

# clinical conduit

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

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## Atypical Fractures in Osteoporotic Patients on Biophosphonates



Osteoporosis is a skeletal disorder characterized by compromised bone strength (density and quality) predisposing an individual to an increased risk for fracture. Physical therapists are accustomed to treating the elderly femur fracture from both a preventative and post-operative perspective. While we can't alter the natural course of aging or post-menopausal hormone changes we often provide conservative approaches such as fall prevention training, counseling on adequate intake of Vitamin D, calcium, and dietary protein, along with regular weight bearing activity to mitigate the risk of an osteoporotic

induced femoral fracture.

Physicians will often prescribe pharmacological therapies (biophosphonates) to men and women over 50 with a T score of < -2.5 or osteopenic patients with a T-score in the range of -1 to -2.5 and have a 10-year probability of a hip fracture greater than 3% as calculated by the FRAX tool. The FRAX is an algorithm that predicts the risk for fractures based on bone mineral density. This on-line calculator can be found at <http://www.shef.ac.uk/FRAX/>

For over a decade, post-menopausal women with osteoporosis have been treated with the biophosphonate class of medications. While alendronate therapy (Fosamax®) has been shown to decrease the risk of vertebral and femoral neck fractures in post-menopausal osteoporotic patients,

recent reports have associated long-term alendronate therapy with low-energy subtrochanteric and diaphyseal femoral fractures in a number of patients.

Recently, multiple reports have raised safety concerns that women who have taken biophosphonates for more than 4 years are at an elevated risk for atypical, spontaneous femur fractures.



- continued on page 3

## Upcoming Courses

Advanced Manual Therapy Series  
Clinical Orthopedic Rehab Education

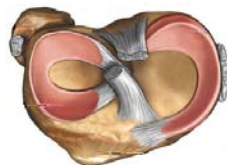
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### 2011 Dates

Part 4 Lumbopelvic - Jul 16-17  
Part 5 Hip/Knee - Aug 27-28  
Part 6: The Lower Quarter - Oct 15-16  
(Leg, Ankle, and Foot)

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)

Single course attendance is allowed on a space-available basis



## Knee Meniscal Examination

Functional limitation deficits secondary to knee pain are commonly seen by clinicians. One of the more common causes of mechanical symptoms (pain and locking) is injury to the meniscal fibrocartilage. In younger patients the mechanism of injury is typically of traumatic origin with a weight-bearing, twisting incident in knee flexion. In older patients it's more likely to be an insidious onset secondary to cartilage degeneration. In either case it is important to differentiate the lesion from patellofemoral pain syndrome. Key questions from the history include initial presentation (mild to moderate swelling), presence of "the knee periodically getting stuck or locked", and the location of symptoms (typically medial or lateral joint line).

Before jumping to a MRI for diagnostic confirmation it is wise to conduct a physical examination. As with most special tests, single provocative maneuvers suffer from inadequate diagnostic accuracy (*see the chart on page 2 that compares the likelihood ratios of single tests vs. combined tests*). The rationale for most meniscal exam procedures are normally divided into one of two categories - joint line tenderness or symptom reproduction with weight bearing or non-weight-bearing maneuvers. My recommendation in screening for meniscal injury is to look for the aforementioned history findings in your patient interview and combine these findings with joint line tenderness upon palpation and a positive McMurray (meniscal entrapment) test if the injury is less than a month old or substitute the Thessaly test if the injury is more than a month old.

- Meniscal Testing Accuracy Table on page 2

## Meniscal Examination continued ...

### REFERENCES

Blorstad A, Perry K, Halady D. The diagnostic accuracy of joint line tenderness for assessing meniscal tears: a systematic review with meta-analysis. *Orthopedic Practice*. 2011 Vol 23;2:11: 76-82.

McLeod TV. Evaluating meniscal injuries. *NATA News: The Clinical Bottom Line*. 2011 Jul 10:24.

Callaghan M, Pugh S. Which is the best clinical test for diagnosing a knee meniscal injury? *Emer Med J*. 2008 25(2):105-107.

### Pooled Accuracy Values of Meniscal Tests

TEST	SN	SP	+ LR	- LR	DOR
McMurray	71	71	2.4	.41	4.5
Joint Line Tenderness	63	77	2.7	.59	4.5
Apley's	61	70	2.6	.50	3.4

### Diagnostic Accuracy of Combined Meniscal Tests

TEST	SN	SP	+ LR	- LR	Application
JLT + McMurray's (medial)	91	91	10.1	.10	Better for acute injuries
JLT + McMurray's (lateral)	75	99	75	.25	
JLT + Thessaly (medial)	93	92	11.6	.08	Better for older injuries
JLT + Thessaly (lateral)	78	99	78	.22	

**No single test has adequate diagnostic accuracy to stand alone as a definitive test for meniscal lesions. Special test combinations are needed to improve detection.**

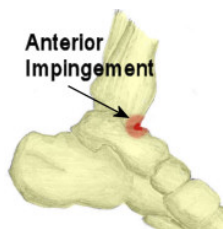
McLeod TV, *NATA News Clinical Bottom Line*, 2011



- A** - Palpating for joint line tenderness
- B** - Thessaly Test: weight bearing rotation in 20° of knee flexion
- C** - McMurray Test: combination of flexion-extension in varus or valgus with tibial rotation.

