continuing ED

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clinical conduit

by Ed Mulligan, PT, DPT, OCS, SCS, ATC

During the past year my colleagues and I have focused on the evaluation and management of lateral hip pain. This has culminated in presentations at the Combined Sections and TPTA annual meetings. Over the next 4 issues we will reprint our findings on Greater Trochanter Pain Syndrome as to be published in *Physical Therapy in Sport* in 2015.

Inside this issue

Greater Trochanteric Pain Syndrome: Part 1 - Introduction

The term greater trochanteric pain syndrome (GTPS) is a label that references a variety of chronic hip pain diagnoses. These conditions typically encompass several soft tissue lesions including coxa saltans (external snapping hip), trochanteric bursitis, and gluteus medius and minimus tendinopathies (Strauss, Nho, & Kelly, 2010). The commonality of these conditions is prolonged, intermittent peritrochanteric pain accompanied by tenderness to palpation overlying the lateral aspect of the hip. Historically, this syndrome has been referred to as a "bursitis", but ironically, the presentation is rarely accompanied by the cardinal symptoms of inflammation including erythema, edema, and rubor. (Williams & Cohen, 2009).

While trochanteric bursal inflammation is often implicated it is rarely the culprit responsible for the patient's symptoms. Bird (Bird, Oakley, Shnier, & Kirkham, 2001) showed magnetic resonance imaging (MRI) evidence in a group of 24 subjects that nearly all had gluteus medius abnormalities but bursitis was only present in 8% of the subjects. GTPS is a more apt description of this geographically located disorder allowing for the possibility of many contributors to the symptoms. This article will discuss the differential diagnosis of numerous potential sources of the lateral hip pain that require unique treatment approaches to affect a remedy. These could include musculotendinous degeneration, myofascial inflammation, compressive friction, or referred pain from intra-articular or lumbopelvic pathology.

The pathophysiology of GTPS can be classified by a variety of mechanisms such as the source of the symptoms (neurologic, soft tissue, skeletal, systemic, or referred (see figure on next page), the location of the symptoms, or the mechanism of onset (traumatic vs. overuse).

This review will focus on the most typical variety of GTPS in which the symptoms emanate from soft tissue disorders. In this regard the soft tissues structures in the trochanteric area are similar to those in the area of the greater tuberosity of the shoulder. Like the supraspinatus and infraspinatus, the gluteus medius and minimus tendons are prone to trigger points, tendon degeneration, or tendon failure. Likewise, the subacromial bursa of the shoulder or deep trochanteric bursae in the hip have potential for inflammation. It has even been postulated that overlying rigid and unyielding structures such as the acromion and coracoacromial ligament in the subacromial space or the iliotibial band (ITB) at the hip may cause external impingement or compressive irritation (Ho & Howard, 2012).

While GTPS can stem from a variety of mechanisms the most common onset is from degenerative, interstitial changes in the hip abductor tendons. This is similar to the intrinsic tendon changes seen in rotator cuff pathology (Connell, Bass, Sykes, Young, & Edwards, 2003; Grumet, Frank, Slabuagh, Virkus, Bush-Joseph, & Nho, 2010; Kagan, 1999; Kong, Van der Vliet, & Zadow, 2007).

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Burnout in Physical Therapy

I was one of those students in college that couldn't decide on a major for my first year or two of college. I'm embarrassed to admit some of my choices were based on what I wouldn't have to take or what type of professional dress would be required in that profession. Needless to say my motives were sophomoric. Somehow I stumbled on to the idea of athletic training. I always loved sports but wasn't good enough to make a team in college so athletic training seemed like a way to stay involved with athletic competition. From there I was fortunate to have mentors and advisors steer me towards physical therapy after my undergraduate degree. I give you this background as a prelude to my comments about professional burnout. For someone who didn't "grow-up" with the idea of being a health professional (in fact, I'm pretty sure I didn't know what a "PT" was until college") I've been very fortunate in my chosen profession. I can honestly say I've never awoken one morning and regretted my decision or thought I don't want to do this anymore. Surprisingly, there is very

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2015 CALENDAR

Upcoming Courses for 2015

Advanced Manual Therapy Series
Clinical **O**rthopedic **R**ehab **E**ducation

2015 tentative dates

Part 1: Cervicothoracic/TMD - Apr 11-12
Part 2: The Upper Quarter – May 30-31
Part 3: Lumbopelvic Spine - Jul 11-12
Part 4: Hip/Knee - Aug 15-16
Part 5: The Lower Quarter – Oct 3-4
(Leg, Ankle, and Foot)

