

clinical conduit

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Prognostic Factors that Influence Rehabilitation Success Following Rotator Cuff Repair Surgery: Part 4 - PAIN ALLEVIATION

My orthopedic physical therapy residents and I recently conducted a comprehensive review of the literature on the factors that predict success following the surgical repair of the rotator cuff (RC). We organized our findings into six categories and had our findings published in the *The Physician and Sportsmedicine* late last year. The variables we discussed included tendon healing, restoration of strength and mobility, pain levels, patient satisfaction, and functional outcomes. While these factors are interdependent they each influence the final result. This 4th section describes the short and long-term pain outcomes

patients should anticipate based on their unique presentation.

Overall, surgical cuff repairs produce good results, most notably in terms of pain relief, which is a priority for patients. However, some patients may be predisposed to higher pain levels during the rehabilitative process. Oh et al⁶³ found the amount of pain reduction after a modified impingement test was significantly related to post-op pain improvement. Univariate regression analysis revealed a 0.6 cm reduction in post-op pain for each cm of pain reduction on a 10 cm scale based on the lidocaine injection's impact on active overhead elevation. The authors suggest that this simple pre-op maneuver may assist patients in understanding the predicted level of pain reduction they could expect following the surgical inter-

vention. Ladermann et al⁶⁴ found that patients undergoing revision repairs had a worse functional outcome if their pre-op pain level was over 5/10.

In regards to immediate post-op pain control, Cho et al⁶⁵ found that a multimodal pain control protocol was more effective with fewer side effects than intravenous patient controlled analgesia. The multimodal pain regimen included prophylactic oral medications, intra-operative injection of a cocktail of local analgesics, and post-op narcotic pain medications. The multimodal pain control group also achieved 120° of flexion and 30° of external rotation in a timelier manner. Consistent with a multimodal approach to early pain control, and in particular for patients predisposed to higher ...

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Can we predict chronic low back pain?

The *Journal of the American Medical Association* (JAMA) does an interesting monthly series titled the "*The Rational Clinical Examination*". A few years ago the featured article was a systematic review that addressed a common question for physical therapists - "*Will this Patient Develop Persistent Disabling Low Back Pain (LBP)?*".

We know that LBP is a common finding and typically defies pathological confirmation. We certainly need to screen for red flags that suggest a more sinister onset (cancer, infection, fracture) and determine if there is neurological compromise but it may be the softer signs (yellow flags) that are our best method for determining which patients are at risk for a prolonged recovery. The authors of this paper conducted an extensive review of the literature to estimate the likelihood of psychosocial risk factors impacting the chance for a quick recovery. These risk factors included psychological conditions, adaptive coping strategies, socioeconomic and educational status, job satisfaction, work demands, general health status, obesity, tobacco use, and workers' compensation/litigation factors. I'm sure each of us have our biases based on previous experience but I think you will find their conclusions on the next page quite interesting.



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Upcoming Courses for 2013

Advanced Manual Therapy Series
Clinical Orthopedic Rehab Education

2013 Dates - Plano, TX

- Part 1: Cervicothoracic/TMD - Apr 20-21
- Part 2: The Upper Quarter - Jun 1-2
- Part 3: Lumbopelvic Spine - Jul 13-14
- Part 4: Hip/Knee - Aug 24-25
- Part 5: The Lower Quarter - Oct 19-20
(Leg, Ankle, and Foot)

A detailed description of the course content and learning objectives is available at our web site — www.continuing-ed.cc

Single course attendance is allowed on a space-available basis

Low Back Pain prognosis continued ...

REFERENCES

Chou R, Shekelle P. Will the patient develop persistent disabling low back pain? J Amer Med Assoc. 2010 303(13):1295-1302.



The most helpful components for predicting persistent (at one year) disabling low back pain were maladaptive pain coping behaviors (high fear avoidance behavior scores), non-organic (Waddell) signs, functional impairments (high Roland-Morris Disability Questionnaire scores), general health status, and psychiatric comorbidities. The estimated median likelihood risk from a number of studies for each of these components is outlined in the table below.

Component	Likelihood Ratio
Non-Organic Signs of or widespread pain or somatization	3.0
High intensity fear avoidance scores	2.5
High intensity Roland Morris Disability (impairment scores)	2.1
Higher scores on psychiatric comorbidity scales	2.2
Lower health status scores	2.2

There were also a number of demographic findings that were not at all clairvoyant in predicting chronic low back pain. These included (to my surprise in some instances) age, sex, education, and BMI. Slightly more predictive were demographic descriptors such as sick leave or work comp status and job demands and satisfaction. Likewise, the presence of leg pain and/or radiculopathy and/or the number of previous episodes of low back pain were less useful in predicting worse outcomes at the one year mark. There is a lot more detail and some expert bottom line commentary if you'd like to read the entire article. The reference is above and to the left.



Question of the Month: Tennis Elbow



My elbow hurts. Should I get the doctor to give me a corticosteroid injection?



