



JOURNAL of PROLO THERAPY [for Doctors & Patients]

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THE MANY FACES OF PROLO THERAPY

AMY PRICE, PhD - TRAUMATIC BRAIN INJURY

ANNA HAMMAN - PELVIC FLOOR DYSFUNCTION

BETTIS - HIP DYSPLASIA

JENNIFER DELEON - WHIPLASH SYNDROME

GIEMO - ACL LIGAMENT LAXITY

L.M. - OSTEOCHONDRITIS DISSECANS

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- Interview with David P. Rabago, MD
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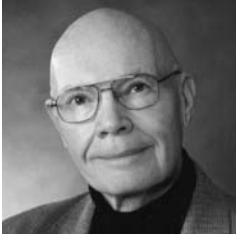
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Anna Hamman attended the United States Air Force Academy. Upon graduation, in 2003, she entered the United States Air Force. Anna completed six years of active duty service, including deployment to Iraq as an Intelligence Analyst. Anna has been a competitive swimmer since she was 10 years old. Over the years, and particularly following the birth of her first child, Anna developed widespread pain along her groin, hips, and lower back. She sought treatment as these problems progressed in severity. Despite being active for many years, she made the proactive decision to leave the Air Force once the military medical community began suggesting pelvic fusion surgery to "fix" her problems. Anna continued to seek medical treatment in the allopathic and osteopathic communities, as well as extensive chiropractic and physiotherapy. Unfortunately, these treatments were all minimally successful at best. Anna then turned to Prolotherapy and has received outstanding results.



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Marion A. Hauser, MS, RD received her Bachelor of Science in Nutrition from University of Illinois and her Master of Science in Nutrition and dietetic internship from Eastern Illinois University. Marion is the CEO of Caring Medical and Rehabilitation Services in Oak Park, Illinois and owner of Beulah Land Nutritionals. As a registered dietitian, Marion is also a well-known speaker and writer on a variety of topics related to natural medicine and nutrition. Marion has recently released "*The Hauser Diet: A Fresh Look at Healthy Living*." Marion co-authored the national best seller entitled "*Prolo Your Pain Away! Curing Chronic Pain with Prolotherapy*" along with a four-book mini series of Prolotherapy books, as well as a comprehensive sports book discussing the use of Prolotherapy for sports injuries. Marion Hauser may be reached at 715 Lake St., Suite 600, Oak Park, IL 60301; Tel: 708.848.7789; www.caringmedical.com.



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G R E A T N E W S C O R N E R



Is Google the Future of Medicine? Why Medicine has to get Back to Basics

Ross A. Hauser, MD

Recently, Marion (my wife) and I had dinner at one of our favorite local restaurants with my primary mentor during my Physical Medicine and Rehabilitation residency, Robert O'Hara, MD, who is now Chief of Informatics at Edward J. Hines Medical Center, though he still has a neurology clinic where he sees patients at the VA Medical Center weekly. Dr. O'Hara's rounds were so informative, that even when I wasn't on his rotation I would try to make his teaching rounds. All Dr. O'Hara needed was a good history and physical examination and he could figure out the patients' problems. Diagnostic tests just confirmed what he already knew. During dinner, we asked him, "What do you think of today's residents compared to residents from 20 years ago (like when I was one of his residents)?" "No comparison. Today's residents are awful! They don't know anything. They know where to find the information, but without Google they would be lost! Then when you ask them the same question the next week, they still don't know it. But they know where to Google it!" We then discussed the topic of diagnostics and how the residents of today just order a test to figure out the patients' problems. The problem with that logic is typical tests such as MRIs have a tremendously high false positive and negative rate. The results, of course, mean a lot of folks get unnecessary and ineffectual care because their diagnosis, based solely on the MRI, is wrong. Ah, perhaps it is time for medicine to get back to basics.

I was able to practice alongside (or just next door) of Dr. Gustav Hemwall for over three years. By all accounts, he was one of the primary reasons Prolotherapy stayed "alive" in the 1970s through the 1990s. He brought teams of doctors to Honduras during this time, not only to give Prolotherapy to the poor, but also to help doctors learn the technique. His work, along with his wife Helen, continues with the Hackett-Hemwall Foundation, through the guidance of Jeff Patterson, DO and his team at the University of Wisconsin. Dr. Hemwall was 85 when I joined him in 1993 and 88 when he retired in 1996. I am not sure I ever saw him order an MRI. He probably

ordered at least one in those years, but why didn't he order more MRIs? The bottom line is that he didn't need to. He knew what was wrong just by listening to the person. The physical examination just confirmed that they did indeed have a hip or sacroiliac problem, and then Prolotherapy was given. Even if someone had a pinched nerve in their neck, he knew they had a pinched nerve in their neck and he would tell them. He didn't need an MRI. His patients didn't want surgery. That is why they went to him! They wanted to get rid of the pain with Prolotherapy and/or by any other conservative means. He found, as most of us who do Prolotherapy would agree, that MRIs for many patients lead to the wrong diagnosis and inappropriate care, including surgeries.

MD'S COULD LEARN A LOT FROM DO'S

Havil Maddela, a medical assistant at Caring Medical, is applying to various medical schools and recently he asked me if he should apply to Osteopathic Medical Schools. I gave him an emphatic "yes!" Havil is one of three young volunteers that helped with the Thebes charity work in southern Illinois, who are now, or planning to become, a doctor. The elder of the three, Peter Blakemore, is already an osteopathic doctor and will soon be graduating from his Neuromusculoskeletal Residency and doing Prolotherapy and osteopathic manual therapy on his own patients. Peter teaches anatomy to medical students as part of his current training. I would venture to say that Peter's knowledge of musculoskeletal anatomy is far greater than Dr. O'Hara's residents. But how does this play out in real life patient care? Various studies have shown that osteopathic doctors, compared to their MD counterparts, spend more time with their patients and order less medications (like NSAIDs) and traditional tests for low back pain, and their care costs less.^{1,2} To be specific, consider this for acute low back pain patients: osteopathic manipulative treatment patients had 18.5% fewer prescriptions written, 74.2% fewer radiographs, 76.9% fewer referrals, and 90% fewer magnetic resonance imaging scans.³ Even with higher Tesla MRI's or ultrasound diagnostics, nothing beats

the accuracy of good ol' fashioned listening like Dr. Hemwall used to do. He did pretty well. I still know folks who Dr. Hemwall helped with Prolotherapy 20, 30, or 40 years ago.

THIS ISSUE OF *JOP* EMPHASIZES THOSE
WHOM PROLOTHERAPY HAS HELPED

Like all diagnostic tests, MRI and musculoskeletal ultrasound have their place. For the Prolotherapy practitioner, they are surely helping validate the fact that Prolotherapy indeed does stimulate the repair of tissue. To this end, I report on a couple of young patients with osteochondritis dissecans that used Prolotherapy to get back to their sports. One of the patients had MRI documentation which revealed that his lesion did repair.

The recent growth of Prolotherapy is primarily indebted to the patients that Prolotherapy has helped. This issue features some of these *Remarkable Recoveries*. Amy Price, missionary, incurred a horrible trauma including a traumatic brain injury. Prolotherapy helped her get back and now she is a PhD helping other traumatically brain-injured people. Jennifer DeLeon became disabled after a car accident where she sustained injuries to her low back, hip, shoulders and neck! Thank God she found Prolotherapy. Now, both women blog their stories to help encourage others to continue to seek care, including Prolotherapy, in order to live healthier, pain free lives. Anna Hamman's life was being ruined by pelvic floor dysfunction, until she found Prolotherapy. She is now on her second child and back to an active life, in addition to referring several close friends whose lives are also being changed by Prolotherapy.

In addition to the patient's telling their stories in this issue, there are the four-legged patients whose stories are told for them by Babette Gladstein, VMD. Her continued work through the Humane Society shows that Prolotherapy works time and again to improve, and sometimes save, the lives of those animals she treats. While some patients get better with just Prolotherapy, some require other modalities like physical therapy. Physical Therapist, Richard DonTigny, of The DonTigny Method™, gives some insight into the mobility of the sacroiliac joint. Richard has been an advocate of Prolotherapy over the years.

We have a number of interviews with Prolotherapy doctors from around the globe. These include written interviews with Stephen Cavallino, MD, a Neural Prolotherapist from Italy, David Rabago, MD, one of the most prolific

scientific writers and researcher on Prolotherapy, and Simon Petrides, MD who is a prominent sports medicine physician in England.

The last of the Thebes Prolotherapy data is published in this issue. Again, Prolotherapy at this missionary charity clinic was shown to be effective at relieving pain. This time we report on foot pain patient data. Dr. Rodney Van Pelt, one of the doctors who helped at the clinic for over 10 years, demonstrates his technique on treating the ankle and foot.

For the doctor who desires to do Prolotherapy studies in their private practice, Dr. Gary Clark addresses this subject in part two of his four part series. Additionally in *It's a Wide Wide World*, Dr. Peter Blakemore reports on the Prolotherapy Weekend in Maine, sponsored by The American Academy of Osteopathy, and licensed practical nurse Joseph Cukla reports on the Age Management Medicine Group 2010 conference in Las Vegas.

If the naturopathic, osteopathic, medical, and veterinary doctors who perform Prolotherapy in all its forms (dextrose, pumice, sodium morrhuate, PRP, bone marrow), use it on appropriate patients based on a good history and examination, it is very likely that Prolotherapy will continue to grow in the United States and throughout the world. ■

Until the next injection,
Ross A. Hauser, MD



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IN THE SPOTLIGHT

Email Interview with Simon P. Petrides, DO

*Ross A. Hauser, MD & Simon P. Petrides, MB BS
DM-S Med DO DipSports Med FFSEM(UK&I)*

Hauser: Dr. Petrides can you tell us your medical and training background?

Petrides: I underwent formal medical training at Guy's Hospital in London and then osteopathic training at the British School of Osteopathy, followed by sports medicine training and further training in musculoskeletal medicine.

Hauser: Are you the founder of the Blackberry Clinic or the medical director? How did that association come about?

Petrides: I founded the Blackberry Clinic in 1988 and I am the medical director. We moved to a new site in 1996 and have built one of the largest independent multi-disciplinary musculoskeletal clinics in the country. We have 22 treatment rooms, a membership and rehabilitation gymnasium, an exercise/conference studio and four health and well being medical screening centres in the South of England. We also have a fluoroscopy theatre and recovery suite which is where I carry out my Prolotherapy treatments.

Hauser: What got you interested in the field of sports medicine and pain management?

Petrides: My initial interest in sports medicine focused on back pain since it is one of the most common injuries and many of my patients had already had the more popular forms of orthodox and complementary medical treatments, so I needed to come up with different types of treatment for the difficult cases. This led me into spinal intervention procedures under image guidance such as epidurals, nerve blocks, radiofrequency neurolysis and Prolotherapy.

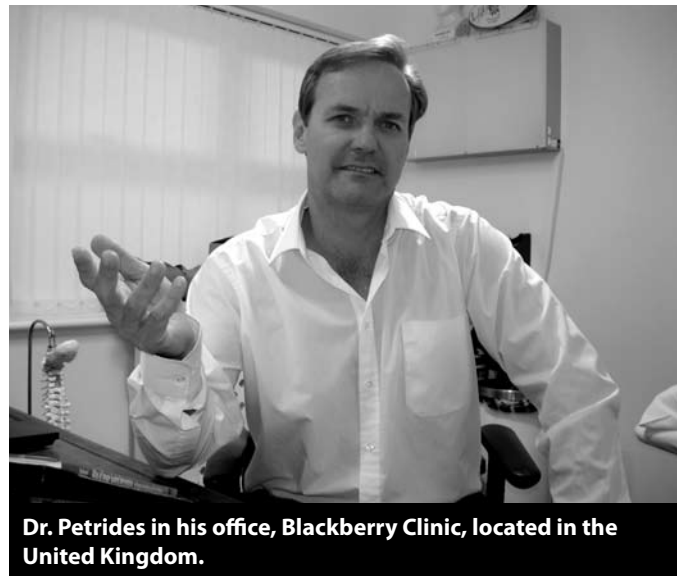
The Blackberry Clinic now has 25 different practitioners in fields such as physiotherapy, osteopathy, chiropractic and there are three other doctors who are all specialist musculoskeletal and sports physicians. We are mostly private but we currently have an NHS contract for a musculoskeletal service.

Hauser: You are traditionally trained in all the various pain techniques such as epidural injections and other steroid shots. What led you to get additional training in Prolotherapy?

Petrides: My training in Prolotherapy was obtained simply by observing my predecessor in the Clinic but also on research around the subject and observing other practitioners. The system we use is based on that described by James Cyriax who pioneered the procedure in this country. There is no formal hands-on Prolotherapy training in the UK and it is something I have wanted to head up at some point.

Hauser: Recently you treated the captain of the English World Cup team, Rio Ferdinand. How did that come about? What condition did he have and how was his response?

Petrides: I was referred the England football captain, Rio Ferdinand, by the Manchester United doctor after he had listened to a presentation of mine at the Annual



Dr. Petrides in his office, Blackberry Clinic, located in the United Kingdom.

