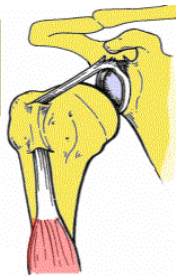


# clinical conduit



## The Passive Compression Test

A Critical Appraisal of a New Diagnostic Maneuver to Detect a Superior Labral (SLAP) Lesion

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This pathology is typically referred to by the acronym of a "SLAP" lesion. SLAP is actually an abbreviation based on the original work of Snyder, et al, in 1990 that stands for Superior-Labral-Anterior-Posterior. The anterior-posterior descriptors reference the lesion's location between the 10:00 and 2:00 positions. He defined the problem as a detachment lesion of the superior aspect of the glenoid margin in the area of the insertion of the long head of the biceps. He described four variants of the pathology and characterized them as:

**Type I:** degenerative or shredded labrum with a normal biceps tendon anchor

**Type II:** superior separation of the labrum with a normal biceps tendon anchor

**Type III:** labrum has separated for biceps tendon with a resultant bucket handle type tear

**Type IV:** both the labrum and biceps have separated from the glenoid rim

Recently, in the American Journal of Sports Medicine a new provocative maneuver was proposed to

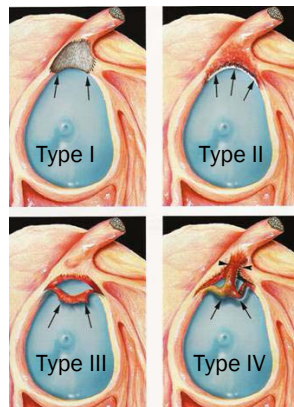
help us identify this pathology.

As has been confirmed in a systematic review published earlier this year on diagnostic testing for superior glenoid labral tears the consumer (reader) must be cognizant of the level of the diagnostic study and how its results are related to the pathology's prevalence. Diagnostic studies are ranked as Level I, II, or III based on the subject selection method, application of a universally accepted gold standard, and whether or not this is an initial or subsequent validation of the diagnostic

accuracy on a second independent population. This study is considered a Level II in that it had a consecutive sampling of patients and used arthroscopy as the reference standard; however, it has not been validated in a second study.

All SLAP special tests that have been studied more than once have suffered from decreasing reports of accuracy. This is likely due to selection bias. Unless the patient population is similar in terms of age and the presence of co-morbidities one could expect variable test results. Unfortunately, most studies seem to have been conducted on a cohort of patients with a much higher prevalence than naturally occurs (true of this study as well) or have subjects of variable age and co-morbidity. This test is somewhat enlightening in that it did look at the effect of the co-morbidities on the statistical accuracy of the test results. If the prevalence is as high as reported in this study and it ...

*continued on page 2*



### Upcoming Course Schedule

#### Shoulder Course

Feb 16-17, 2008 - Grapevine  
Mar 29-30, 2008 - Iowa City, IA

#### Lumbar Course

Mar 1-2, 2008 - Salina, KS  
Mar 15-16, 2008 - Plano, TX  
May 17-18, 2008 - Lawton, OK

#### Knee Course

July 12-13, 2008 - Grapevine, TX

#### Pilates Course

Aug 16-17, 2008 - Grapevine, TX

#### Foot-Ankle Course

Sep 27-28, 2008 - Plano, TX

#### Cervical Course

Nov 15-16, 2008 - Plano, TX

A detailed description of the course content and learning objectives is available at our web site -

[www.continuing-ed.cc](http://www.continuing-ed.cc)

## Plantar Fasciitis: The Evidence for Evaluation and Conservative Management: Part 2



In Part I (Volume 2:5, September 2007) we focused on the evaluation of plantar fasciitis and in Part II we will discuss the evidence for the non-operative treatment of plantar fasciitis. There are a number of medical interventions that either augment the care provided by allied health care providers or are used when conservative measures fail to alleviate pain and restore function. These include non-steroidal anti-inflammatory drugs (NSAIDs), topical medications, extracorporeal shock wave therapy, and partial surgical releases. From a conservative perspective there is limited evidence at this time on which to base a definitive guideline for care. The Cochrane review by Crawford, et al.<sup>13</sup> reported that common treatments used to reduce heel pain offer marginal gains as compared to no treatment in control subjects. That said I would like to look at a number of common individual interventions and detail the evidence supporting their application.

*continued on page 3*

## Superior Labral Lesions continued ...

### References

Kim YS, et al. The passive compression test: a new clinical test for superior labral tears of the shoulder. *Am J Sports Med.* 2007 Sep;35(9):1489-94.

