extension, along with forearm supination and pronation compared to the right side. Strength testing was not manually performed for the left shoulder due to pain and postoperative restrictions. The patient reported his pain to be at a pain level of 1 out
of 10 at best and 5 out of 10 at worst. We used a verbal 0-10 point numeric system for pain measurements, since it is simple to use in the clinic and has a good interclass correlation coefficient of .83 (Farrar, Troxel, Stott, Duncombe, and Jensen, 2008).

The patient’s left shoulder passive flexion measured in supine was 30° and abduction 20°. Due to pain at end ranges of motion, further measurements were not taken of the involved shoulder. Right shoulder active range of motion (AROM) was as follows: flexion 171°, abduction 178°, external rotation 97°, internal rotation (including some scapulothoracic motion) 60°. Shoulder range of motion was measured in standing for right shoulder flexion and abduction and supine with the shoulder in 90° of abduction for internal and external rotation. These measurements were taken using a goniometer laterally placed with the axis aligned at the lateral joint line for flexion and abduction and in supine at the olecranon process for internal and external rotation. All goniometric measurements throughout evaluation and subsequent treatment sessions were measured by the same physical therapist and compared to the contralateral side. Intra-tester and inter-tester reliability of shoulder motion measurements taken with a universal goniometer find better intra-tester reliability than inter-tester reliability. The intra-tester intra-class correlation coefficients (ICCs) for all motions ranged from .87 to .99 (Riddle, Rothstein, and Lamb, 1987).

The American Shoulder and Elbow Surgeons (ASES) standardized shoulder form was selected as a measure for the patient’s outcomes. The ASES form uses self report, and it is quick to score, requiring approximately two minutes to complete. It has been shown to be a valid and reliable measure of outcomes for those with shoulder pain. This test consists of a 50% pain subscale and a 50% disability subscale which are then added together. Internal consistency and test-retest reliability are 0.86 and 0.84, respectively (McClure and Michener, 2003, p. 20-21; Michener, McClure, and Sennett 2002). This patient’s initial (pre-therapy intervention) shoulder functional score was calculated to be 50%. Short and long term goals are presented in Tables 1 and 2.
Table 1. Short Term Goals

<table>
<thead>
<tr>
<th>Short Term Goals for 6 weeks postoperative</th>
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</thead>
<tbody>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>3</td>
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<tr>
<td>4</td>
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</tbody>
</table>

Table 2. Long Term Goals

<table>
<thead>
<tr>
<th>Long Term Goals for 24 weeks postoperative</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>3</td>
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<tr>
<td>4</td>
</tr>
<tr>
<td>5</td>
</tr>
</tbody>
</table>

**Plan of Care.**

Shoulder rehabilitation followed the guidelines for range of motion outlined in Table 3. Initial exercises included passive pendulum shoulder exercises to be performed in all directions for two minutes initially at a frequency of 2 times per day and increased gradually to 5 times per day if he had no overall increase in pain. Passive ROM was emphasized to avoid activation of muscular which easily occurs with this exercise (Klintberg, Gunnarsson, Svantensson, Styf, & Karisson, 2009; Koo & Burkhart, 2010; Koo et al., 2010; Long et al., 2010; Parsons et al., 2010). Also added were passive shoulder flexion within 80° to avoid stress on the SLAP repair and scapular retraction sets, drawing the scapulae together and inferior for the purpose of initiating scapular stability and trunk stability (Dodson & Altcheck, 2009; Gaunt et al., 2010; Yung et al., 2008). Static, passive stretches were employed since active or neuromuscular stretches would be contraindicated. Studies show that these types of stretches demonstrate effectiveness for ROM (Bandy, Irion, & Briggler, 1998; Feland, Myrer, Schulthies, Fellingham, & Measom, 2001). Early range of motion exercises are incorporated in arthroscopic SLAP repairs and arthroscopic rotator cuff reconstruction rehabilitation programs, although there are variances in regards to specific time frames. Most evidence in regard to arthroscopic rotator cuff repairs shows that this is safe and imperative in order to minimize the deleterious effects of immobilization (Klintberg et al., 2009; Koo et al., 2010; Levy, Kelly, Lintner, & Speer, 1997; Parsons et al., 2010). Since rotator cuff repairs allow some time for healing and protection of repaired soft tissues, this information was applied here to SLAP repairs, since they are both soft tissue injuries of the shoulder and require some non-stress healing during the initial phase of rehabilitation. Elbow, wrist and forearm exercises were provided in order to maintain mobility in the unaffected joints,
but biceps activation was discouraged until about 10 weeks postoperative due to its attachment to the superior labrum (Gaunt et al., 2010; Reis et al., 2009).