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GTPS continued …

Neurologic	Soft Tissue	Systemic
Meralgia Paraesthetica	• Bursopathy • Intrinsic Degenerative Tendinosis • Traumatic Tendon Avulsions • Calcific Tendonitis • Myofascial • Snapping Hip • ITB Syndrome	Cancer
Skeletal		**Referred**
• Fracture • Enthesophyte • Arthritis		L2-3 Radiculopathy

Similar to the shoulder, impingement forces through external compression may then be magnified by altered biomechanics and functional compensations. Histological investigation and evidence from MRI (Fearon, Scarvell, Cook, & Smith, 2010; Schapira et al, 1986) or ultrasound identification (Kingzett-Taylor, Tirman, Feller, McGann, Prieto, Wischer, Cameron, Cvitanic, & Genant HK, 1999) of calcific changes about the greater trochanter in 13-40% of patients with chronic GTPS substantiate this perspective.

In an industrial society the prevalence of GTPS is approximately 10-25% in between the fourth and sixth decades of life and is 2-5-times more likely in females but represents only 2.5 % of hip injuries in a sporting population (Anderson , Strickland, & Warren, 2001; Bird et al, 2001; Shbeeb & Matteson, 1996; Williams & Cohen, 2009). Segal et al (Segal, Felson, Torner, Zhu, Curtis, Niu, & Nevitt, 2007) showed the prevalence of unilateral and bilateral GTPS to be 15% and 8.5% in women and 6.6% and 1.9% in men respectively. In a primary care setting the reported incidence of GTPS is around 2 per 1000 per year (Lievense, Bierma-Zeinstra, Schouten, Bohnen, Verhaar, & Koes, 2005). Similar incidence was found in a survey of active U.S. military service members with a fivefold higher risk in women (Blank, Owens, Burk, & Belmont, 2012). These authors speculated that this female predisposition may be secondary to anatomical differences stemming from a relatively wider pelvis, which alters the muscle biomechanics of the gluteal muscles and the ITB in the area of the greater trochanter. At this time it unclear as to the specific incidence of gluteus medius and minimus tendinopathy as the primary cause of GTPS. One study reported an incidence of gluteal tendinopathy in the range of 9-23% in an age-matched group of patients undergoing alternative hip surgical procedures (Howell, Biggs, & Bourne, 2001). Since these rates are similar to the overall incidence of GTPS one could speculate that a large percentage of GTPS is associated with gluteal tendinopathy.

A number of risk factors have been implicated in the likelihood of developing GTPS. Because of the functional connection between the lumbopelvic and hip region it is not surprising to see that a concurrent or past history of low back pain was found in 20-62% of patients with GTPS (Collée, Dijkmans, Rozing, & Cats, 1990; Segal et al., 2007; Schapira et al., 1986; Tortolani, Carbone, & Quartararo, 2002). In a cross-sectional, multi-center observational study, Segal (Segal et al., 2007) additionally found that ITB tenderness and knee osteoarthritis were positively related to the presence of GTPS. It is postulated that these confounding variables adversely alter lower-limb biomechanics and create abnormal force vectors at the hip. In contradiction to popular clinical sentiment, Segal (Segal et al., 2007) could not find a positive relationship based on obesity (> 30 BMI) or limited hip internal rotation mobility. Unproven, but possible extrinsic risk factors for the athletic patient may include asymmetrical shoe wear, running on a cambered or crowned surface, or an unreasonably rapid progression in the intensity, duration, or frequency of training. It is also hypothesized that inadequate core stability, gluteal weakness, functional limb-length discrepancies, and alterations in the pronation-supination sequence could contribute to the probability of developing GTPS. Runners who adduct the hip beyond midline in the gait cycle are predisposed to this problem particularly if they routinely run on cambered surfaces that create limb length inequality (Anderson et al., 2001).

In the next issue we'll present our findings regarding the history and physical exam

The references provided in this article are available as full citations in a bibliography available on-line at our web site - wwww.continuing-ed.cc

I also would like to acknowledge my colleagues and co-authors for their contributions to the manuscript. Thank you to:

Dr. Emily Middleton, PT, DPT, OCS, CSC
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What do you think of the Thessaly test?

Goossens P, et al. . Validity of the Thessaly Test in Evaluating Meniscal Tears Compared With Arthroscopy: A Diagnostic Accuracy Study. *J Orthop Sports Phys Ther*. 2014 Nov 24:1-26. [Epub ahead of print] PubMed PMID: 25420009.