Jones GL, Galluch DB. Clinical assessment of superior glenoid labral lesions: a systematic review. *Clin Orthop Relat Res.* 2007 Feb;455:45-51.

Hegedus EJ, et al. Physical Examination Tests of the Shoulder: A Systematic Review with Meta-analysis of Individual Tests. *Br J Sports Med.* 2007 Aug 24; [Epub ahead of print]



Figure 1:  
**The Passive Compression Test**

The test is performed with the patient in side lying on the uninjured side. The physician stabilized the patient's affected shoulder by holding the acromioclavicular joint in one hand and the patient's elbow in the other. In 30° of abduction the patient's shoulder was externally rotated and then a simultaneous superiorly directed long axis compression was applied to the humerus as the shoulder was extended. A positive test was present if there was reproduction of pain or mechanical clicking.

can be confirmed with follow-up investigations the calculated likelihood ratios show a powerful ability to predict the post-test probability for the presence of labral pathology. Here is a brief summary of the study results.

**Study Population** – 74 consecutive patients (76 shoulders) with painful shoulder joints were evaluated. 15 patients with fractures or frozen shoulder were excluded. 57 of the 61 patients were male with a median age of 32.6 years (range 19-54). The dominant shoulder was involved 90% of time with 82% of the patients having a traumatic onset to their pain complaint.

**Interventions** - the passive compression test was performed by 2 physicians blinded to each other's findings and prior to taking a medical history or imaging studies. Subsequently, the presence of all superior glenoid labral lesions (and other co-existing pathoanatomical findings) were verified via arthroscopic exam. The passive compression test is pictured and described to the left in Figure 1.

**Outcomes** – 31 of the 61 shoulders had a positive test. 30 of the 61 had a negative test. Of the 31 with a positive test, 27 had arthroscopically confirmed SLAP lesions (of different variety). Of the 30 with a negative test, 24 had an intact superior labrum. Therefore the test's sensitivity was 82%, specificity was 86%, positive predictive value was 87%, and negative predictive value of 80%. The kappa coefficient rating the degree of (non-chance) agreement between physician evaluators was 0.771 ( $p < .01$ ).

### Appraisal of the Study:

There has been a wide range of accuracy reported for a variety of diagnostic tests proposed to identify this pathology. The results of this test are within this range. A unique aspect to this study is that the high intertester reliability of this examination procedure was confirmed. The passive nature of this test (as compared to active mechanisms inherent to other tests) and the range in which it is performed may make this test more applicable for those with painful or restricted motion joints (i.e. – concurrent rotator cuff tears). While this injury's prevalence is not known to have a gender preference this study did have a high % of male subjects who suffered injuries from active lifestyles. There was a wide range of subject age making the test potentially applicable to a broad chronological spectrum. The major drawback to this study was that it is an initial investigation of a new technique that has not been validated by another study with a different subject population. Also, further studies could evaluate the test following surgical remedy of the lesion or with a control group that is free of shoulder pain to confirm its predictive validity. Finally, while not provided in the study, I calculated the likelihood ratios based on the sensitivity and specificity values reported. The positive likelihood ratio is 5.9 and the negative likelihood ratio is 0.21 (both which would be classified as moderate shifts in probability to rule in or rule out the pathology).

### Conclusions:

Despite the relatively high specificity and sensitivity, the diagnosis of this pathology is still highly dependent upon the subjective history and comprehensive examination to heighten the patient's pre-test probability of the lesion. In the event that these findings are suggestive of labral pathology this test could be used as a good adjunctive maneuver to rule the problem in or out. This test has a high clinical utility for patients with suspected rotator cuff co-morbidities and has a valuable role in the event that an anterior instability has been ruled out. However, at this time, the findings from this test should only be considered one piece of the diagnostic puzzle and confidence in the diagnosis would be enhanced by a cluster of positive findings from other similar tests.



## Question of the Month

What is a PICO?

J.C., PT – AR

P.I.C.O is a mnemonic abbreviation that describes the way a clinical issue should be framed when asking a colleague a question or doing a literature search to ensure an evidence-based perspective. The well built PICO has four elements that are briefly described in the chart to the right.