Congress of the British Association of Sport and Exercise Medicine in Edinburgh in 2009. Although I cannot discuss the exact nature of his problem, the indications for Prolotherapy were quite typical of many of our patients, and he had apparently been performing sub-optimally for the previous 6 months. After the treatment he returned back to the England team and was elected captain to lead England into the World Cup finals in South Africa. Unfortunately, he recently suffered a knee injury which was totally unconnected.

I have a case series of 15 International rowers who have all returned to full training after Prolotherapy. Two of the rowers were Olympic Gold Medalists.

Hauser: For which conditions do you feel Prolotherapy should be first line therapy, instead of being the therapy of last resort?

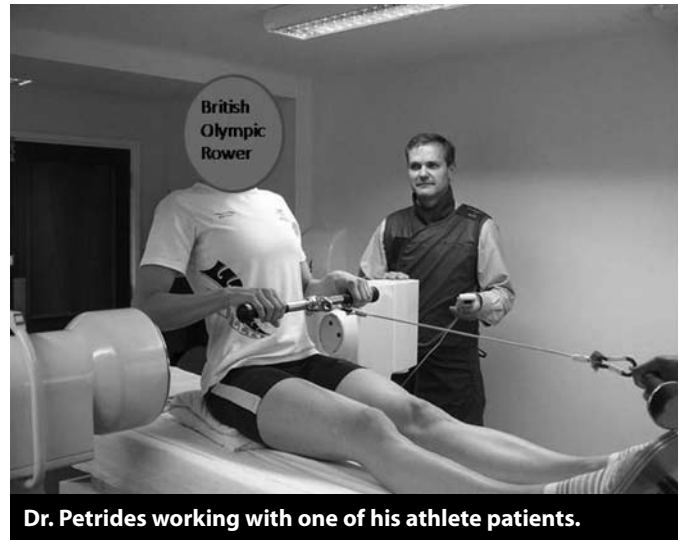
Petrides: I tend to use Prolotherapy after patients have tried manual therapies or corticosteroid injections but have experienced a temporary response. Secondly, when patients present to me they have often tried extensive physical therapies and injections with no effect and it is only when we use Prolotherapy combined with an intensive rehabilitation programme and extensive advice that they start to improve.

Hauser: You also do manipulation. When do you use that modality and how do you combine it with Prolotherapy?

Petrides: I do use manipulation with my background in osteopathic training. Although manipulation was advocated in some of the trials on Prolotherapy as a procedure that is carried out before each session of Prolotherapy, I do not now routinely use that approach and it does not seem to have altered my success rate.

Hauser: You are involved with the British Institute of Musculoskeletal Medicine? Can you tell us about that organization and your role?

Petrides: The British Institute of Musculoskeletal Medicine is the main interest group in the UK serving the needs of musculoskeletal and orthopaedic physicians, and which represents the interest group in pushing towards recognition of the specialty. I sat on the Council for many years and organized 12 annual conferences with 500 or so delegates, but now I am not involved on the Council.



Dr. Petrides working with one of his athlete patients.

I teach on the diploma of musculoskeletal medicine and on the roadshow, a one day seminar for general practitioners which is held every few months throughout the British Isles. I am closely involved with the Council at present on initial discussions regarding assisting the General Medical Council in credentialing musculoskeletal physicians by defining their role and defining the specialty of musculoskeletal medicine itself.

Hauser: Can you tell us about the various courses that are offered through that organization (BIMM)?

Petrides: In the UK, the National Health Service are employing many GPs with a special interest in musculoskeletal medicine in order to run musculoskeletal services but there is also a role for the more specialised practitioner who receives referrals from these GPs with a special interest. The British Institute of Musculoskeletal Medicine (www.bimm.org.uk) offers a modular course which can result in a diploma of musculoskeletal medicine if delegates decide to take the exam. The organization runs several other courses around the country aimed at different levels of knowledge based on spinal injections, examination and treatment techniques. It is closely allied with FIMM (The International Federation for Manual/Musculoskeletal Medicine) which has offered a platform, or forum, for representatives of the national societies to exchange experience and knowledge. There is also a FIMM international academy which recognizes the existence of diverse schools of manual medicine in Europe and osteopathic medicine in the USA. The academy supports the future work of the Health Policy

Board of FIMM in its lobbying of international medical organizations with respect to the validity and status of manual and musculoskeletal medicine.

Hauser: What is the state of Prolotherapy in England? Is it growing in popularity? Where would you like Prolotherapy to be in England a few years from now?

Petrides: Prolotherapy has been around for about 50 years in the UK and it is growing slowly in popularity purely because there is no acknowledged career structure within the NHS for musculoskeletal physicians. If there was enough finance then my preference would be to see a properly randomized double blind control trial on Prolotherapy using specific diagnoses and demonstrating the benefits of Prolotherapy in different spinal problems. Unfortunately, research on low back pain is notoriously difficult and expensive to do properly. In addition, the use of dextrose cannot be patented and so pharmaceutical companies are unlikely to be interested in helping fund studies of that kind.

Interestingly, I find that the addition of phenol and glycerol to the dextrose solution significantly enhances the efficiency of the injection.

Hauser: Do you have a sense of the acceptance of Prolotherapy in Europe?

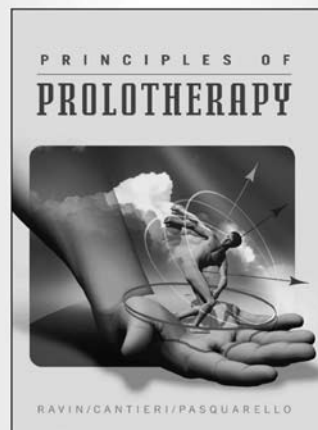
Petrides: I am uncertain about the European acceptance of Prolotherapy but I recently received a referral from Hans Müller-Wolfhart's clinic in Munich for Prolotherapy on a patient of his.

Hauser: Is there anything you else you would like to say about Prolotherapy or pain management to the readers of the *Journal of Prolotherapy*?

Petrides: I was interested to see your technique on YouTube. I am soon to be launching a new website which will include videos of my technique on YouTube, which I must say is less extensive than yours, but more specific in that it is done under X-ray guidance to 13 different sites at L4/5 and L5/S1 along with the posterior sacroiliac ligament and iliolumbar ligament insertions.

Hauser: When can we teach a course together?

Petrides: I believe there may only be 20 practitioners in this country using Prolotherapy, so teaching a course may not be cost-effective and also our differing techniques may be an issue. But I will bear you in mind if I organise a course on Prolotherapy and we decide to collect different practitioners using different techniques. We did actually get Dean Reeves, MD over here, from the USA, to demonstrate his technique several years ago. ■



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IN THE SPOTLIGHT

Interview with David P. Rabago, MD

Ross A. Hauser, MD & David P. Rabago, MD

Hauser: Dr. Rabago, can you tell us briefly how you got into Prolotherapy?

Rabago: I was in residency at University of Wisconsin, Madison and Dr. Jeff Patterson is on faculty here. He is pretty forward about including residents in that experience. He includes residents in clinical Prolotherapy at the UW, and invites them to join him on the medical service trip that he makes to Honduras every year to provide Prolotherapy there through the Hackett-Hemwall Foundation. I went on the trip in the early 2000s and was impressed by the apparent effectiveness of Prolotherapy but also by the lack of evidence in a clinical trial context of its effectiveness. When a person who is interested in clinical research sees a therapy that is doing apparent good but is supported by very little evidence in the literature, it's a natural magnet to think about clinical trials and investigation. So we picked a likely candidate in terms of clinical scenarios and submitted a grant that we were fortunate to get. That indication was knee arthritis. We applied to the NIH (National Institutes of Health) in the form of a career development grant early in my research career. We submitted that to the NIH Center for Complementary/Alternative Medicine (NCCAM). They were interested and they funded us. Those studies are nearing completion now and we hope to publish those within a year or so.

Hauser: Congrats on that, David. Can you tell us what was involved in that study?

Rabago: We've done a few things in terms of clinical trials so far. The first was the knee arthritis study. It uses a so called "full knee" Prolotherapy intervention with dextrose, (intra- and extra- articular injections), compared to a blinded placebo control group that gets saline, compared to an un-blinded home exercise therapy control. It's not formal physical therapy with a therapist; rather it's a home protocol that subjects perform based on an informational pamphlet. Injection subjects had three

to five injection sessions at the knee for their pain, and one year follow up.

Hauser: Since you currently don't know the outcome or results, let's move onto another subject. Do you have a private practice? Do you do Prolotherapy in your practice?

Rabago: No, I'm an assistant professor in the department of family medicine at the University of Wisconsin, so it's not private. It's a university teaching based practice. I split my time between research, with Prolotherapy being one of the research interests, teaching, and general family medicine. I have gradually stopped doing most injections because it was simply too much breadth to keep up with all aspects of a research career, full spectrum family medicine, teaching and also focus on injections. I depend on colleagues who do Prolotherapy interventions in the research projects and I have mostly become the research person. Prolotherapy research for me is a very collaborative enterprise.

Hauser: Let me just congratulate you again. You've probably written more on Prolotherapy as far as reviews as it relates to the traditional doctors getting the word out on Prolotherapy.

Rabago: It's been fun. It's been very positive. I'm a believer in the need to identify which patients are most likely going to benefit from Prolotherapy, as it certainly appears that some do. Injection therapy is hard to study; others have found that too. The folks that did the back pain studies realized this was a difficult thing to study. I think that's one reason the protocols are so complicated. Dr. Michael Yelland has done a great job. He's probably the best researcher of Prolotherapy in the world, in terms of clinical trial design and conduct. We're happy to be in the game, for sure. Knee arthritis is a very compelling indication for Prolotherapy. It's very common. It's not the one that Prolotherapists probably do the most, but if we can make a dent in arthritis, that's like making a dent in back pain since it's so common, so debilitating.

Hauser: Regarding one challenge as it relates to doing research that you alluded to in the NIH grant study you completed, is the whole notion of the placebo group and doing the saline injections. As you're familiar with

Dr. de Vos' study where they did a kind of Prolotherapy, PRP, for Achilles tendinopathy, both the Prolotherapy group and the placebo group had statistically significant improvements in pain.

Rabago: Compared to their own baseline but not compared to one another.

Hauser: Right. So, your thoughts?

Rabago: Research is difficult. They did, I think, a fine study. The problem is injections are interventions no matter what you put in the syringe. The fact that both groups got better is good for patients. The fact that they weren't statistically significant compared to one another isn't particularly damning for the PRP intervention group. It may be that the effect size between the groups was smaller than anticipated because both groups received eccentric exercise, an active therapy, and because of effects from needle trauma, blood and pressure volume relationships. Also it was a very small study and they didn't follow them for all that long. All of those things can limit the effect size between groups. We actually wrote an editorial to JAMA, which can be found via Google, that lays out our argument that that study shouldn't muddy the water too much with respect to PRP and injection therapy in general. We only were allowed 400 words in that letter, but if I was given another 400, I would argue that what we should be doing is comparative effectiveness research and not double blind placebo control trials for Prolotherapy because any injection control is going to have those problems. Comparative effectiveness research is just like it sounds. It would pit Prolotherapy against something else that we do for chronic MSK (musculoskeletal) pain and compare the effectiveness of two different but actual therapies. It takes away blinded-ness usually but we may simply have to accept that because it does seem that injecting *anything* does *something*. Saline seems to have an effect, whether it's placebo response that has a mind-body interaction or whether there's tissue response, we don't really know but it does seem to do things. The initial intent of placebo was to have it be a non-physiologic intervention. It doesn't seem that that's true with injection therapy.

Hauser: I think you bring up a good point. So thus, in your study that you did, you had the exercise group. In essence, that might end up being your placebo group though you're calling it more comparative effectiveness research.

Rabago: Right. The NIH, and traditional clinical trialists have always placed value on comparison groups that can be labeled as blinded placebo control arms. And we indeed have that in the saline group, but we also have this additional comparison group, the at-home exercise subjects. Comparative effectiveness research makes common sense and is getting more attention lately. The notion of comparative effectiveness research has its own acronym (CER) which you can Google to find a host of articles on the principles of comparative effectiveness research and the fact that it's being talked about at the highest levels of clinical trials work. I think it's a step forward for assessment of musculoskeletal therapy. I think it's smart.

Hauser: If you and others find, from a comparative effectiveness perspective, that Prolotherapy is as effective or more effective than some other therapy, such as exercise, do you see that it might help Prolotherapy in its quest to get more accepted in traditional medicine?

Rabago: The short answer is yes. If Prolotherapy is compared in a strong trial to another therapy that is credible, and if a researcher found and reported that Prolotherapy did better than that therapy, sure. That's a head to head trial and that's a good thing for Prolotherapy. An example is Dr. Mike Yelland's Achilles tendinopathy trial published in the British Journal of Sports Medicine last year. It's a very interesting, well designed study that compared Prolotherapy to eccentric exercise to both. It's terrific. It was a pilot study, not powered to be a definitive trial. But even given that, the authors were able to report some better outcomes for the combination of Prolotherapy and eccentric exercise than for either one alone. That's impressive. That study should not be overlooked. Great trials can be designed and conducted. It's hard work but better is better. He's shown that you can do it and that you can detect effectiveness compared to other therapies using relatively small numbers.