A lot of enthusiasm has been shown for the Thessaly test since it was initially described back in 2005. The first two studies seemed to indicate a high degree of accuracy but little attention has been paid to the subsequent evaluations used to validate its utility in a broader population. It also seems that no one noticed that the test has only been proved of value in a more chronic population (injury more than one month old). Personally, I still find entrapment testing via an Apley or McMurray test and joint line palpation an important adjunct to diagnosis, particularly in patients with a more acute or traumatic injury.

In fact, a recent study published ahead of print in the *J Ortho Sports Phys Ther* suggests that these special tests may not be that useful in the clinical confirmation of a mensical tear. In that study they found the Thessaly test alone had a sensitivity of 64% and specificity of 53%. Even the combination of the results from the Thessaly and McMurray test were similarly unimpressive with sensitivity and specificity of 53 and 62% respectively.

My recommendation is to use a cluster of findings to increase your confidence in the diagnosis of a meniscal tear. The presence of the following five findings increases the positive likelihood ratio of a meniscal tear to 11 - the patient has history of "catching" or "locking", pain is reproduced with forced hyperextension and maximal flexion, the joint line is tender, and an entrapment sign is positive. As we now know, this only increases the likelihood of the meniscal pathology but the patient should still undergo conservative rehabilitation before considering a surgical solution.

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

References

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The PT Now portal is a pathway to existing resources and a generator of synthesized evidence. PTNow clinical summaries and clinical cases are enhanced with links to tests and videos of examination procedures and therapeutic interventions, as well as a blog where you can share new knowledge on clinical topics and discuss the implementation of new knowledge in patient care. Orthopedic Clinical practice guidelines that have been published for ATPA members include Achilles tenditinits, ACL injury, BPPV, and TKA. Many more clinical summaries are due to be published this year so I'd recommend you check the web cite regularly for updates.

Burnout continued -

little in our literature about "burnout". One study from 1984 said that 53% of us currently have feelings of burnout. A couple of more recent studies in the 1990s looked at burnout rates in orthopedic physical therapists and physical therapists working at inpatient rehab hospitals. The study for PTs in rehab settings showed 46% of respondents scored high on the emotional exhaustion subscale of the Maslach Burnout Inventory scale, 20% scored high on the depersonalization subscale, and 60% scored low on the personal accomplishment subscale. As a whole, the sample demonstrated moderate burnout.

Three factors emerged from the factor analysis. The factors communication/ connectedness, achievement, and time constraints accounted for 69% of the variability in emotional exhaustion and 73% of the variability in depersonalization and personal accomplishment. Burnout was not significantly associated with the therapists' number of years of practice, number of years on the job, or number of patients seen daily. So it seems all are somewhat prone.

In the study looking at orthopedic PTs, the respondents reported a slightly lower level of burnout. However, all therapists, except those in private practice, showed moderate levels of burnout on the Emotional Exhaustion subscale. The mean score for therapists in rehabilitation settings (23.71) was the highest Emotional Exhaustion score for any grouping used in the study.

Physical therapy is certainly not the only health care field prone to burnout. Occupational burnout is quite common with individuals working in human service professions. (social workers, nurses, teachers, lawyers, engineers, physicians, customer service representatives, and police officers). I believe the burnout rate for us may be elevated because the stakes are high and the work results do not always correlate with the degree of effort exerted by the provider. If you are feeling a little "burned-out" take solace in the fact the typically the therapists most vulnerable to occupational burnout are ones who are strongly motivated, dedicated, and involved in their work. Work for you is meaningful and you take great pride in meeting your patient's expectations.

I'd love to hear from you if you have had feelings of "burnout"- What were your symptoms? and What strategies you'd suggest to your colleagues to avoid or overcome? If I get some good feedback I'll anonymously publish some of the comments along with ideas that have helped me remain pleased with my career choice for the past 35 years.

Hip Adductor EMG Study

A recent article in the *British Journal of Sports Medicine* evaluated the electromyo-graphic activity in a group of common rehabilitative exercises for the hip adductor muscle group that could be used in the prevention of treatment of hip and groin related injuries. There have been a number of studies over the past five years looking at the difficulty of hip abductor exercises so it was interesting to see the same type of assessment for the hip adductor group.

This study used 40 healthy college-age male soccer players as subjects to gather the EMG data. All of the percentages reported below are based on the maximal voluntary isometric contraction during a bilateral hip adduction maneuver in a supine position with the hip and knee straight and a ball placed between the knees.