*I have a patient who is having a hard time recovering from a simple ankle sprain. Any suggestions or ideas?*

R.C., PT



## Question of the Month: Identifying Concurrent Injuries in Chronic Ankle Sprains

Lingering symptoms and chronic ankle pain is an unfortunate sequel of many simple ankle sprains. Given that mechanical stability has been restored you may want to turn your attention to some injuries that are often concurrent with the common inversion sprain. Common complications or concurrent injuries that need to be addressed include subtalar joint instability, functional deafferentation, sural nerve irritation, cuboid subluxation, tibiofibular syndesmotic change, or synovial ankle impingement.

Subtalar instability could be evaluated by manually stressing the medial and lateral glide at the talocalcaneal joint. Residual functional instability may be evident from poor unilateral balancing abilities evident on a unilateral stork stand or dynamic

movement pattern. Irritation of the sural nerve often causes a "sunburn" like pain pattern in the sural nerve's sensory dermatomal distribution on the posterolateral side of the leg and foot. You can evaluate this area by plantarflexing and inverting the foot during a slump or straight leg position.

Calcaneocuboid instability can be assessed by direct palpation of the cuboid's position or a supination stress of the cuboid on a fixed calcaneus. A syndesmotic injury can be evaluated by palpating for tenderness of the anterior and/or posterior tibiofibular ligaments along with an external stress of the foot from a dorsiflexed position. This causes a gapping of the tibiofibular joint and often reproduces the symptomatic complaint.

Finally, check for synovial impingement. In 1997, Liu, et al, in the *Amer J Sports Med*, reported

on a sign/symptom cluster to identify the presence of ankle impingement. A specificity of 94% and sensitivity of 75% was found when at least 5 of the following 6 findings were present. 1) anterolateral ankle joint tenderness, 2) anterolateral ankle joint swelling, 3) pain with forced ankle dorsiflexion and eversion, 4) pain with a single leg squat, 5) pain with ADL activities, and 6) ankle instability. In 2003, Molloy, et al, in the *J Bone Joint Surg*, found a specific provocative maneuver with 95% specificity and 88% sensitivity. This special test is done by providing digital pressure over the anterolateral ankle with simultaneous dorsiflexion.

Hopefully one of these complications can be identified during your re-evaluation to give you new intervention directions.

Questions you would like addressed in a future issue can be sent to [mulliganpt@tx.rr.com](mailto:mulliganpt@tx.rr.com)

**REFERENCE**

Stanton TR, Fritz JM, Hancock MJ, Latimer J, Maher CG, Wand BM, Parent EC. Evaluation of a treatment-based classification algorithm for low back pain: a cross-sectional study. *Phys Ther* 2011 91(4):496-509.

**"Featured Internet Link"**

**novoseek**

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

Here is another search engine that I've found helpful when conducting evidence-based biomedical literature searches. Novoseek is an innovative search engine that performs "entity identification" on PubMed records which vastly improves the filtering of the search. It also searches NIH's database of extant grants,

I find it most effective when trying to make sense of a large set of search hits quickly and accurately. It works by applying artificial intelligence techniques to perform "entity identification", such that the types of entities (diagnoses, techniques, people) referred to in a PubMed abstract can then be enumerated and used for filtering.

## Atypical Femoral Fractures in Osteoporotic Patients on Biophosphonates continued -



Atypical transverse, non-communicated femur fracture distal to the lesser trochanter

A recent study in the *New England Journal of Medicine* found that atypical femur fractures were 97% specific to patients on biophosphonates. The atypical femur fracture occurs below the lesser trochanter and is associated with no or minimal trauma. The fracture is usually transverse and non-comminuted. The patient may have prodromal symptoms and at risk for bilateral involvement with delayed healing.

It is important to know that further epidemiological research and well-designed studies are needed to clearly define and characterize these atypical fractures and which patients are at greatest risk. While this fracture risk is real it is relatively uncommon and should not diminish the well-established benefits of biophosphate therapy. From a risk-to-benefit perspective it is estimated that for every 10,000 patients treated with biophosphonates at least 100 hip fractures and 750 fractures at other sites are prevented, whereas only 3-6 atypical fractures will occur.

As rehabilitative clinicians it is important to know which of our patients have been on biophosphonates for more than 4-5 years so as to encourage them to not discount unwarranted hip and thigh pain. As of last year the FDA now requires a new label statement on biophosphonates regarding the uncertainty of their optimal duration of use and recommends the periodic medical re-evaluation of the need for continued biophosphonate use in patients that have taken them for over five years. Decisions at this point for a drug holiday or continued use are based on bone mineral density studies.



**CONGRATULATIONS!**

Congratulations to our two 2010-11 orthopedic physical therapy residents at UT Southwestern. Both passed the orthopedic specialist examination offered by the American Board of Physical Therapy Specialty Examiners.