Hauser: David, thank you again for all the work you've done in getting the message out with Prolotherapy.

Rabago: You're very welcome, I've appreciated being able to do it, and have had tremendous help from colleagues along the way. ■

IN THE SPOTLIGHT

Email Interview with Stephen Cavallino, MD – Prolotherapy in Italy

JOP Staff

JOP: Dr. Cavallino, please tell us a little about your medical background.

Cavallino: My medical background: I am an Emergency Medical Physician. I was born in New York and went to medical school in Bologna, Italy. I have been working for more than 20 years in the ER and currently doing Prolotherapy for the past seven years in Italy with much success.

JOP: How were you introduced to Prolotherapy?

Cavallino: Thanks to the Hackett-Hemwall Foundation and Dr. Jeff Patterson, who came to Italy to give a Prolotherapy course.

JOP: What has your overall experience/impression been with Prolotherapy?

Cavallino: I am incredibly happy to have this amazing healing therapy to offer, known as “Prolotherapy.” I am very lucky to have the opportunity to use this amazing



Dr. Cavallino working with physicians who are learning Prolotherapy.

regeneration injection therapy. Over 90% of my patients are pain free after several treatments. I think that this is amazing!

JOP: What types of cases do you feel respond best to Prolotherapy?

Cavallino: I see very good results all over, but the knee and shoulder are very promising. I also have incredible results treating the spine and hip joints. Tendinopathies are great responders to Prolotherapy, but you need to do it correctly.

JOP: Do you perform other procedures for pain, and if so, what types.

Cavallino: I do “Neural Prolotherapy” and I am so shocked how it works. All we are doing is regenerating the nerves that have been suffering for a long time. Very successful if used in association with Prolotherapy.

JOP: Can you estimate the percentage of your patients that receive Prolotherapy?

Cavallino: All my patients receive Prolotherapy, and Neural Prolotherapy if needed. I do only these two pain procedures.

JOP: What type of Prolotherapy solution do you use?

Cavallino: ONLY glucose/lidocaine/saline (sugar water).



Happy team ready to share the joy of Prolotherapy with the people of Honduras and the team of international doctors.



JOP: How many visits do your patients typically need?

Cavallino: I would say a minimum of three to maximum of eight visits.

JOP: How is Prolotherapy perceived in Italy?

Cavallino: It is not known at all. It will take time and patience to convince the medical society that Prolotherapy is harmless and can cure many people, especially ill people that cannot undergo surgery, who are on blood thinner medications, and definitely unhealthy people with chronic pain. Italy is successful with Prolotherapy because patients by “word of mouth” tell the real life results.



JOP: Are there any Prolotherapy organizations in Italy?

Cavallino: Yes, SIPRO - Societa Italiana di Proloterapia. www.proloterapia.net.

JOP: Where do you think the future of Prolotherapy is headed in Italy?

Cavallino: Very soon it will be exploding!

JOP: Is there anything else that you would like the international *JOP* audience to know about you?

Cavallino: Yes, I’m trying very hard to pass on the message that we need to inform the public more and especially doctors need to realize how important Prolotherapy can be for so many ill people with chronic pain.

JOP: Thank you Dr. Cavallino for your time and sharing with our readers about your practice.

Cavallino: Thanks for this opportunity to prove how Prolotherapy has cured many Italian people. ■



Dr. Cavallino with physicians and assistants treating patients at the annual Hackett-Hemwall training in Honduras.

FANTASTIC FINDINGS

A Retrospective Observational Study on Hackett-Hemwall Dextrose Prolotherapy for Unresolved Foot and Toe Pain at an Outpatient Charity Clinic in Rural Illinois

Ross A. Hauser, MD; Marion A. Hauser, MS, RD; Joseph J. Cukla, BA, LPN

ABSTRACT

To study the efficacy of Hackett-Hemwall dextrose Prolotherapy for foot and toe pain, a retrospective observational study was commissioned using the data obtained at a charity health clinic in rural Illinois. Foot and toe pain is a common complaint affecting the lives of millions. Nearly 25% of the population suffers from foot and toe pain at any one time. The diagnoses given to these patients by their medical doctors and podiatrists are many and varied. Some of the most common are hallux rigidus and hallux malleus. Prolotherapy is an injection treatment used to initiate a healing response in injured connective tissues such as tendons and ligaments, common in painful foot and toe conditions. This retrospective study documents the improvements the subjects obtained after receiving Prolotherapy treatments, which included reduction of their pain and an increase in quality of life measures.

Objective: To investigate the outcomes of patients undergoing Hackett-Hemwall dextrose Prolotherapy treatment for unresolved foot and toe pain.

Design: Nineteen patients who had been in pain an average of 54 months were treated quarterly with Hackett-Hemwall dextrose Prolotherapy. This included a subset of eight patients who were told by their medical doctor(s) that there were no other treatment options for their pain. Patients were contacted an average of 18 months following their last Prolotherapy session and asked questions regarding their levels of pain, physical and psychological symptoms, as well as activities of daily living, before and after their last Prolotherapy treatment.

Results: In these 19 patients, all 100% had improvements of their pain and stiffness. Eighty-four percent experienced 50% or more pain relief. Dextrose Prolotherapy helped the patients make large improvements in walking and exercise ability, as well as produced

decreased levels of anxiety and depression. One-hundred percent of patients said Prolotherapy changed their lives for the better.

Conclusion: In this retrospective observational study, Hackett-Hemwall dextrose Prolotherapy helped cause large decreases in pain and stiffness and improved clinically relevant quality of life parameters in people with unresolved foot and toe pain.

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KEYWORDS: bunion, cuneiform, hallux rigidus, metatarsal, metatarsalgia, metatarsal ligaments, navicular, phalanges, Prolotherapy.

INTRODUCTION

Chronic foot and toe pain is a common condition affecting approximately 25% of the population at any given time.¹ The average person spends four hours on their feet and takes between 8,000 and 10,000 steps each day. Each step generates a force, more than 50% the person's body weight.² Jumping and running adds a force many times the person's body weight with each stride.³ Thus, during an average day the feet support a combined force equivalent to several hundred tons. It is not surprising, then, that about 75% of Americans experience foot pain at some point in their lives.

The causes of many incidents of metatarsalgia, or forefoot pain, are mechanical, including poorly fitting shoes and improper foot mechanics with walking or running, although the nature and mechanism underlying many types of foot and toe pain is not clearly understood.⁴ Other factors that can lead to foot pain are intense training, certain

foot shapes such as high or fallen arches, degenerative arthritis, and excess weight.⁵ For the purpose of this study, the phalanges (toes) are included, as painful conditions involving the toes which can arise from problems in the forefoot or metatarsal region. Bunions, otherwise known as hallux rigidus, and hammertoes (hallux malleus), are two common diagnoses for toe pain whose etiologies can be related to the structures of the forefoot. A multitude of diagnoses can be arrived at for foot/toe pain, though many times the underlying problem, a weakness or injury in the ligaments, tendons or cartilage, is the culprit. For example, hallux rigidus (bunion) “is poorly understood but is thought to be secondary to both hereditary and environmental factors. The fact that bunions occur commonly in families suggests a genetic predisposition from ligamentous laxity and hyperpronation of the foot.”⁶ First ray hypermobility and pes planus (flat feet) are conditions that can lead to bunions.⁷ A study done at the University of Pittsburgh’s Orthopaedic Foot Research Clinic came up with 23 different diagnoses for 98 patients with forefoot pain.⁸ Joint instability and/or hypermobility is what happens when the ligament structure in an area is damaged. This can result in a hallux rigidus, pes planus (flat feet) or other painful maladies such as Morton’s neuroma that can be traced back to an original ligament injury or weakness. Morton’s neuroma, a neuropathy that usually occurs between the 3rd and 4th metatarsals, is not traditionally thought of as being an instability problem. But, “excessive motion between these metatarsals ...can result in significantly enlarged 3rd common digital nerve. This enlargement can cause further trauma, worsening the symptoms,” which can be quite severe.⁹

Standard treatment for foot pain is generally conservative, beginning with having the patient wear properly fitting shoes and/or orthotics. If the pain does not resolve, NSAIDs are often prescribed along with some physiotherapy. Patients that do not respond to conservative treatment for foot and toe pain are often considered to be surgical candidates. These procedures include but are not limited to arthrodesis, commonly known as a “fusion;” arthroplasty, which restores the joint, often with some type of implant; chondroplasty, which is the reshaping of the cartilage in the joint; and osteotomy, defined as a bone division to correct a deformity.¹⁰ Despite these measures, a large percentage of foot pain remains, especially in the elderly.¹¹ Because of the limited response of chronic foot and toe pain to traditional therapies, many people are turning to alternative therapies including Prolotherapy

for pain control, because it addresses the underlying cause of the problem, ligament injury or weakness.^{12, 13}

The foot, if we include the toes and ankle, contains 26 bones, 33 joints and more than 100 muscles, tendons and ligaments. The function of cartilage is to provide a cushion and allow ease of motion between these various joints. When there is insufficient ligament support to stabilize joint motion, the resultant increase in joint laxity leads to the development and acceleration of articular cartilage injury, commonly known as osteoarthritis, another frequent diagnosis related to foot and toe pain. (Degenerative joint disease is a more apt description as this process of cartilage breakdown is not inflammatory in nature.) Other joints susceptible to degenerative joint disease include the knees, hips, shoulders, fingers and spine due to their supportive ligament structures that can become damaged.¹⁴

Prolotherapy is becoming a widespread form of pain management in both complementary and allopathic medicine. Its primary use is in the pain management associated with tendinopathies and ligament sprains in peripheral joints.^{15, 16} It is also being used in the treatment of spine and joint degenerative arthritis.^{17, 18} In double-blinded human studies the evidence on the effectiveness of Prolotherapy is still being debated, with promising but mixed results being reported.¹⁹⁻²¹

George S. Hackett, MD coined the term Prolotherapy.²² As he described it, “The treatment consists of the injection of a solution within the relaxed ligament and tendon which will stimulate the production of new fibrous tissue and bone cells that will strengthen the ‘weld’ of fibrous tissue and bone to stabilize the articulation and permanently eliminate the disability.”²³ Dr. Hackett introduced Prolotherapy to Gustav Hemwall, MD in the mid 1950s. Dr. Hemwall continued Dr. Hackett’s work after his death in 1969, and trained the majority of physicians who practiced the technique, over the next 30 years. Hence, the designation Hackett-Hemwall Prolotherapy was born.

Animal studies have shown that Prolotherapy induces the production of new collagen by stimulating the normal inflammatory reaction.^{24, 25} In addition, animal experiments have shown improvements in ligament and tendon diameter and strength, as evidenced upon post-mortem exam.^{26, 27} While Prolotherapy has a long

history of being used for unresolved foot and toe pain,²⁸ no study has been done to date to show its effectiveness. This observational study was undertaken to evaluate the effectiveness of Hackett-Hemwall dextrose Prolotherapy in regard to reducing the subjects' previously unresolved foot and toe pain, stiffness, and their need for medications, in addition to improving other quality of life measures.

Patients And Methods

FRAMEWORK AND SETTING

In October 1994, the primary authors (R.H., M.H.) started a Christian charity medical clinic called Beulah Land Natural Medicine Clinic in an impoverished area in southern Illinois. The primary modality of treatment offered was Hackett-Hemwall dextrose Prolotherapy for pain control. Dextrose was selected as the main ingredient in the Prolotherapy solution because it is the most common proliferant used in Prolotherapy, is readily available, inexpensive (compared to other proliferants), and has a high safety profile.²⁹ The clinic met every three months until July 2005. All treatments were given free of charge.

PATIENTS

Patients who received Prolotherapy for their unresolved foot and toe pain in the years 2002 to 2005 were called by telephone and interviewed by a data collector (D.P.) who had no prior knowledge of Prolotherapy. General inclusion criteria were an age of at least 18 years, having an unresolved foot or toe pain condition that typically responds to Prolotherapy, and a willingness to undergo at least four Prolotherapy sessions, unless the pain remitted with fewer Prolotherapy sessions. The foot, for purposes of this study, included the area in front of the ankle (cuneiform, navicular) to the metatarsals, metatarsal heads and phalanges. It did not include the heel (calcaneous) or ankle (tibia and fibula). Conditions that typically respond to Prolotherapy include metatarsalgia, degenerative arthritis, as well as tendon and ligament injuries of the foot.

INTERVENTIONS

The Hackett-Hemwall technique of Prolotherapy was used. Each patient received 10 to 30 injections of a 15% dextrose, 0.2% lidocaine solution with a total of 6 to 40

cc of solution used per foot and toe. Injections were given into and around the areas on the foot that were painful and/or tender to touch. The typical areas injected each with 0.5 to 1cc of solution can be seen in *Figure 1*. Tender areas injected included the metatarsal joints, metatarsal, cuneiforms, and navicular bones, as well as ligament and tendon attachments on the foot. In regard to toe pain, the metatarsophalangeal joints, the proximal interphalangeal joints and the proximal interphalangeal joints were injected if painful and/or tender to the touch. If applicable, the patients were asked to decrease or stop pain medications and therapies they were using, as much as the pain would allow.