### Table 3. ROM Recommendations/Precautions

<table>
<thead>
<tr>
<th>Shoulder motions</th>
<th>0-3 weeks</th>
<th>3-6 weeks</th>
<th>6-12 weeks</th>
<th>12+ weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Passive Flexion</td>
<td>0-90°**</td>
<td>0-120/135°**</td>
<td>0-145/180°*</td>
<td>0-180°l</td>
</tr>
<tr>
<td>Passive ABD</td>
<td>0-30°</td>
<td>0-30°</td>
<td>0-180°</td>
<td>0-180°</td>
</tr>
<tr>
<td>Passive ER</td>
<td>0°**</td>
<td>0-30/45°**</td>
<td>0-45°/90°</td>
<td>0-90°</td>
</tr>
<tr>
<td>Passive IR</td>
<td>Hand to abdomen.</td>
<td>None stated</td>
<td>None stated</td>
<td>None stated</td>
</tr>
<tr>
<td>Active Flexion</td>
<td>-</td>
<td>-</td>
<td>115°-145°</td>
<td></td>
</tr>
<tr>
<td>Active ABD</td>
<td>-</td>
<td>-</td>
<td>0-180°</td>
<td>0-180°</td>
</tr>
<tr>
<td>Active ER</td>
<td>-</td>
<td>-</td>
<td>0-45°/90°</td>
<td>0-90°</td>
</tr>
<tr>
<td>Active IR</td>
<td>-</td>
<td>-</td>
<td>None stated but with posterior capsule stretches</td>
<td>None stated but with posterior capsule stretches</td>
</tr>
</tbody>
</table>

**Precautions:**
- PROM only, Brace on continuously, no shoulder extension > 0°
- PROM only, may decrease brace use, no shoulder extension >0°
- No isolated biceps until 8-10 weeks. *Gradual progression of AROM*
- Increased activities as tolerated

* Shoulder in neutral abduction
**Forward elevation or in the scapular plane

The patient was educated regarding measures to reduce pain and effusion. This included use of ice for 20-30 minutes at a time, since it is a safe and effective modality for postoperative use (Levy et al., 1997, p. 27-28; Speer, Warren, & Horowitz, 1996). He was instructed to use his medication as prescribed by his physician. Since he was controlling his pain adequately and he had to travel some distance to the clinic, it was agreed that he was to attend physical therapy approximately two times per week for examination, reassessment, and progression of his rehabilitation program. He was responsible for continuing with his exercise program at home between visits. All exercises were practiced, and written, illustrated instructions were provided and updated as appropriate.

During subsequent visits, the emphasis of interventions was to progress the patient in a manner that maximized his ability to meet his personal and work-related goals while protecting the repair. The phases of the protocol were modified to three categories for simplicity. The first being the PROM/protective phase, the second being the AROM/early strengthening phase and the third being the advanced strengthening/functional activity phase. Initial PROM and restrictions are necessary for tissue healing and remodeling while protecting the surgical repair (Koo & Burkhart, 2010; Koo et al., 2010; Klintberg et al., 2009; Long et al., 2010; Parsons et al.,...
Core and proximal stability began in Phase I and progressed throughout the rehabilitation to provide a basis for neuromusculoskeletal efficiency as defined by Clark, Lucett, and Corn (2008) as “...the ability of the neuromuscular system to properly recruit muscles to produce force, reduce force and dynamically stabilize the entire kinetic chain in all three planes of motion”). As the patient advanced to the strengthening phase, the emphasis was to include the entire kinetic chain in order to maximize proximal stability, thus allowing for maximal distal mobility and function (Burkhart and Morgan, 1998; Burkhart and Morgan, 2001; Dodson & Altcheck, 2009). Combinations of open and closed chain activities maximize recovery and return to sport (Koo and Burkhart, 2010; Koo et al., 2010; Mikkelsen, Werner, and Eriksson, 2000; Morrissey et al., 2000; Parsons et al., 2010). Therefore, both open chain and closed chain activities were incorporated to allow for optimal strength gains, muscular hypertrophy and to provide for a variety of specific strengthening positions and situations that the patient might encounter during a work day as an electrician. Finally, functional job duties and lifts were performed to meet job demands and to allow for specificity of training. This included floor to waist lifts, carrying, and overhead activities to simulate working on overhead lighting and electrical repairs. Items used during rehabilitation include the following: resistance bands, Bosu® balance trainer, physioball, weighted medicine balls/plyoballs, Body Blade®, Scott Pilates® Reformer V2 Max, various hand weights.