The most recent medical literature is definitely discouraging the use of corticosteroid injections (CCSI) for lateral epicondylitis secondary to its poor long-term efficacy and high likelihood for recurrence of symptoms as the impact of the shot wanes. A study from the *British Medical Journal* in 2009 suggested the recurrence rate may be as high as 70%. Other studies have suggested that there is not a significant outcome difference between placebo and real anti-inflammatory injections – this may be speak to either the placebo value of the shot and/or the fact that it is the “needling” effect of the injection that may be more important.

We also are unsure of the additive or combination value of non-conservative interventions (i.e. – physical therapy) with corticosteroids. To address these issues a recent study from *JAMA* looked at the outcome of 4 unique intervention strategies. 1)CCSI alone;

2)Placebo injection alone; 3)CCSI + PT; or 4)Placebo injection + PT.

What they found was interesting. While there were no long-term benefits in terms of patient satisfaction or functional change there were some difference in short-term findings between groups. The group that received the “real” injection did have greater pain relief and functional improvement for the first 8 weeks. This impact was negated (and in fact slightly reversed) by the 1-yr mark. The group that received physical therapy did better in the short term regardless of real or sham injections. By the end of the study there was no significant benefit for the PT intervention as compared to the groups who received injections alone. This finding may be speaking to the statistical regression towards the mean in which natural healing takes place over the course of the year for this type of condition.

A couple of other recent studies have looked at the types of conservative interventions that were labeled as physical therapy in this study. These two studies compared the benefit of a manual therapy approach (friction massage and manipulation) vs. a more traditional approach (phonophoresis, stretching, and eccentric strengthening). These two studies came to distinctly different conclusions. One study favored the manual approach and the other the more traditional approach. Both studies found that either intervention to be effective in the short term. My conclusion is that probably both forms of treatment are helpful and the choice of treatments hinges on the unique circumstance and impairments of each patient. If it were my elbow I would probably use the injection for its short term pain alleviation but appreciate the “cure” lies in the physical therapy interventions and the passage of time.

Questions you would like addressed in a future issue can be sent to mulliganpt@tx.rr.com

References

All references for the post-operative rotator cuff prognostic factors article are available on line at www.continuing-ed.cc/newsletter.htm

Rotator Cuff Success Prognosis: Pain Levels continued -



pain levels, we recommend that pain is addressed in the immediate post-op period. Cryotherapy and transcutaneous electrical nerve stimulation have both been proven to be effective means to reduce the intensity and frequency of nocturnal and resting pain as well as the use of post-op analgesics.⁶⁶⁻⁶⁸

An interesting study found that patient's pre-op expectations were predictive of their post-op pain reduction. Henn et al⁶⁹ showed that pain was self actualized in a study that rigorously controlled for age, gender, smoking, worker's compensation status, symptom duration, surgical history, comorbidities, tear size, and surgical technique. This study suggests the patient expectations may help to explain the divergent results in regards to pain and function in an otherwise similar population of patients. Tashjian et al⁷⁰ also found that high patient surgical intervention satisfaction correlated with high pre- and post-op expectations. One of the central indicators of this satisfaction was the post-op pain level experienced by the patient.

Diabetes and nerve entrapment are other comorbidities that have been associated with difficulty in achieving post-op pain relief. While diabetic patients showed significant improvements in pain and function, it was at a level less than their non-diabetic counterparts.⁷¹ Patients with retracted chronic tears may have neuropathic pain from the suprascapular nerve which is tethered at the transverse ligament before innervating the supraspinatus or at the spinoglenoid ligament before innervating the infraspinatus.

In regards to surgical approaches, Lindley et al⁷² reported no difference in long-term post-op pain, functional outcome scores, or tear recurrence when comparing all-arthroscopic and mini-open repair techniques. In contrast, Kang et al⁷³ found that patients with arthroscopic repairs had significantly less pain at 3 and 6 month post-op than patients with a mini-open approach.

We recommend the routine use of fear-related behavior questionnaires. Lentz et al⁷⁴ and Mintken et al⁷⁵ have both suggested that fear-of-pain scores contribute to shoulder function and short-term work absence. These self-report surveys could help identify patients who have an aversion to exercise therapy and indicate the need for early educational counseling to alleviate excessive concern regarding their gradual resumption of activities. The use of the Fear Avoidance Belief Questionnaire or the Tampa Kinesiophobia Scale identifies patients with behavioral tendencies that impact the outcome or delay the appropriate functional interventions necessary to ensure a successful outcome.

The next issue will present prognostic factors that impact post-operative patient satisfaction.