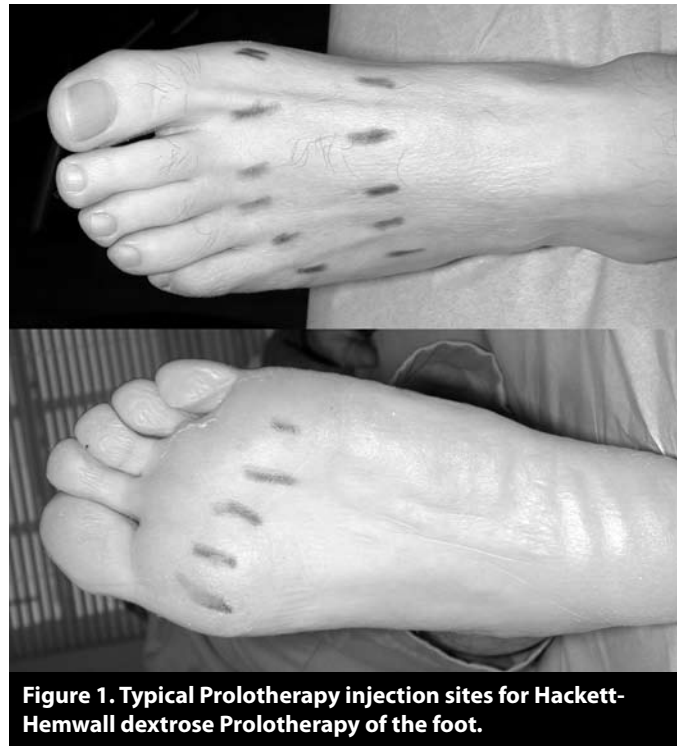


Figure 1. Typical Prolotherapy injection sites for Hackett-Hemwall dextrose Prolotherapy of the foot.

OUTCOMES

D.P. was the sole person obtaining the patient information during the telephone interviews. The patients were asked a series of questions about their pain and previous treatments before starting Prolotherapy. Their response to Prolotherapy was also detailed with an emphasis on the effect Prolotherapy had on their need for subsequent pain treatments and their quality of life. Specifically, patients were asked questions concerning length of pain, pain intensity, stiffness, number of physicians seen and medications taken, quality of life concerns, psychological factors and whether the response to Prolotherapy continued after the Prolotherapy session stopped.

Analysis

For the analysis, patient percentages of the various responses were calculated. These responses gathered from patients before Prolotherapy were then compared with the responses to the same questions after Prolotherapy. The patient percentages were also calculated for clients who answered “Yes” to the following question: “Before starting Prolotherapy it was the consensus of the my MD(s) that there were no other treatment options that he knew of to get rid of my chronic pain.”

PATIENT CHARACTERISTICS

Complete data was obtained on a total of 19 feet who met the inclusion criteria. Of these, 74% (14) were female and 26% (5) were male. The average age of the patients was 56 years-old. Patients reported an average of four years, six months of pain and on average they saw 2.6 MD’s before receiving Prolotherapy. The average patient was taking 1.1 pain medications. Forty-two percent (8) stated that the consensus of their medical doctor(s) was that there were no other treatment options for their chronic pain. The demographics of the patients can be seen in *Table 1*.

Table 1. Foot patient demographics.	
Foot patients	19
Average age of foot patients	56
Average number of MD’s seen	2.6
Average years of pain	4.5
Average number of pain meds prior to Prolotherapy	1.1
Average number of pain meds after Prolotherapy	0.2
Percentage of male patients	74%
Percentage of female patients	26%

TREATMENT OUTCOMES

Patients received an average of 3.1 Prolotherapy treatments per foot/toes. The average time of follow-up after their last Prolotherapy session was 18 months.

Patients were asked to rate their pain and stiffness levels on a scale of 1 to 10 with 1 being no pain/stiffness and 10 being severe crippling pain/stiffness. All 19 patients reported pain as a symptom, 10 of the 19 reported stiffness as a symptom. The patients had an average

starting pain level of 7.1 and stiffness level of 7.0. The average ending pain and stiffness levels were 2.3 and 2.8 respectively. Sixty-three percent had a starting pain level of 7 or greater, while none had a starting pain level of three or less, whereas after Prolotherapy only 6% (one patient) had a pain level of 7 or greater, while 79% had a pain level of three or less. One-hundred percent of the 9 patients reporting stiffness as a symptom had a stiffness level of 5 or greater before Prolotherapy. (See *Figure 2*.)

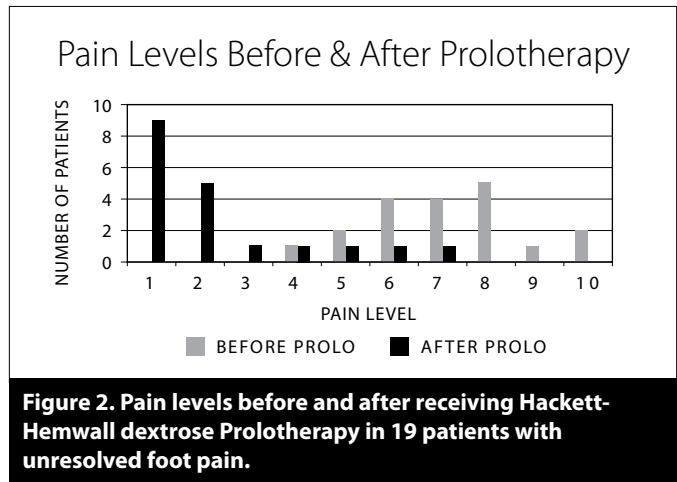


Figure 2. Pain levels before and after receiving Hackett-Hemwall dextrose Prolotherapy in 19 patients with unresolved foot pain.

One-hundred percent of patients stated their pain and stiffness were improved after Prolotherapy. Over 73% percent said the improvements in their pain and stiffness since their last Prolotherapy session have continued 100%. Eighty-four percent of patients stated Prolotherapy relieved at least 50% of their pain. Sixty-three percent received greater than 75% pain relief. All 100% of patients experienced at least 25% pain relief with Prolotherapy. In regard to pain medication usage, before Prolotherapy the average patient was taking 1.1 pain medications but this decreased to 0.2 medications after Prolotherapy.

In regard to quality of life issues prior to receiving Prolotherapy, 58% of patients had a compromised walking ability, but this decreased to 26% after Prolotherapy. Specifically, 37% could walk 3 blocks or less before Prolotherapy, decreasing to 5% (1 patient) that could only walk 3 blocks or less after Prolotherapy. (See *Figure 3*.)

In regard to exercise or athletic ability prior to Prolotherapy, 74% said it was compromised, but after Prolotherapy this decreased to 63%. Before Prolotherapy, only 58%

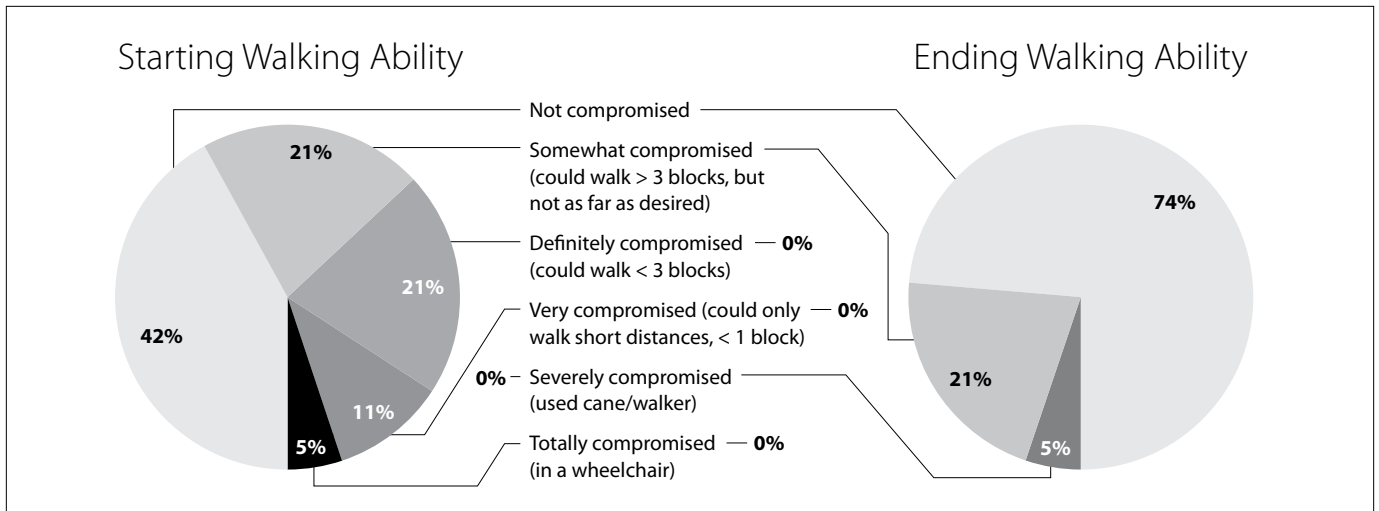


Figure 3. Walking ability before and after Hackett-Hemwall dextrose Prolotherapy in 19 patients with unresolved foot pain.

could do 30 minutes or more of exercise, whereas after Prolotherapy this increased to 95%. (See Figure 4.)

Prior to Prolotherapy, 48% of patients had feelings of depression and 58% had feelings of anxiety. After Prolotherapy, only 16% had depressed feelings and 16% had feelings of anxiety. (See Figures 5 & 6.)

In regard to sleep, 53% of patients felt their foot/toe pain interrupted their sleep. After Prolotherapy, 90% of this group had improvements in their sleeping ability.

To a simple yes or no question “*Has Prolotherapy changed your life for the better?*” 100% of patients treated answered “*Yes.*” Eighty-four percent of patients rated the Prolotherapy as successful for them (50% or greater pain relief). Sixty-three percent rated it as very successful (75% or greater pain relief). Sixty-eight percent stated that the results from Prolotherapy have very much continued to this day (75% or greater). Ninety-five percent of patients knew someone who had received Prolotherapy. Seventy-nine percent came to receive their first Prolotherapy session because of the recommendation of a friend. One-hundred percent of patients have recommended Prolotherapy to someone.

RESULTS FOR THOSE WHOSE MD’S SAID NO OTHER TREATMENT OPTION AVAILABLE

As previously noted, 42% of patients (8 in number) prior to Prolotherapy were told that there were no other treatment options for their pain. As a group, they suffered

with pain on average 54 months. In analyzing these patients, they had a starting average pain level of 7.4 and after Prolotherapy of 3.2. Prior to Prolotherapy, 88% of the patients rated their pain as a level 8 or higher and none rated it a 4 or less. Prior to Prolotherapy, they rated their foot stiffness as a 5.0 and ending of 2.5. All eight patients had improvements in pain and stiffness levels. Six of the eight (75%) had 50% or greater pain relief. All had 25% or greater pain relief. As a group, they were on an average of 2.5 pain medications before Prolotherapy, but this decreased to 0.3 medications after completing treatment.

Discussion

PRINCIPLE FINDINGS

The results of this retrospective, uncontrolled observational study demonstrate that Hackett-Hemwall dextrose Prolotherapy helps decrease pain and improve the quality of life of patients with unresolved foot and toe pain. This treatment gave 63% of patients greater than 75% pain relief, and 84% of patients achieved 50% or more pain relief. One-hundred percent of patients stated their pain and their life in general was better after receiving Prolotherapy. Notable improvements in other quality of life issues included depression, anxiety, sleep, walking ability, exercise ability and medication usage.

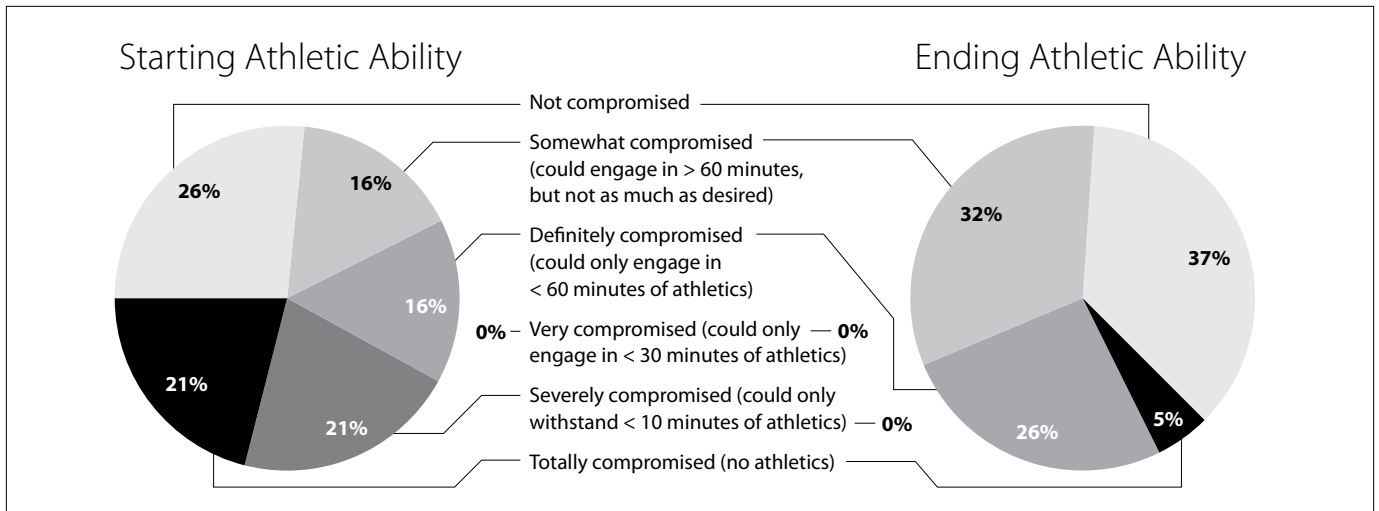


Figure 4. Athletic ability before and after Hackett-Hemwall dextrose Prolotherapy in 19 patients with unresolved foot pain.