**Outcomes.**

The patient completed 38 visits over 24 weeks. He consistently attended twice a week for 8 weeks until he returned to work with restrictions. Upon return to work, his attendance at physical therapy varied due to work commitments. He was required to perform his home exercises on days in which he missed his outpatient visits. The patient was able to demonstrate his home exercises and self-ROM exercises independently after instruction. At his final visit he had achieved 160° of active shoulder flexion and abduction (Riddle et al., 1987). He achieved 90° for external rotation and 59° for internal rotation. Although he continued to have some minor limitations, he considered these deficits to be negligible.

Manual muscle testing revealed slight deficits (4/5) for resistive left shoulder flexion and abduction compared to the right shoulder, but left shoulder external and internal rotation measured 5/5. He completed the job required maximum lifting of 75 pounds. He demonstrated lifting 75 pounds from the floor to waist with 10 repetitions calculating to an estimated one repetition maximum of 100 pounds. He demonstrated the ability to carry 75 pounds for up to 210 feet to simulate potential job tasks. He demonstrated manipulation of a 7 pound weight overhead for greater than 90 seconds and sustained overhead shoulder position with less weight for approximately 5 minutes to simulate weighted overhead work activities.

Pain levels were managed with good results and did not require assistance or additional physical therapy modalities. During his initial visits, base line pain measurements were taken and pain numbers fluctuated from 2-6/10 for the first month. After that, he generally reported at worst 2 out of 10 pain, with rare episodes of 4-6 out of 10 pain (Farrar et al., 2008). Four weeks post-discharge he reported that he still had rare episodes of pain of up to 2 out of 10 depending on the day’s particular work duties, however he reported that this was manageable and did not require the use of prescription pain medication.

His final functional condition ASES score was obtained four weeks post-discharge and calculated to 95%. At the time of discharge he was, unfortunately, laid off and was unable to
fully assess his ability to tolerate full time work without restrictions. However, at his 4 week post-discharge interview, he had obtained other employment. In this new position, he was able to perform his full job tasks with minor modifications to avoid increased pain. Additionally, he reported returning to normal household duties and was able to complete construction activities on his work shed. He had met his goals for personal and job related measures, although overhead tolerance was not tested specifically for greater than 6 minutes.

Discussion

SLAP lesion repairs are increasingly more common (Vogel et al., 2012) and therefore physical therapists are experiencing a greater number of these patients in their caseloads. This case report describes the postoperative management of one such patient with emphasis on the interventions administered. This discussion explores the postoperative precautions that were utilized and compares them to the current literature, arthrokinematics, and tissue healing.

In this case report early PROM was carried out without adverse effects and early ROM and exercises were performed in a manner that did not increase pain generally beyond 2 out of 10 (Gaunt et al., 2010). It is important to develop postoperative mobility precautions that take into consideration the rate of tissue healing and shoulder arthrokinematics. Current research supports the need for early ROM in rotator cuff repairs. Parsons et al. (2010)(n=43) and Klintberg et al. (2009)(n=55) demonstrated that early ROM had no negative effects, indicating no differences among ROM, function and pain scores between early ROM and later ROM one to two years post operatively. Huberty et al. (2009)(n= 489) indicated that 4.9% developed some postoperative stiffness, that second look arthroscopy revealed 95% still had intact surgical repairs, and that later ROM interventions again did not result in any long term ROM restrictions (p. 35). According to these studies, there is some suggestion that although early ROM seems to be safe, there are no long term differences in ROM between early and late ROM implementation.

Progression without significantly increasing pain, with safe PROM and other restrictions is required. Gaunt et al. (2010) and Dodson and Altcheck (2009) recommend the following restrictions supported by other biomechanical shoulder complex experts. They suggest limiting shoulder flexion to passive ROM consistent with arthrokinematics of the glenohumeral joint since there is minimal upward translation of the humerus with passive shoulder elevation 0-90° of .35 mm-1.2 mm compared to 2.0 mm-9.0 mm actively (Rockwood, Matsen, Wirth, & Lippitt, 2009). Furthermore, they recommend shoulder elevation in the scapular plane which causes slight external rotation of the humerus with subsequent vector forces inferior on the glenoid. For example, at 30° of shoulder flexion, the resulting force vector changes from about the 1 o’clock position to 3 o’clock position when the humerus is in external rotation. Although this was not emphasized in this case report, the literature supports the movement of shoulder flexion in the scapular plane (Koo & Burkhart 2010; Koo et al., 2010; McMahon et al., 1995; Poppen & Walker 1978).