Old Concept Reinforced Early Open-Chain Quadriceps Exercise in a Limited Arc is Safe

An article published ahead of print in the *American Journal of Sports Medicine* evaluated a historic exercise rehabilitation concept that fell out of favor 25 years ago with the emphasis on "functional", closed-kinetic chain rehab-



tation following knee reconstructive surgery. While we'd all agree that there is appropriate justification for this approach we seemed to abandon time-tested concepts of quadriceps strength restoration. This clinical trial randomized subjects who'd undergone hamstring autografts into an early (4 weeks post-op) and late (12 weeks post-op) initiation of isotonic, open-chain leg extension exercises in a 90-45° arc. Both groups underwent a standardized rehabilitation protocol with the only difference being when the non-weight bearing exercises began.

The chief concern of initiating early quadriceps exercises is that it may place undue stress on the remodeling graft and result in increased anterior laxity. However, this was not found to be the case in this study with no significant differences between groups at approximately a 3, 5, 6, or 17 month follow-up. This phenomenon is likely the result of restricting the leg extension exercises to a protective arc that did not place strain on the graft. Even more encouraging was a slightly greater return of quadriceps strength at each follow-up interval in the early quad training group (although not statistically significant). Additionally, the authors found no difference between groups in pain or function at any time during the follow-up assessments.

We cannot generalize these findings to bone-patellar-bone grafts but I predict future research will also show similar results. Because return of quadriceps strength is such a critical (and difficult to achieve) element to athletic function I have always emphasized addressing this impairment early in the rehab process. Maybe this one article will motivate some clinicians to dust off that old leg extension machine and safely address a common impairment found after ACL surgery.

Fukuda TY, et al. OKC exercises in a restricted ROM after ACL reconstruction. A RCT. *Am J Sports Med.* Preview 2/19/2013



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Because of my place of employment I am fortunate to have full-text access to most journal articles that would be of value to me in the practice of physical therapy. Many of you may not have that luxury but I found a web site that may be of use for those who want to find free access to medical journal. Over the next few years, more and more journal will be available on-line free of charge because of the federal funding that is provided to many researchers. In the meantime check out this site. It provides a link to some of the most important journals, provides its impact factor, and tells you whether or not it's open access (free) and/or when the embargo will be lifted to allow free-text viewing.

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2013

Clinical Orthopedic Residency Education Series: An Advanced Manual Therapy Education Track



Still time to sign up for this year's CORE series. Our first class begins on April 20th. These courses are designed to provide a comprehensive overview of orthopedic physical therapy (from head to toe) based on the APTA's definition of advanced specialty practice. We've had a number of clinicians from the community take the series in the past three years and received excellent feedback on the content and format. In fact, we've had 15 clinicians from our first two classes pass the orthopedic specialty (OCS) exam. We anticipate another 8-10 from the 2012 class to be sitting for the exam in the next week or two. If you'd like a mechanism by which to prepare for the exam or would simply benefit from advanced coursework with expert colleagues, we hope you'll consider joining us this year. The courses are designed as a series but we allow attendance at individual courses if you are only interested in a specific body region. These courses are taught by the orthopedic faculty at UT Southwestern and cover examination & intervention strategies for the cervicothoracic spine, upper quadrant (shoulder, elbow, hand), lumbopelvic spine, and lower quarter (hip, knee, ankle/foot). All of the material is based on current evidence with over 50% of the on-site course work devoted to lab demonstration and practice. For more information on the 2013 advanced clinical orthopedic education series please visit our web site at www.continuing-ed.cc/residencycourse.htm. Let us know if you'd like us to send you a brochure.



Provocative Tests for the Wrist and Hand

There was a nice literature review regarding the provocative tests for the wrist and elbow in the *Journal of Hand Therapy* last year. They looked at 47 different tests (40% of which were for diagnosing carpal tunnel syndrome) and categorized them into 4 groups based on the quality of the research used to evaluate the accuracy of the



proposed test and a minimal threshold of having a mean positive likelihood ratio over 2 and negative likelihood ratio under 0.5. Special tests that made the "highly recommended" category were the Phalen's, Tinel's, and Modified Compression test for median nerve entrapment, the Watson Schaphoid shift test for scapholunate instability, and the Tinel's and Elbow flexion tests to identify cubital tunnel syndrome. 14 rather obscure (in my opinion) tests made the moderately recommended category. These tests were placed in this category because they have not been studied extensively or the published trials were of inferior quality. 20 of the 47 tests could not be recommended for clinical practice because of poor diagnostic differentiation abilities. The article also highlighted a number of common tests (varus/valgus laxity testing at the elbow, Mill's and Cozen's tests at the elbow for lateral epicondylitis, UCL ligament testing at the 1st MCP, and Finklestein's test for stenosing tenosynovitis in the 1st dorsal tunnel) that are widely used but have little or no research to support their utilization. This article was an excellent overview and has a valuable appendix that describes each of the 47 test's technique and interpretation.

If you're interested in the evaluation and management of orthopedic wrist and hand injuries you may enjoy our home study on Orthopedic Evaluation and Management of Wrist and Hand Injuries: From Adolescence to Adulthood. This inservice can be read and/or viewed free of charge. A post-test for CEU credit is available at <http://www.continuing-ed.cc/homestudy.htm> for a reasonable fee.

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