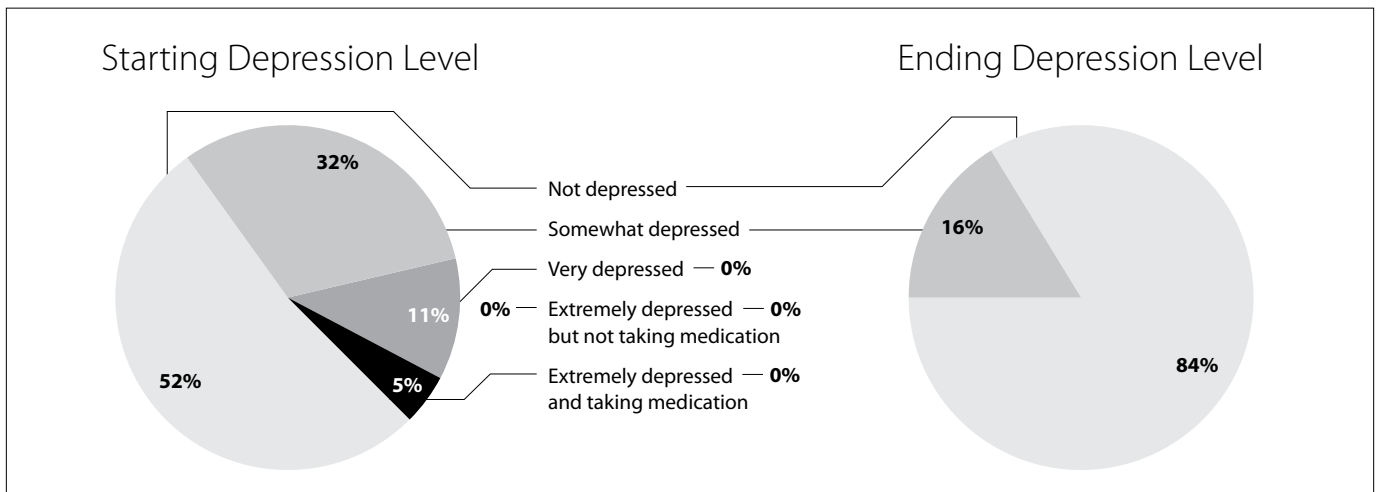


Figure 5. Depression level before and after Hackett-Hemwall dextrose Prolotherapy in 19 patients with unresolved foot pain.

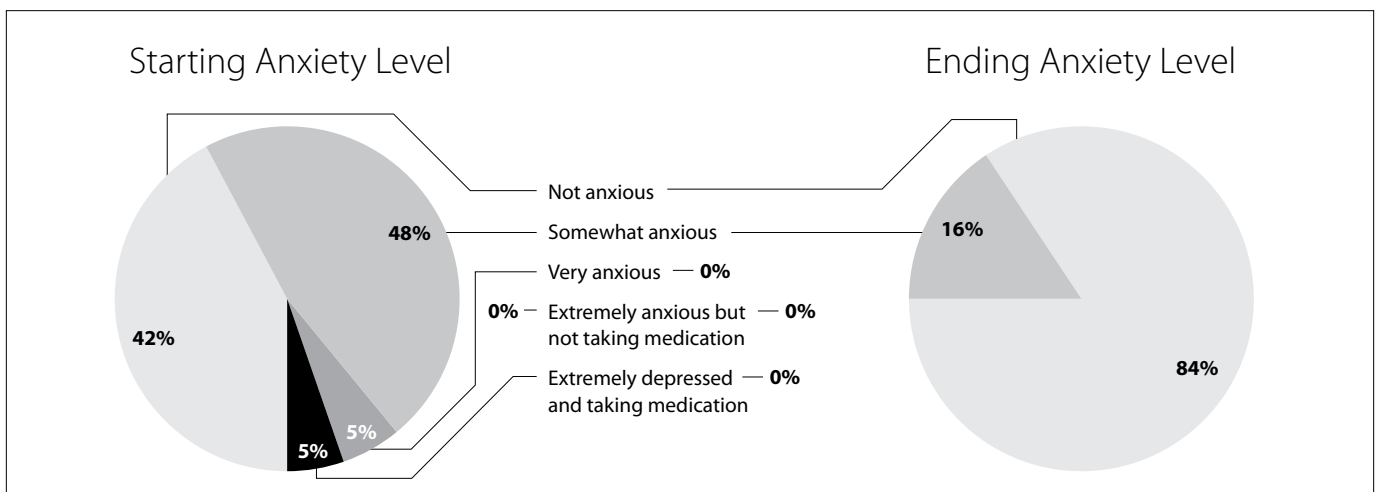


Figure 6. Anxiety level before and after Hackett-Hemwall dextrose Prolotherapy in 19 patients with unresolved foot pain.

For the 42% (8) of patients who stated their doctors said no other treatment options were available for their pain, the results were very similar. Clinically relevant decreases in pain and stiffness were also seen in this subgroup.

STRENGTHS AND WEAKNESSES

Our study cannot be compared to a clinical trial in which an intervention is investigated under controlled conditions. Instead, it is aimed to document the response of patients with unresolved foot and toe pain to the Hackett-Hemwall technique of dextrose Prolotherapy at a charity medical clinic. Clear strengths of the study are the numerous quality of life parameters that were examined. Such quality of life issues as walking ability, stiffness, athletic (exercise) ability, sleep, anxiety and depression, in addition to pain level, are important factors affecting the person with unresolved foot/toe pain. Decreases in medication usage were also documented. The improvement in such a large number of variables treated solely by Prolotherapy is likely to have resulted from Prolotherapy. So while there is no medical test to document pain improvement or the progress with Prolotherapy, an increased ability to walk, exercise, work and use less medications are objective changes.

The quality of the cases treated in this study is also a strength. The average person in this study had unresolved foot or toe pain for four years six months, and eight (42%) of the patients were either told by their MD(s) that there was no other treatment option for their pain. So clearly this patient population represented *chronic* unresponsive foot and toe pain. A follow-up since their last treatment of an average of eighteen months since their last Prolotherapy session was also a strength.

Because this was a charity medical clinic with limited resources and personnel, the only therapy that was used was Prolotherapy. The Prolotherapy treatments could only be given every three months. In private practice, the Hackett-Hemwall technique of dextrose Prolotherapy is typically given every four to six weeks. If a patient is not improving or has poor healing ability, the Prolotherapy solutions may be changed and/or strengthened or the patient is advised on additional measures to improve their overall health. This can include advice on diet, supplements, exercise, weight loss, changes in medications, additional blood tests, and/or other medical care. Often patients are weaned immediately off of anti-inflammatory and narcotic medications that inhibit

the inflammatory response that is needed to produce a healing effect from Prolotherapy. Since this was not done in this study, the results at this charity clinic are an indication of the lowest level of success with Hackett-Hemwall dextrose Prolotherapy. This makes the results even that much more impressive.

A shortcoming of our study is the subjective nature of some of the evaluated parameters. Subjective parameters of this sort included pain, stiffness, anxiety, and depression levels. The results relied on the answers to questions by the patients. Changes in these parameters that occurred with Prolotherapy were analyzed by an independent data analyst. No X-ray and MRI correlation for diagnosis and response to treatment was observed. Lack of documentation in the patients' charts of physical examinations made categorization of the patients into various diagnoses categories impossible.

INTERPRETATION OF FINDINGS

Hackett-Hemwall dextrose Prolotherapy was shown to be very effective in eliminating pain and improving the quality of life in this group of patients with unresolved foot and toe pain. This included the subgroup of patients who were told by their MD(s) that no other treatment options were available for their pain. Current conventional therapies for unresolved foot pain include medical treatment with analgesics, non-steroidal anti-inflammatory drugs, anti-depressant medications, steroid shots, trigger point injections, muscle strengthening exercises, physiotherapy, weight loss, rest, massage therapy, manipulation, orthotics, surgical treatments including fusions, multidisciplinary group rehabilitation, education and counseling. The results of such therapies often leave the patients with residual pain.³⁰⁻³² Because of this, many patients with chronic foot pain are searching for alternative treatments for their pain. Searching for alternatives, simply put, are patients who either cannot find relief with traditional therapies or do not like the options, especially if surgery is recommended. One of the treatments that chronic foot/toe pain patients are trying instead of surgery is Prolotherapy.³³

Prolotherapy is the injection of a solution for the purpose of tightening and strengthening weak tendons, ligaments or joint capsules. Damage to connective tissues such as these can cause misalignment of the joint surfaces. Metatarsophalangeal (forefoot/toe) pain most commonly results from misalignment of the joint surfaces with

altered foot biomechanics, causing joint subluxations, capsular impingement and joint cartilage destruction (osteoarthritis).³⁴ Many forefoot deformities such as hallux rigidus (bunion) result from the failure of deep transverse ligaments in the sole of the foot, allowing for an abnormal “splay” of the forefoot which progressively worsens, causing the big toe (hallux) to drift and become deformed.³⁵ Prolotherapy works by stimulating the body to repair these soft tissue structures. It starts and accelerates the inflammatory healing cascade by which fibroblasts proliferate. Fibroblasts are the cells through which collagen is made and by which ligaments and tendons repair. Prolotherapy has been shown in one double-blinded animal study in a six-week period to increase ligament mass by 44%, ligament thickness by 27% and the ligament-bone junction strength by 28%.³⁶ In human studies on Prolotherapy, biopsies performed after the completion of Prolotherapy showed statistically significant increases in collagen fiber and ligament diameter of 60%.^{37, 38} Ligament injury has been implicated as the cause of degenerative osteoarthritis in joints.³⁹ This is significant since a potential cause of unresolved foot pain is ligament weakness, such as in the calcaneonavicular (spring) ligament, which can lead to flattening of the arch and degenerative osteoarthritis. Ligament injury is also a potential cause of metatarsalgia.⁴⁰ Thus, Prolotherapy has the potential to stop the degenerative joint disease process and some preliminary and anecdotal evidence shows that in some cases it can reverse it.⁴¹

Conclusions

The Hackett-Hemwall technique of dextrose Prolotherapy used on patients who had an average duration of four years of unresolved foot pain, who were eighteen months out from their last Prolotherapy session, was shown in this observational study to improve quality of life. The patients reported less pain, stiffness, depressed and anxious thoughts, medication usage, as well as improved walking ability, sleep and exercise ability. This included patients who were told by their medical doctor(s) there were no other treatment options for their unresolved foot pain. Further research is needed to confirm the results found in this retrospective study. Although studies with larger patient populations in more controlled settings are needed to properly document the efficacy of Hackett-

Hemwall dextrose Prolotherapy, this treatment should be seriously considered for people suffering with unresolved foot and toe pain based on risk/reward parameters. ■

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REMARKABLE RECOVERIES

How Prolotherapy Changed My Life

Jennifer DeLeon

I was in my first car accident in 1987 which resulted in a diagnosis of whiplash syndrome and included pain and stiffness in my neck, shoulders, and upper back. I received chiropractic treatments for about 18 months, which helped decrease the symptoms, but did not fully resolve the cause of the pain. From 1989 through 1991, I was a cashier at a department store, engaging in repetitive movements. This created a deep, achy pain which spread down my back, and into my hips, buttock and legs, sometimes causing a slight numbness. I took Tylenol for the symptoms, which helped, but I eventually increased my dose to the daily maximum.

Later, in a college aerobics class I experienced a severe, sharp pain in my mid back that led me to see the college doctor. He diagnosed me with short leg syndrome, gave me a shoe lift, and enrolled me in an alternative physical education class where I participated in physical therapy exercises. The exercises helped increase my strength but did little for my pain symptoms. In 1992, I worked for one year as a waitress carrying trays as heavy as 20 lbs. with my left arm/shoulder, inducing repetitive strain injury. That same year I was in a second car accident sustaining fresh whiplash symptoms. I could not afford treatments at that time.