**Dr. Jordan Harwell,**  
PT, DPT, OCS  
Dallas, TX

**Dr. Danny Coyne,**  
PT, DPT, OCS  
Dallas, TX



## Xiaflex Injections for Dupuytren's Contractures

Dupuytren's contracture is a progressive disease that causes the fibrous tissue of the palmar fascia to shorten and thicken. The problem is most commonly found in men over 40 of Northern European descent. The clinical manifestation of the condition begins with small fibrous nodules in the palmar fascia that slowly progress in to contracture of the ulnar fingers at the MCP and PIP joints. It is a difficult condition to manage from a conservative perspective and for many years had to be treated with an open palmar fasciotomy when the flexion contractures exceeded 40° at the PIP and 20° at the MCP joints.

In 2009, the FDA approved a new treatment for Dupuytren contracture—an enzyme injection (collagenase clostridium histolyticum) to soften and weaken the diseased cords of tissue that caused the fingers to contract. In addition, other treatment options such as needle aponeurotomy (NA) — a minimally invasive technique that uses needles to puncture and weaken the contracting cords until they can be broken by mechanical force are providing alternatives to open surgery.

Both treatments address already bent fingers and both start with weakening the contracting cord. NA does this by stitching a thin needle several times into the cord to decrease its mechanical strength. Xiaflex (collagenase) injections do this by weakening or dissolving the cord. After this "weakening" step both therapies stretch the finger mechanically until the weakened cord actually snaps and the finger fully extends. The difference between collagenase and NA is essentially the way by which the cord is weakened before it is broken mechanically. Injection of collagenase is therefore sometimes also described as enzyme fasciotomy.

A difference between both methods may be the time period until the disease returns — there is some evidence that this recurrence period is longer following the collagenase injection. For the time being better long term investigations are needed to ultimately judge the potential difference between the two methods.



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Wisdom has two parts –  
 having a lot to say, and  
 knowing when to say it



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### Orthopedic and Neurological Physical Therapy Residencies

The Department of Physical Therapy at UT Southwestern Medical Center's School of Health Professions offers an APTA credentialed residency-based educational opportunity beginning in February of each year. The selected residents are offered a twelve-month employment contract with the University as a Clinical Affiliate. The resident sees patients in the faculty practice and works under the supervision of a designated mentor and the faculty members who see patients in the department's orthopedic clinic. The Resident maintains an 80% patient load inclusive of time reserved for collaborative care with their mentor. The resident is allotted time for additional learning opportunities such as journal club participation, academic instruction in the undergraduate DPT program, inservice presentation, research projects, physician rounds/conferences, poster/platform presentation development, and attendance at 6 two-day weekend intensive educational courses. The residency format is based on a structured, comprehensive approach to examination and treatment of orthopedic spinal and extremity dysfunction. The content is based upon the APTA's description of advanced orthopedic clinical practice and includes didactic, laboratory, and clinical practice components. At the completion of the residency the resident will be fully prepared and qualified to sit for the American Board of Physical Therapy Specialty's Orthopedic Clinical Specialist certification (OCS) examination. Applicants should have at least 6 months of experience in an orthopedic setting, licensure or board eligibility to practice physical therapy in the state of Texas, and current CPR/BLS certification. The salary for this position is commensurate with the applicant's qualifications and experience. Benefits include free tuition to the long-term orthopedic and manual therapy education series, full medical coverage, and accrued time off. For more information please contact Ed Mulligan at 214-648- 1553 or email at [ed.mulligan@utsouthwestern.edu](mailto:ed.mulligan@utsouthwestern.edu). Additional information can be found on the UT Southwestern web site at [www.utsouthwestern.edu/orthoptresidency](http://www.utsouthwestern.edu/orthoptresidency).

We are also offering for the first time a similar residency program with a clinical emphasis on neurological physical therapy. For information about this program please contact Dr. Karen McCain at [karen.mccain@utsouthwestern.edu](mailto:karen.mccain@utsouthwestern.edu) or call 214-648-1559

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)



### Featured Home Study Program Ethics and Professional Responsibility

On the Federation of State Boards of Physical Therapy web site there is an interesting article on *Ethical Decision Making to Avoid Disciplinary Actions* by Annette Iglarsh, PT, PhD, MBA and Nancy Kirsch, PT, PhD, DPT. The article originally appeared in Volume 22, Number 1 of the Federation Forum Magazine. In this article I thought they gave five very practical "tests" for determining right from wrong.

#### Home Studies Now Available Study and learn at your own pace at home!

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- 1. Legal test:** Is it legal? Know your practice act's rules and regulations. In Texas – you can access our practice act on-line at <http://www.ecptote.state.tx.us/>
- 2. "PU" test:** Does it feel or "smell" wrong? We all have an intuitive barometer that tells us the right path to choose based on our moral principles
- 3. Front page test:** How would it look on the front page of the newspaper?
- 4. Mom/Dad Test:** How would your parents feel if they knew what you were doing? Or even worse, what would "Grandma" say?
- 5. The professional ethics test:** What do the Code of Ethics and Standards of Ethical Conduct say?



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