Copenhagen Adduction

Top limb - 108% MVIC
Bottom limb - 69%MVIC

The top limb is supported in a sidelying plank position and bottom leg is lifted up towards the top leg

Bent Knee Isometric

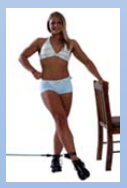
102-108% of MVIC

A ball is placed between the knees with the hips and knees bent about 90° The knees "squeeze" the ball.

Elastic Tubing Resisted Hip Adduction-Standing

100% of MVIC-swinging limb
70% of MVIC - stance limb

Adduction against the resistance of elastic tubing with tension equal to 80% of one rep max



Hip Adduction Machine

99% of MVIC

Isotonic progressive resistive exercise in a hip adduction machine at 80% one rep max

Sliding Hip Adduction

98% of MVIC-moving limb
89% of MVIC - stance limb

Standing on a tile surface with one foot on a wash cloth. The limb is moved laterally as far as allowed by the COG and returned to starting position.

Sidelying Hip Adduction

64% of MVIC

Top leg is moved out of way to allow a lifting of the bottom leg

Previous issues are archived at
www.continuing-ed.cc/newsletter.htm

"Cheers to a new year and one more chance for us to get it right."

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

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 over the past 5 years and received excellent feedback on the content and format. In fact, we've had over 30 clinicians from our first four classes pass the orthopedic specialty (OCS) exam. We anticipate another 10-12 from the 2014 class to be sitting for the exam in March. 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. These courses are taught by the orthopedic faculty at UT Southwestern. The 2015 series will begin again in April. The course content includes examination and 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 2015 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. The courses are designed as a series but attendance at singular courses is allowed on a space available basis.

The Extensor Carpi Ulnaris Synergy Test

Chronic dorsal ulnar-sided wrist pain has been described as the low back pain of the wrist because of the elusiveness of a specific diagnosis and the refractory nature of the pain. With a wide array of both contractile and non-contractile pathologies possible (lunotriquetral instability, arthritic changes at the distal radioulnar joint (DRUJ) or lunotriquetral articulation, DRUJ instability, tears of the triangular fibrocartilage, stylocarpal impingement, and ECU tendonitis or instability) - distinguishing the etiology of the symptomatic source of pain can be challenging.

The inability to distinguish between intra- and extra-articular pathology leads to a heavy reliance upon ancillary studies, most notably magnetic resonance imaging (MRI) and wrist arthrography. Though of proven utility, these studies may identify asymptomatic intra-articular attritional changes in the TFCC or the luno-triquetral ligament and erroneously prompt a surgeon toward operative intervention when, in fact, tendinitis of the ECU may be the actual source of the complaint. A new test, using the principle of synergism (muscles working together) has been proposed to identify ECU tendinitis. The authors of the study hypothesized that resisted radial abduction of the thumb would initiate an isometric contraction of the ECU tendon and recreate the dorsal ulnar wrist pain (see picture above). The ECU synergy test is performed by having the patient rest his or her arm on the examining table with the elbow flexed 90° and the forearm in full supination. The wrist is held in neutral position with the fingers in full extension. Facing the patient, the examiner grasps the patient's thumb and long finger with one hand and palpates the ECU tendon with the other hand. The patient then radially abducts the thumb against resistance. The presence of both FCU and ECU muscle con-traction is confirmed by direct palpation as the tendon bowstrings under the fingertips. Reproduction of the patient's wrist pain complaint is considered a positive test.

Using the test on 54 subjects from 3 distinct groups revealed the following results. The 21 subject with intra-articular pathology on MRI or arthroscopic exam had a negative synergy test (perfect sensitivity). The other 33 subjects had a positive test. Of this group, the 11 subject who only had examination evidence of ECU tendonitis all responded extremely well to 11 subjects with positive tests who only examination evidence of ECU tendonitis all responded well to a corticosteroid injection into the ECU sheath. The remaining 22 subjects had evidence of both intra and extra-articular pathology and 17 of these subjects had a positive test. In this preliminary investigation it seems that this test may be accurate enough to avoid an MRI in the instance of a positive test. This may be a test that can isolate the ECU tendon with stressing intra-articular structures. If you find this information valuable you may enjoy our home study of examination of the wrist and hand. If you'd like more information on our home studies they can be found at http://www.continuing-ed.cc/homestudy.htm. These are all TPTA approved and can be accessed free of charge. A post-test for CEU credit for a reasonable fee is also available.

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