From 1994 to 1997, I worked as a machine operator, again inducing repetitive strain injury. By the time I began my first “desk job” in 1998, the pain in my neck, shoulders and back was pervasive and chronic. I tried more chiropractors, physical therapists, as well as acupuncturists and massage therapists. Due to the short-term effects of these treatments, and insignificant reduction in pain, I did not find it feasible to continue them. I moved on to various prescription pain killers/anti-inflammatories/anti-muscle spasm medications, but found their side effects unbearable and/or not worth the physical risks they imposed. In some instances the side effects contradicted their therapeutic purpose. I tried traction devices, orthopedic braces, TENS units, and more, but they did not make a significant difference

in pain levels. Additionally, the multitude of medical appointments, diagnostic procedures, and continuous treatments, were financially draining, not to mention a strain on my time and energy.

By now my pain was chronic and pervasive and was in my neck and shoulders, entire spinal area including my sacrum and tailbone, and my hips. The pain periodically radiated into my extremities, sometimes included numbness, and also caused migraines. The pain ranged from dull and achy to throbbing and sharp. The pain was in my joints and my muscles and occasionally aggravated nerves. My central nervous system became completely over stimulated, exacerbating the existing pain. The chronic pain caused sleepless nights, lack of concentration, exhaustion and weight gain. The chronic pain detrimentally affected my sex life, my work life and my recreational life. I could not exercise, I could not even sit through a movie, I had to give up driving manual transmissions—the list went on and on.

The psychological effects of chronic pain were even worse than the physical. I felt guilty over burdening my husband, I was self-conscious from the weight I had gained, and I resented people who did not suffer from chronic pain. I lost a job because of my condition and I was told to my face on more than one occasion that I was not in as much pain as I claimed. My first thought every morning was about pain, my last thought every night was about pain—and every hour in between. I felt helpless, hopeless, and at times had thoughts of suicide. Chronic pain had destroyed my soul.

In 2006 I saw an orthopedic surgeon who diagnosed me with Facet Joint Syndrome. As he explained, facet joints ensure that the vertebrae’s glide smoothly, allowing the spine to flex, yet remain stable. My history of accidents, overuse, and a probable genetic factor, had resulted in weakened and destabilized joints, which created pain in the joints and their surrounding structures and tissues. I went on to see the pain management doctor and we discussed the pain management options of corticosteroid injections, nerve rhizotomy (severing nerves to kill pain), and potentially, surgery.

I did not want to go the orthopedic route and I began researching alternative treatments for Facet Joint Syndrome. In 2007, I ran across www.getprolo.com, where

I learned about a procedure called Prolotherapy, which had successfully been used to treat a variety of musculoskeletal conditions, including Facet Joint Syndrome. A few months later, I had my first appointment with, Dr. Rick Marinelli, ND, MacOM, in Portland, Oregon, who specialized in Prolotherapy. Dr. Marinelli explained that Prolotherapy involved injecting weak/damaged joints/ligaments with naturally occurring substances, thereby triggering the body's natural healing system, which in turn would strengthen the weak/damaged areas and significantly decrease the associated pain. This procedure could be used to treat any traumatized joint/ligament in the body, whatever its cause.

Dr. Marinelli treated my low back and hip area, first. I had a deep dull achy pain in that area, extremely tight low back muscles, and sciatica symptoms as well. As a result, I could not put any weight on my left side while standing, and I could not sit longer than 30 minutes. I also had to give up my favorite exercise—hiking. Dr. Marinelli thought I would need between four and six treatments. I was amazed at how much better I felt after just the first treatment. I came back every two weeks, over a period of two months. After the fourth treatment I was absolutely thrilled to be able to put weight on my own leg again, to actually be able to sit at my job, and to resume my beloved hiking! I was completely amazed!

Next, Dr. Marinelli treated the ligaments, and surrounding structures, of my first rib. I had been experiencing symptoms of First Rib Syndrome, which felt as if someone had twisted my neck 45 degrees sideways, and then jammed it down into my clavicle. My neck and clavicle muscles were always severely constricted, inducing frequent neck/headaches. I could not get one night of decent sleep due to the severity of the pain and tension. The range of motion toward that side of my neck was so restricted, I could not even check my blind spot while driving. I had begun taking anti-muscle spasm medications and sleeping with a neck brace on—which I sometimes wore during the day—in an effort to tame the symptoms, but to no avail. For this area, Dr. Marinelli utilized a type of Prolotherapy known as Autologous Platelet Rich Injection, which utilizes plasma from the patients' own blood in the injection solution. I had one treatment, and within three months, all of the aforementioned symptoms had vanished! I was beyond ecstatic to be able to get good quality sleep on a regular basis, which in turn, improved my energy, mood, and concentration. Due to the success of this treatment, I was also able to stop taking my anti-



Jennifer DeLeon hiking through the beautiful Pacific Northwest, pain free because of Prolotherapy.

muscle spasm medication and stop wearing a neck brace. And, I could check my blind spot once again!

The third major area Dr. Marinelli worked on was my left shoulder joint, which was loose and unstable, causing major muscle distress in my scapular area. This problem also caused aching in the back of my shoulder, all the way down my arm and into my wrist. Since I used my shoulder for every activity, it was in a constant state of aggravation. I could never fully exert myself in anything I did, or the symptoms would flare-up. In just two Prolotherapy treatments the symptoms were gone and I was able to fully exert myself in all activities without fear of pain and tension!

Because of Prolotherapy, I avoided corticosteroid shots, nerve rhizotomy, and back surgery and all of their probable, and potentially detrimental, side effects. Because of Prolotherapy, I was able to get off of prescription pain medications, and significantly decrease OTC medications, thereby avoiding many unbearable, and ultimately detrimental, side-effects. Because of Prolotherapy, I was able to resume my former exercises, lose weight, and decrease my stress levels. Because of Prolotherapy, I was able to sleep well on a regular basis, which improved my energy, concentration, and mood. Because of Prolotherapy, I was able to engage in activities that so many people, who do not live with chronic pain, take for granted, from being able to sit through an entire movie to being able to bend over and pull weeds in my garden. But most importantly, because of Prolotherapy, the black cloud of helplessness and hopelessness, has lifted, and in its place exists optimism and peace. And that is the greatest gift Prolotherapy has given me... Prolotherapy gave me my life back! ■

The Hidden Culprits – Brain Injury and Ligament Injury: My Personal Journey

Amy Price, PhD

In 2003 life as we knew it came to an end. My husband and I travelled the world together as international motivational speakers and missionaries. We were preparing for our 30th wedding anniversary vision of taking a year to circle the globe with the Gospel that comes through faith in Jesus Christ. Our hope was to take a medical missions team in order to share that a relationship with God is real and personal, that God is our healer and that He cares.

Instead we were rear ended while at a stop sign in a country where we were without medical insurance or physician friends. Before the crash I ran 4-6 miles about 5 days a week, swam a mile daily and alternated weight lifting and core exercises with biking or kayaking. We were only home for about 10 days every 6-8 weeks, the rest of the time we were doing mission work. I had no need of medical care except for an occasional routine check up, malaria prevention medications and tropical disease shots. A couple of years before the crash, I was helping my daughter launch a product at a trade show and a chiropractor a few booths over insisted on filming my spine. He said it was the first perfectly functioning spine he had seen in many years.

I remember very little about the crash. I was gently extracted from the car by ambulance workers who transported me to the closest trauma facility. The hospital asked if I was unconscious after the accident, I said no because I did not know. I was later to find there were serious gaps of time lost which they could have found by establishing a timeline or by administering a simple computerized assessment. After discharge from emergency, I chalked it up to a bad night and attempted to wash the whole experience away with a bath. My pupils were two different sizes, my ears were bleeding and I couldn't see properly. I couldn't think

well enough to find the hospital number or use the phone, and beside, they said I was fine and had directed me to an orthopaedic surgeon for follow up. I didn't feel I could drive safely, and the rental car was towed. So I went to the freezer for bags of frozen food to stop the swelling and tried to stay awake. The next 2-3 days my face broke out in tiny blotches, which I later learned were broken capillaries.

The injuries I sustained were severe, yet because of the damage to my spinal cord and central nervous system I felt no initial pain. To give you an example of the level of injury sustained I was initially unable to move my legs. My hands lost the ability to grip or hold objects. In spite of having no memory of the accident and considerable impairments, I was sent home from the emergency room. I clearly should have been admitted, particularly for the head injury where prompt medical treatment would have minimized the collateral damage.

I sustained brain damage visible even on a .02 Tesla MRI, and later found the trauma had damaged my heart, broken my sternum, dislocated my ribs, scarred my intestines, and impaired vision, hearing, speech and thyroid gland, as well as the spine. It took 9 months to get referred to a neuropsychologist to check my brain. I got lost in restaurants trying to find a bathroom, had to ask my relatives how to play kindergarten computer games and lost the ability to spell or say complex words. It was very hard on my family as the social graces needed for communication vanished and my emotions were blunted. They grieved for the person they once knew. I grieved for her too. They and my friends supported me in wonderful ways but it was a difficult time for all of us.

I implored the insurance company to give me computer based brain rehabilitation software. The insurance company lawyer mocked me, made fun of the brain injury and called me an insurance fraud. But the insurance company doctors gave me the software. I knew living like this was not my destiny. That was the bad news but life got better! God finds a way to help you where you are. He will open doors so that you can be a provider of answers.

The computer based brain rehabilitation helped me as evidenced by neuropsychological testing before and after training. I am presently licensed to help people with these tools. If you or a loved one is going through this now, I

can help you. I determined I would study brain science and make a difference so others would not have to go through the hell I experienced. I shared with my doctors that I was going to be a brain science researcher and help others get their brains back after trauma. My surgeons wrote recommendations to help me get into the university with brain damage and all. They even showed me how to work a voice recognition system. I am thankful they chose to support what I wanted to do with God's help.

I kept their recommendations and read them over and over. They reminded me that I was a person who mattered and not a liability, disability or a brain damaged nobody. The law of kindness moves mountains. You have the power to change someone's life with words. I am also thankful for my husband and my family who believed in me and encouraged me not to give up. Today, I work as a brain researcher, consultant and developer of brain science tools that work. What you make happen for others can open doors for you.

Traumatic brain injury (TBI) can be a hidden culprit. Unless you suspect it, no treatment will be given. A patient is often asked, "Did you lose consciousness?" They don't remember so they respond with a no. Recognizing the signs of TBI and insisting on appropriate treatment is the best path for recovery.

I am presently working to advance the availability of computerized cognitive assessments in hospitals. They can be administered by a volunteer at low cost. Emergency staff in many countries are not equipped to handle head injury because of the time it takes to do it right. Emergency room cognitive and neurological testing is less than ideal. I was assessed as having a 15 Glasgow score for orientation in spite of statements by family members who expressed concern about my mental function. I was to study this later and learn that I was considerably under diagnosed.

Actions pointing to a brain injury may include difficulty performing simple tasks, such as counting to one hundred by threes and repeating this activity counting backwards, distractibility or inability to stay on task or memory loss concerning events in the preceding minutes, hours, or days to the trauma. Brain injured persons often lose their train of

The Glasgow Coma Scale is used to assess the level of consciousness after head injury. It is based on a scale of 1-15, with 3 indicating deep unconsciousness and 15 being normal consciousness. The GCS is used around the world to monitor patients that have sustained head injuries.

thought while responding to a question or they offer responses that are tangential or inappropriate. They may stare blankly or undergo uncharacteristic behavioural changes. Language patterns, ability to spell or calculate numbers may be affected. If you or a loved one experience these warning signs after a head trauma, insist on a full neuropsychological evaluation and a high (3+) Tesla MRI of the brain read by a neuro-radiologist who specializes in brain trauma.

A good treatment protocol will be multidisciplinary and very specific in nature. Assessment will be continuous and treatment adjusted accordingly. Effective treatment means a brain injured person will recover the skills to function independently in the outside world and increase their quality of life. They will relearn the social nuances of maintaining relationships and will rebuild their identities and destinies. The faster a brain damaged person receives treatment, the better prognosis they have for recovery. Still it is almost never too late. With today's specialized tools progress can be made years after an injury. We have helped people progress and recover even twenty years post injury. It is critical to find a specialist medical team whose focus is on treatment and recovery after diagnosis.

Setting appropriate boundaries and realizing physical limitations can be difficult for a brain injury survivor even after achieving significant intellectual and functional recovery. Brain injured persons are emotionally vulnerable and can be exploited in the workplace. Friends, family members and medical professionals can help by showing the individual what it is 'normal' to accomplish along with determining that compensation received is fair and reasonable.

My husband and I plan to take brain technology into third world countries. Children become beggars, or worse, because of brain problems they have sustained due to parasites, disease and malnutrition. People ask me if God caused this to happen. My answer is "No, God will show you ways to make a difference where you are. He is with you." For me, Prolotherapy was a tool God used to deliver healing and this is how it happened.

I was still experiencing severe pain every day in spite of several spinal surgeries and multiple procedures. Allergies

to codeine and other opiates complicated the scenario. Medications can be unpredictable in the face of brain injury. Cortisone and radio frequency lesioning were of little help. Multilevel fusions and internal pain pumps were suggested as the “gold standard” solution.