Limited external rotation is necessary to avoid “peel back” of the labrum which may occur at end range of external rotation, thus a gradual progression into external rotation is warranted (Burkhart & Morgan, 2001; Huberty et al., 2009; Wilk et al., 1997). In contrast, internal rotation is encouraged along with gentle posterior capsule stretching to allow for crucial posterior mobility, thus decreasing anterior stresses on the surgical repair (Angelo, Esch, & Ryu 2010; Bach & Goldberg, 2006; Huberty et al., 2009). Abduction is not discussed at length in these recommendations; however abduction greater than 90° is associated with superior
translation of the humerus on the glenoid fossa, which may be why some recommendations limit abduction to 30° until 6 weeks (Poppen & Walker, 1978; Rockwood et al., 2009). Tissue healing or “second look” studies were not found for SLAP repairs and tissue healing for other surgeries demonstrated lack of healing. In a 2010 article, Tashjian et al. (2010) found a 51% healing rate in 49 arthroscopic rotator cuff repairs using diagnostic ultrasound. Studies of analogous meniscus repairs of the knee revealed that second look arthroscopies confirmed incomplete healing in all of the 11 patients in the study (Seo, Lee, & Jung, 2011). In a clinical and radiological study of meniscus repairs, imaging showed possible incomplete healing in 19 of 27 patients (Hoffelner et al., 2011). Physiologic healing occurs in three overlapping stages. The inflammatory phase begins within hours and may last up to 3 weeks, the proliferative phase follows within one week and may last up to 10 weeks and the remodeling phase begins in about one month and lasts up to 12 months (Huberty et al., 2009). Early mechanical stimuli are supported clinically, however not necessarily with animal histological models (Angelo et al., 2010). It is accepted that tissues begin to adhere from 6-10 weeks postoperatively and that is why AROM is held for at least six weeks, and bicep activation is avoided all together for 10 weeks, yet evidence of actual healing at this stage is lacking (Klintberg et al., 2009; Koo & Burkhart, 2010; Koo et al., 2010; Long et al., 2010; Parsons et al., 2010).

Prior to Phase II, proximal stability activities were used to prepare the patient for the next phase of his rehabilitation of active range of motion and resistive training (Clark et al., 2008). The activities were progressed throughout his rehabilitation, which included providing neuromuscular strength and endurance of the core musculature extending throughout the entire kinetic chain, including open and closed chain strengthening. These principles are widely supported throughout the literature (Brockmire et al., 2009; Burkhart & Morgan, 1998; Burkhart & Morgan, 2001; Koo & Burkhart, 2010; Koo et al., 2010; Mikkelsen et al., 2000; Morrissey et al., 2000; Parsons et al., 2010). As the patient progressed with his exercises from PROM to AROM additional exercises were added with the stated precautions (See Table 1) as a guideline. He eventually met his short and long term personal and professional goals with an ASES score of 95%.

Upon reflection of this case, it is possible that some modifications may have been beneficial. For instance, internal rotation/posterior capsule stretches could have been introduced sooner since the patient demonstrated contra-lateral tightness upon the initial examination and some limitations were noted early in his rehabilitation. This is important to decrease anterior translation of the humerus and allow more posterior mobility, thus decreasing stress to the anterior repaired labrum (Angelo et al., 2010; Huberty et al., 2009; Rockwood et al., 2009;). In addition, earlier rotator cuff strengthening may have been employed to help decrease superior migration of the humerus during shoulder flexion and abduction and has been recommended by others (Brennan et al., 2010; Dodson and Altcheck, 2009; Escamilla, Yamashiro, Paulos, and Andrews, 2009; Gaunt et al., 2010; McMahon et al., 1995).

This case report demonstrates the need for further research and investigation in developing proper therapeutic guidelines for post SLAP repairs. Prospective studies involving rehabilitation may provide benefit and knowledge in identifying optimal time frames for progression. Tissue healing imaging or second look arthroscopies may assist in guiding safe and appropriate restrictions and/or allowances in early as well as later stages of interventions. Finally, prospective nonoperative treatments merit further investigation since the only current study of nonoperative treatment found was a retrospective questionnaire with n=39 which
identified successful results (ASES improved from 58.5%-84.7%) of about 49% of respondents and the other 51% electing for surgery (Edwards et al., 2010).

Although SLAP lesion repairs are becoming more prevalent, careful progression throughout the rehabilitation is warranted. This includes ROM restrictions and progression of AROM and progressive resistive exercises. The literature is lacking prospective studies in regards to postoperative SLAP rehabilitation and histological studies of actual tissue healing of the involved structures. The physical therapist must utilize the patient’s presentation and pain levels, and combine this with arthrokinematics and available tissue healing evidence. Future studies will assist in the knowledge and management of postoperative SLAP repairs.
References