PICO Element	Tips
<b>P</b> atient/Problem	Ask who is this patient? How would I describe this patient to a colleague? What is the common condition or disease you're interested in? Balance precision with brevity.
<b>I</b> ntervention	What do I want to do for this patient (treat, diagnose, prognose)? What kind of treatment am I considering? Be as specific as possible
<b>C</b> omparison	If not compared to a control group, what would be a likely alternative to the treatment you're considering? (placebo, different form of therapy, medication, surgery)
<b>O</b> utcome	What are the relevant outcomes? What do I hope to change? Is it measurable? Don't just say "more effective – quantify how the intervention will specifically be more effective.

### Plantar Fasciitis references available at:

<http://www.continuing-ed.cc/PReferences.pdf>



Fig 1 - Intrinsic plantar fascia stretch. See Volume 1:6 for greater detail



### "Featured Internet Link"

**ReleMed**

ReleMed

[www.relemed.com](http://www.relemed.com)

ReleMed is a free search engine source for your clinical questions. You simply enter one or a few words, and then ReleMed searches all the data in MEDLINE for the best matches to your query words. Unlike PubMed that lists the citations by date, ReleMed displays the most relevant results first (although the search results are almost identical). Each citation is assigned a level of relevance by a green indicator bar. When you hover your mouse on the indicator bar, it shows a yellow tip explaining the types of sentence matches for that article. I've found this search site to be very effective in my quick searches for basic information regarding a clinical topic.

## Plantar Fasciitis continued -

In general, 80-90% of patients with plantar fasciitis respond well to conservative treatment. Baxter<sup>7</sup> showed that 90% of their subjects recovered with conservative care in an average of 11 months. Wolgin, et al<sup>50</sup> utilized a survey instrument to assess patient's perception of treatment and also found that approximately 90% had good results in an average of 6 months. In their survey, patients reported that stretching, "cushioned" inserts, and NSAIDs were the most effective interventions while poor results were most common in patients who were overweight, had bilateral symptoms, or a longer duration of symptoms prior to the initiation of medical management.

The initial intervention goals should be focused on decreasing pain, minimizing plantar fascial strain, and identifying and addressing predisposing risk factors. Maybe the most important early treatment is appropriate rest or simply avoiding or reducing activities that aggravate symptoms. The patient's asterisk sign(s) should be reduced in intensity, duration, and/or frequency. I have found ice massage an effective treatment for its anesthetic value however no research is available to support this statement. Many common therapeutic modalities have **NOT** been found to be effective in the management of plantar fasciitis. Therapeutic ultrasound<sup>14</sup>, low-intensity laser<sup>6</sup>, and electron generating insoles (magnet therapy)<sup>49</sup> have not been shown in random controlled trials to be more effective than sham or placebo treatments in alleviating pain. There does seem to be clinical consensus (although limited research) that one of the more effective early interventions is what I call "rolling-pin" therapy. The patient is asked to keep a hard, cylindrical device (like a rolling pin, cylindrical aerosol can, Coke bottle, etc) at the foot of their bed and easy chair and must gently roll their foot over the device for 15 seconds if they have been in a position of non-weight bearing for more than 15 minutes. At the very least, patients report a significant reduction in "first step" pain if they gently stretch their arch prior to weight bearing.

### STRETCHING/STRENGTHENING

An important element in the management of plantar fasciitis is stretching of the triceps surae and the plantar fascia itself (Level II Evidence – evidence supported by low quality random controlled trials or prospective comparative studies). Wolgin reported that 83% of the subjects in his study found gastroc/soleus stretching to be the most important element of their treatment.<sup>50</sup> Porter<sup>36</sup> found that both sustained and intermittent stretching are effective in the management of a painful heel syndrome. I have found this treatment particularly important in the foot that hyperpronates in midstance to gain sagittal plane motion that is not available at the talocrural joint. DiGiovanni<sup>17,18</sup> found that even greater improvement in pain and function was achieved by intrinsic plantar fascial stretching (Figure 1). This stretch incorporates simultaneous ankle and 1<sup>st</sup> MTP dorsiflexion. They found this stretch was most effective when performed before initial weight bearing in the morning and recommend 10 stretches for 10 seconds after any period of prolonged non-weight bearing. There is also Level II evidence for increasing 1<sup>st</sup> MTP range of motion. This can be accomplished through dorsal glides of the 1<sup>st</sup> proximal phalanx and/or distal gliding of the sesamoids<sup>45</sup>. In my experience these techniques seem to be especially helpful with the patient who has a cavus foot.

The literature also supports the application of strengthening activities. Intuitive reasoning would suggest that training the muscles that control and reverse pronation (posterior tibialis, anterior tibialis, and peroneals) at the subtalar joint would reduce tension on the plantar fascia. Martin<sup>30</sup> emphasized the importance of strengthening the intrinsic muscles of the foot. His subjects found that intrinsic training (sweeps, curls, pick-ups, etc) were more helpful than other forms of intervention such as night splints, orthotics, heel cups, and NSAIDs.