My spine surgeon and pain management doctors, Dr. Merrill Reuter and Dr. Dannell Anschuetz at Lake Worth Surgical center in Florida explained the ligaments holding my neck and spine together were unstable and would disqualify me for artificial disks. Dr Reuter shared the notion that more surgery would be a short-term solution that could make things worse. He offered to use Prolotherapy and gave me some internet links and a couple of web sites to search on this topic. Dr Reuter explained I would have 3-7 days of pain before I noticed any healing and that he estimated it would take about six sessions before there would be any improvement.

I did go for several second opinions. They were not in favour of Prolotherapy, but could not suggest better options. The consensus was Prolotherapy wouldn't work and insurance wouldn't pay. Perhaps one of the reasons was and is because, like traumatic brain injury, ligament injury is also a hidden culprit. Ligament injuries often do not show up on X-ray! I am so happy I didn't take their advice because they were mistaken on all counts! Prolotherapy worked and insurance paid.

Later, I had Prolotherapy for my ribs and my shoulders. The ribs have stayed in place beautifully, the shoulders would have benefited from more treatment. I really recommend Prolotherapy for anyone with ligament instability issues. Prolotherapy for my SI joint and spine were helpful, particularly after I started to use The DonTigney Method™ to realign and strengthen that area.

Ligament injuries can be more painful and take longer to heal than a broken bone. They are common in traumatic injuries like a car crash, fall or sports injury. A ligament is a tough band of white, fibrous, slightly elastic tissue. They are an essential part of the skeletal joints; binding the bone ends together to prevent dislocation and excessive movement that might cause breakage. Some people like to compare ligaments to duct tape; they hold bones together. Another way of seeing this is to compare ligaments with elastic. Have you ever had favourite clothes where the elastic goes and loses its ability to follow and cling to your body? This is how lax ligaments work in your body. Torn

ligaments could be compared to a fan belt in your car or a belt in your clothes dryer or vacuum cleaner, once it tears there is no real way to fix the problem because each time the appliance is used it puts pressure on the belt.

Ligaments contain signalling features which tell the bones how much to move. Ligaments also protect the joints and nerves. When these structures are injured, the body works to rebuild them but this is a slow process. A severe ligament tear can take 18 months to heal, whereas a broken bone heals in about three weeks. When the tear is bad and the ligament can't heal, the surrounding muscles work overtime and the nerves do not have the same degree of protection which can lead to chronic pain and atrophy of the surrounding muscles. Severe ligament injuries that can't heal produce instability in the surrounding structures. When this happens, deep supporting muscles get weak, nerves get irritated (causing more muscle weakness), and joints get inflamed and painful.

Prolotherapy can repair ligaments and provide normal support to the joint. While most of our daily injuries heal completely, severe ligament tears, degenerated and worn out tissues, and those with a poor blood supply (such as in the knee) don't usually mend themselves. This is because low grade inflammation is taking place and causing pain but it is not strong enough to signal initiation of the repair process. Prolotherapy practitioners start by injecting a mild irritant, such as glucose mixed with local anaesthetic, to trigger a healing response in the damaged area. This otherwise harmless, natural substance causes a brief period of inflammation (3-5 days) which triggers the body to release its own natural growth factors in the injured tissue.

Most practitioners do these injections in a series, with 3-6 injections being considered the norm. Cervical instability is an exception sometimes requiring upwards of 20 injections. Prolotherapy can be used in most joints that are unstable. The injections work immediately, directing your body's natural healing mechanisms to repair damaged and degenerated tissue. The first stage of healing usually takes about a week, but the tissue continues to restore itself for 4-6 weeks after the injection. Prolotherapy needs to be precisely targeted and done by a practitioner who is getting consistently good results from the treatment. It may be good to ask the doctor for the name of a couple of satisfied recipients. They will be able to tell you about the procedure and what to expect as well.

Following treatment, it is helpful to use ice packs for 15 minutes each hour.* After 24 hours alternate ice packs and heat packs to increase circulation. Start exercise to create the optimal climate for healing and to release endorphins and dopamine that will increase self esteem and decrease pain.

If you have access to an electronic acupuncture machine and a cold light laser, these are very helpful for reducing pain and promoting healing. In fact, I take my ETPS 1000 machine everywhere I go. This little machine can be carried anywhere, runs on batteries and has saved me time and money that would otherwise be spent for massage and other therapies. It is my number one pain fighting weapon. Supplements that promote cell health such as vitamin C, glucosamine, fish oil supplements and anti-oxidants can help. It is important to have high quality protein in your diet to promote a healthy balance of amino acids which help your cells increase the building blocks needed to heal.

Getting enough sleep and regular exercise is important. When you combine exercise and Prolotherapy, the new growth is made stronger. Exercise can even help your brain grow new neurons, conserve immune function, strengthen cardiovascular systems, muscles and ligaments. Stress slows your body's ability to heal. Learning stress busting techniques or avoiding stressors promotes health. Prolotherapy prompts the body to naturally heal damaged and degenerated tissues. Prolotherapy is not a steroid which can block healing by inhibiting the natural inflammation cycle whereby new cells can regenerate and repair tissue. It uses a natural substance that promotes healing.

I am not entirely pain free but I can sit in a restaurant, attend a conference, bike, swim and run. My brain now works well enough to do fairly well on post graduate classes but summa cum laude without great effort is a thing of the past. I find myself more vulnerable to betrayal and emotional pain than pre-injury. Rebuilding functional identity, credibility and self worth takes incredible effort. It is worth it. You can move mental mountains, one rock at a time. Your life is a seed that contains the future within itself. Rebuilding your destiny removes the boundaries other have set for you.

Prolotherapy works for me! I continue to improve and look forward to a wonderful future.



Amy's first time kayaking after Prolotherapy!

A PATIENT CASE:

Marjorie Kirkpatrick (Jo) is similar to many of the clients Dr. Price works with. Inspiration, perseverance and training prepares individuals to follow their dreams. Jo was given little hope for life or success after her diagnosis of hepatitis C and myelopathy, yet she pressed forward to attain her destiny. Jo made an observation about her work with Dr. Price, "Amy and I studied psychology together but I learn more from Amy than I do from the courses. The courses have taught me about the workings of the human brain and mind. I had picked up the reins of my life for the first time in 40 years when I began studying, but I was not quite sure what to do with them. Amy taught me about myself and the power of my spirit. She believes in self-empowerment, how not to let other people (parents, teachers, partners, employers, or society) define who we are. Amy has shown me that who and what I am is my own decision. I just have to do the work, put in the time and believe in myself to make it happen. I knew how to do the work and put in the time, but I needed Amy to show me how to believe in myself." The things that are impossible to man are possible with God!

***Editor's Note:** Utilizing ice packs is not recommended by all Prolotherapy practitioners. It is best to consult with your treating clinician first. ■

REMARKABLE RECOVERIES

Our Story: Pelvic Floor Dysfunction helped with Prolotherapy and Natural Medicine

Anna Hamman

This road has been long and hard. I am so very thankful to have found Prolotherapy without which I would never be able to say with confidence that this road is ending, and my life is again beginning. My name is Anna Hamman, I have a wonderfully supportive husband, and a wild and crazy three year-old son, and my life has been affected by chronic pain for the past few years. We live in Florida, but we have searched the country for advice in treating my condition. Because chronic pain affects the lives of more than just the individual, I label this “Our Story.”

For the past three years I have suffered from chronic pelvic and low back pain. My symptoms have included severe groin pain (7 out of 10 pain), inner leg/thigh pain (6/10), symmetrical hip pain (5/10), and intense low back pain (8/10). These symptoms grew over time to include upper back /collarbone pain (5/10) and pelvic floor pain (5/10). There is no doubt that each of my symptoms was a chain reaction from the initial injury. However, with the pain so intense throughout my entire body, neither I nor my initial doctors, fully understood the problems going on within me.

In hindsight, I can now say my initial injury happened during the birth of my first son in December 2006. I had a great pregnancy, and I naturally (but with the help of an epidural) delivered my healthy baby boy two weeks and one day past my due date. He weighed 9 lbs, 2 oz., and the delivery was very long and hard (14 hours, 5 hours pushing). I believe my initial pelvic injury occurred during the long birth. When I went home from the hospital I was in pain, but I thought it to be normal; I had just had a big, healthy baby.



Anna with her husband & son.

As time began to pass, I tried my best to return to the active lifestyle I had before. However, I soon realized that I had suffered a severe injury that was not going to heal without proper medical attention.

Thus, my quest to figure out what was causing me so much pain began. At that time, I was an active duty captain in the United States Air Force. I say this to make the point that I was not only an athletic person by nature, but it was required that I maintain a certain physical standard to stay in the military. For the first six months following my injury, I kept taking the advice of the military doctors, that with time and physical therapy my body would heal itself so that I could return to being the active woman I was before my pregnancy. I pushed myself to return to my normal exercise routine even though the pain was extremely intense and much worse with exercise. Time passed, the doctors ran some preliminary tests to ensure nothing obvious was being overlooked. A year into my quest to find an answer to my chronic pain, the only diagnosis I had included a “minimally bulging disc material present at L1-2, L4-5, and L5-S1, as well as an annular tear in the midline of L4-5,” and “minimal sclerosis of the right sacroiliac joint.” Not having identified the true injury to date, I did not realize at the time, that all of the above mentioned injuries were developing because of the underlying problem that no doctor had yet been able to diagnosis.

The prescribed method of treatment under the military system included routine chiropractic manipulations, physical therapy, and steroid /cortisone injections. I endured a rigorous once-a-week treatment schedule for 12 months following the birth of my baby. Times were tough. My husband deployed three times that first year, leaving me to raise a new baby, work, and try to fit in all of these doctors appointments all while feeling like I had been run over by a semi-truck. Despite a hugely supportive immediate family, I became depressed as the pain began to get the best of me. Still, I kept looking for an answer. The tipping point was the three cortisone injections I received in my lower back and SI joint at the direction of the military doctors. In hindsight, I certainly wish I had not gone through

with the cortisone injections, as they did absolutely nothing to ease my pain. Furthermore, they could have proved detrimental if continued as prescribed! All of these courses of action were simply methods of masking the pain rather than getting to the root of it. I found myself extremely frustrated and weary that I might have to spend the rest of my life in this horrible state.

In 2008, nearly a year and a half into my quest for an answer, I finally convinced the military doctors to send me to an orthopedic specialist who specialized in pelvic reconstruction. This doctor was not associated with the military. Clearly, the military doctors were not able to figure out what was wrong with me, and civilian attention was required.

Upon examination by the orthopedist, a pelvic reconstruction specialist, he suggested I complete a new pelvic ultrasound and weight-bearing X-rays of my pelvis, standing on one leg in a flamingo-like pose. The X-rays showed a mild separation of my pubic symphysis and a definite shift of the weight-bearing side when standing on one leg. Just as expected, the MRI also returned signs of “early-mild osteitis pubis,” or inflammation of the suspect joint. We had finally found the root source of my pain: pelvic instability due to an injured pelvic joint. This, my orthopedist told me, could have been a result of the hormonal changes a woman goes through during pregnancy as her body prepares for delivery and the joints open to make room for the baby. But more likely, it was aggravated by a 9+ lb baby coming down the birth canal and the long labor that I had to endure. Slowly, my back, hip, and groin pain began to make more sense. After receiving the results, the obvious question became, how do we fix this? The orthopedist suggested I consider fusion of the symphysis pubis. My husband and I left his office, happy to find an answer, but unsure that surgery was the answer for me. There were simply too many questions that the orthopedist and the military doctors could not answer with certainty for us. My main question persisted: would the surgery address my lower back pain? Nobody could say with certainty that fusion of the pubic symphysis would solve all my problems.

I set out to find alternative sources for treating pelvic instability. My search led me to a physical therapist who specialized in women’s health and pelvic floor injuries as well as to a wonderful team of doctors at Florida Health Center East. The doctors at Florida Health Center East were

DOs who specialized in family practice and osteopathic manipulation, a method of smoothly realigning out-of-place joints back to their proper position without the use of chiropractic techniques. By this time, I was very weary of chiropractic manipulation because I had endured so much under the military’s method of addressing my low back pain, and I knew it was not the treatment I needed for pelvic instability. My ligaments were already too loose, I did not need chiropractic manipulations to make my problems any worse! Thus began an intense schedule of appointments once every three weeks, for six months, for osteopathic manipulation.

I saw some improvement and was encouraged enough to continue my non-surgical methods of treatment. Furthermore, the doctors at Florida Health Center East, as well as my new physical therapist all shared the opinion that the pelvis has joints for a reason: a little movement is necessary, if not imperative, for normal healthy female function. I still had dreams of being able to run again and, if my health is good enough, have one more baby. Both dreams were even less of a reality with a pelvic fusion. However, a full recovery with non-surgical treatments was still possible according to the doctors at Florida Health Center East. I had no choice but to continue to work with these specialists while continuing my personal search for an answer.