### EXTERNAL SUPPORT

The final element of management that should be considered by the care provider is external support. This could include the appropriate use of shoes, orthotics, taping, and night splints. One of the easiest recommendations is to counsel the patient on the type of shoe that will most likely control their symptoms. Wolgin's study<sup>50</sup> found that 14% of patients with chronic heel pain found a change of shoes as the most effective treatment. I generally recommend a shoe with a firm heel counter and straight last. The midsole should be flared and beveled to enhance stability and have adequate shock attenuation. If the gastroc/soleus is tight an elevated heel is a desirable temporary measure as long as it doesn't affect the midfoot and forefoot's flexibility.

A number of taping techniques have demonstrated level II evidence as effective means to provide short-term relief of symptoms. Landorff<sup>26</sup> showed a significant short-term reduction in pain with Low-Dye taping and Hyland<sup>20</sup> showed calcaneal taping to be more effective than stretching, sham taping, or no treatment.

I tend to find that the Low-Dye taping is particularly beneficial for patients with forefoot varus deformities and the calcaneal taping to be helpful in controlling compensatory rearfoot motion. Lynch, ...

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"If you have learned all the answers ... it's time to change the question"



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### Plantar Fasciitis continued -

The "Clinical Conduit" newsletter is an every other month publication available to any allied health care provider free of charge upon request. Individuals who would like to be included on the email distribution list should contact the editor at [mulliganpt@tx.rr.com](mailto:mulliganpt@tx.rr.com)



et al<sup>29</sup> conducted a randomized, prospective study to compare mechanical support (taping for the first month and custom orthotics for the next two months) with accommodative heel cups and corticosteroid injections. They found significantly better outcomes in the taping-orthotic support group (70% satisfaction) as compared to the accommodative/anti-inflammatory group (30% satisfaction).

There are many studies which have supported the use of orthotics for patients with plantar fasciitis. The debate centers more on what type of orthotic and the degree of customization that is necessary to achieve a desirable outcome. Siligman<sup>44</sup> showed that a customized heel pad/soft orthotic offered significant pain relief in a small sample of elderly patients while Gross<sup>19</sup> showed that semi-rigid orthotics provided a 66% decrease in pain and 75% reduction in disability. Studies by both Pfeffer<sup>33</sup> and Landorf<sup>24</sup> suggested that customization was not necessary for optimal outcomes.



For patients with more chronic symptoms (longer than 6 months) there is good evidence (Level II) for the use of night splints<sup>8,35,37</sup>. The splint is used to maintain the ankle and toes in a dorsiflexed position during the night to prevent physiological creep of the fascia while non-weight bearing.

Finally, for assessing patient progress a number of outcome assessment tools are available. The Foot Functional Index, Foot and Ankle Ability Measure, and Foot Health Status Questionnaire all have been shown to be valid (content and construct), reliable, and responsive for changes in the status of patients with plantar fasciitis<sup>30</sup>.



## Featured Home Study Program Ethics and Professional Responsibility

What is the difference between ethics and morals? The Greek derivative of ethics" comes from the word *ethos*, which means character. The Latin origin of ethics comes from the term *mores* that means customs. Although "morals" and ethics are sometimes used interchangeably they do have distinct differences.

Ethics is the practical and theoretical structure by which morals are formed. Morals include ethically examined practices, but can also include scenarios or perspectives that have not been ethically analyzed or judged. Examples might include social customs, prejudices, and lifestyles. No one should feel compelled to abide by another person's morality, although individuals are clearly obliged to comply with organized ethical and legal mandates.

Ethical behavior is important because it intrinsically makes people feel better about themselves if they work and act in such a manner. On a professional level, ethics promote good business. A time tested truth is that over the long run, ethical associations perform better than unethical groups. Ethical standards simply push our profession to truly determine what "is best" through disciplined, internal accountability. In fact, the credibility of our profession rests not only on technical competence, but also on the public's trust and expectation that we will judge the quality of our service and validate its legitimacy. Many states now require education in professional conduct. We have a TPTA approved written home study that will meet this requirement and explain the rules and regulations that define our practice and professional responsibilities. This inservice can viewed or read free of charge. A post-test for CEU credit is available at <http://www.continuing-ed.cc/homestudy.htm> for a reasonable fee for clinicians licensed in Texas or Oklahoma.

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