New Year’s Eve of 2008 came, and I remember counting down the last few seconds praying to God that 2009 would bring about change. God is good. At one of my appointments at Florida Health Center East, my doctor suggested I consider a method of treatment called Prolotherapy. After hearing their explanation of the procedure, I agreed. I received a few concentrated Prolotherapy injections around my lower-lumbar and SI Joint region. I returned about four weeks later and received several in my SI joint and symphysis pubis. I continued Prolotherapy for about four or five months under the care of the DOs at Florida Health Center East, all the while doing as much research as I could on this method of treatment, trying to learn and understand what it was that was beginning to make me feel better!

My quest for more information, and ultimately a permanent cure to my chronic pain, lead me to Caring Medical and to Dr. Ross Hauser. Since I knew Prolotherapy was working for me, I decided it best to make an appointment with a leading expert in the field. Last February, after

two years of living with severe chronic pain, I began treatments with Dr. Hauser. Dr. Hauser did more than diagnose my problems surrounding pelvic instability and the pain associated, he began to dig deeper to find out why it was taking me so long to heal. It is Dr. Hauser's method of Prolotherapy combined with his "whole body" methodology of peeling back the layers in a chronic pain case that, I believe, finally caused me to begin my path to recovery!

The difference between using Prolotherapy to compliment a treatment and using Prolotherapy as the main source of treatment was the turning point in my battle with chronic pain. Upon examination, I received some 300+ Prolotherapy injections throughout my lumbar spine, my hip joints, my groin, and my collarbones. Additionally, I began a rigorous course of vitamins and supplements, all of which I continue today. I did not see results immediately. I was disheartened at first, but the doctors and nurses at Caring Medical did a wonderful job explaining that in my case it would likely take time and numerous treatments (an estimated eight or more) before results were surely evident. Dr. Hauser asked me to think of my ligaments surrounding my lower back and pelvis as over-stretched rubber bands that, with each injection, would heal tighter, but not until they were tight. Just tight enough to hold my bones in place to take the strain off of my muscles. Since I had been living with this condition for over two years, there were also overcompensation issues that my body would have to overcome with time, proper medical attention, and patience.

On my third visit, I still was not seeing the results I wanted, so I agreed to complete the Hauser Diet Typing and food allergy panel as well as a panel of blood work in which Dr. Hauser checked my hormone levels and thyroid. The diet typing, or blood sugar response test, revealed that I should mimic an "Otter" in my eating habits with a 50% protein, 25% fat, 25% carbohydrate diet. The food allergy results were very shocking – I was allergic to dairy, eggs, gluten, and even a few choice fruits! All of these foods, while they didn't cause me digestive strain, were, according to Dr. Hauser, causing systemic inflammation increased body aches and pain. Although very strange and difficult, I made an immediate change. The blood panel also revealed some eye opening problems: I was hypo-thyroid, and my testosterone and progesterone levels were not within the normal ranges for ideal healing. I now take natural thyroid medication as well as apply natural

testosterone and progesterone creams daily. All of these changes made were to help my body return to an optimal state of healing. For the first time in my quest for finding an answer, somebody was listening to my entire body, and my entire body began to respond!

I have seen Dr. Hauser for treatment seven times, thus far. At my last appointment, I reported an overall 85-90% decrease in pain. Additionally, I have had recent MRI scans run, and there are no longer any bulging discs to report in my lower back—a true testament to the Prolotherapy treatments. I am continuing the vitamins, supplements, and prescribed medications as directed, as well as doing my best to eat well and follow the food allergy guidelines. I am slowly adding exercise back into my routine, and am limiting my stretching and increasing my resistance activity. I enjoy swimming, however, I am still challenged by walking long distances and running, both which continue to cause me increased pain. I am not done, however, with my treatments. I strongly believe the 100% recovery exists for me, and I continue to see Dr. Hauser every few months with the goal of once again being the active woman I used to be!

While I am not yet at the end of my battle with chronic pain, it is only because I am seeking full recovery, and I believe it is possible with Prolotherapy and Natural Medicine. I am so thankful that I did not follow through with the pelvic fusion. I have had to separate from the military in order to seek continued treatment from civilian health care providers. While one is able to see civilian health care specialists in the military, the referral system is long and tedious. Juggling my toddler, my poor health, my own career, and my husband's constant deployments was not something that we, as a family, could continue. Since my husband and I had decided against the pelvic fusion surgery, the military doctors and insurance system made it very difficult to pursue additional civilian options. I do not write these words to justify my decision to get out of the military, but instead to highlight how desperate I was to find an answer to my chronic pain.

I share my story here in hopes of reaching out to that one person who is questioning Prolotherapy. I am not ashamed of anything that I have been through, instead I am a much stronger person because of this experience, and I hope that through our story someone else finds the courage and determination to find the answer and to once again reclaim his or her life. ■

W O N D E R W H Y ?

Sacroiliac 101: Form and Function – A Biomechanical Study

Richard L. DonTigny, PT

ABSTRACT

The pelvis has been a puzzle that has consumed the greater part of my working life. The sacrum is the keystone of the puzzle, but does not function as a keystone. When the sacrum is loaded with the superincumbent weight and the joint is symmetrical, little or no movement has been observed. Measurements of movement have varied widely. The sacrum is a non-weight bearing joint that hangs from the posterior interosseous ligaments with weight loading. Movement of the sacrum on the pelvis occurs with ambulation and is moderately complex, but not incomprehensible. When the pelvis moves into asymmetry the innominate on the side of loading moves the sacrum caudad on that side, but does not move caudad on the sacrum. The innominate on the side of the trailing leg rotates cephalad as the sacrum is unloaded on that side, causing it to flex laterally toward the side of loading, rotating on a mid-sacral axis. Innominate rotation occurs on an axis through the pubic symphysis. A force-dependent oblique axis of rotation is created. The sacrum then rotates on that oblique axis to drive counter rotation of the spine to decrease the forces of loading. Static x-rays in the extreme long straddle position demonstrate the movement of the innominates on the sacrum. An error in method by an early researcher demonstrated only minute motion in the long straddle position, which has impeded further research. Pelvic dynamics has a primary effect on normal gait.

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KEYWORDS: sacroiliac joint, anatomy, movement, function, normal gait.

INTRODUCTION

The purpose of this article is to succinctly describe the normal movement and function of the pelvis; the aim is to dispel the myths that the sacroiliac joint (SIJ) has no important movement or function and that the function of the pelvis is so complex that it is impossible to describe. Salient features of the structure are described and related to movement. When the ligaments of the SIJ are loaded they become balanced and function as force couples. During normal gait, the pelvis moves

into asymmetry and functions to drive counter rotation of the trunk to decrease the forces of loading. X-rays demonstrate movement in the extreme long straddle position with counter rotation of the trunk.

STRUCTURE

The pelvis consists of the sacrum and two innominates. White, et al. and O'Donoghue^{1, 2} have described the sacrum as functioning as the keystone of an arch, however, the keystone of an arch becomes wedged more tightly as weight is applied from above. The sacrum is actually suspended from the ilia by the dense posterior sacroiliac ligaments and functions as the reverse of a keystone by hanging more deeply between the ilia with increased weight loading³⁻⁶ until it reaches its limit of motion. The posterior superior iliac spines (PSIS) approximate and further movement of the sacrum downward between the innominates is blocked.⁵ Superincumbent weight is transferred from the sacrum through the posterior interosseous ligaments to the ilia. The SIJs are inherently non-weight-bearing joints.

MOVEMENT WITH LOADING

With superincumbent weight loading Weisl⁶ found that the sacrum descends between the innominate bones when moving from a supine to an erect posture. This movement is in accord with Erhard and Bowling⁷ who stated that for all practical purposes the only motions permitted are gliding in a ventral and caudal direction and return to the resting position.

BALANCED LIGAMENTS

Primary loading of the superincumbent weight on the sacrum is on the posterior interosseous ligaments. Vukicevic, et al. found that the joints do not approximate with weight loading as long as the posterior interosseous ligaments are intact.⁸ When the posterior interosseous ligaments are removed the sacrum can no longer sustain weight bearing.⁸ The superincumbent weight is transferred from the sacrum to the ilia through the posterior interosseous ligaments.

The sacrum then rotates anteriorly and downward on a transverse sacral loading axis just posterior to the S3 segments.⁹ (See *Figure 1*.) Gracovetsky verified this bony transition point.¹⁰ This axis is essentially force-dependent

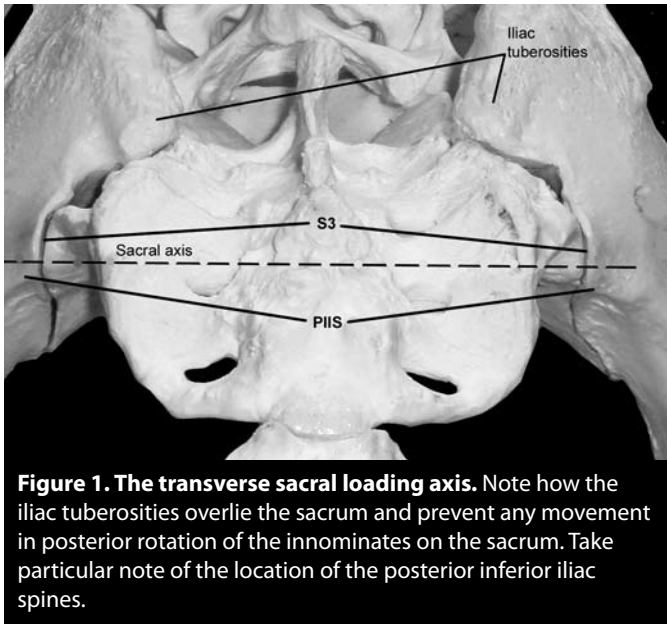


Figure 1. The transverse sacral loading axis. Note how the iliac tuberosities overlie the sacrum and prevent any movement in posterior rotation of the innominates on the sacrum. Take particular note of the location of the posterior inferior iliac spines.

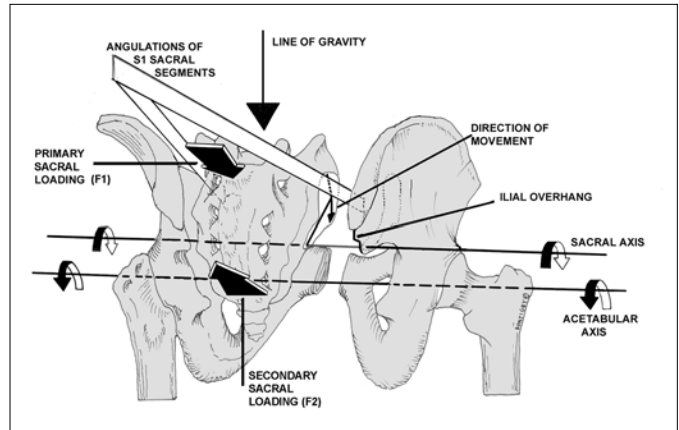


Figure 3. Primary sacral loading occurs on the posterior interosseous ligaments with an instantaneous equal secondary loading of the sacrotuberous ligaments in the opposite direction. The lumbar lordosis is increased, as is the lumbosacral angle.^{9, 11}

and must lie between the ligaments of primary loading and the ligaments of secondary loading. The sacral axis is also forced by the iliac tuberosities, which prevent an axis within the SIJ.¹¹ (See Figure 2.) Simultaneously with the primary loading, the caudal sacrum rotates dorsally and cephalad and causes a secondary loading on the sacrotuberous ligaments with a force in the opposite direction balancing the primary loading force.^{11, 12} (See Figure 3.)

In the normal standing posture the line of gravity is anterior to the sacral axis and posterior to the transverse acetabular axis. Primary loading will cause an increase in lumbar lordosis and an increase in the lumbosacral angle. The primary sacral loading also causes a primary pelvic loading. The pelvis rotates posteriorly on the acetabular

axis, which flattens the lumbar lordosis and decreases the lumbosacral angle. Secondary pelvic loading creates balancing forces on both the posterior interosseous ligaments and the sacrotuberous ligaments. (See Figure 4.)

THE FORCE COUPLE

The balanced ligaments create force couples on each side. (See Figure 5.) These balanced tensile forces result

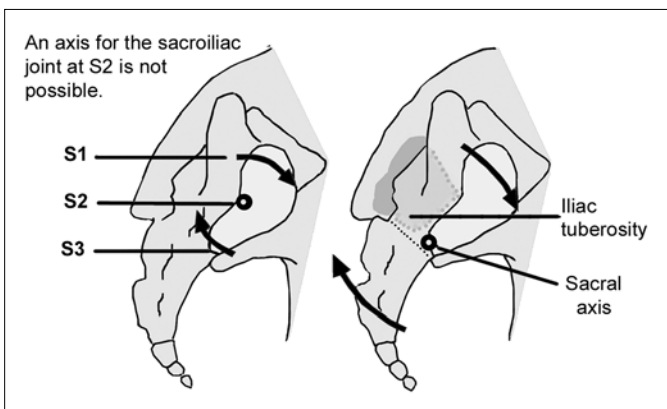


Figure 2. The forced sacral axis. The iliac tuberosities force the sacral axis distally making any sacroiliac axis at S2 impossible.¹¹

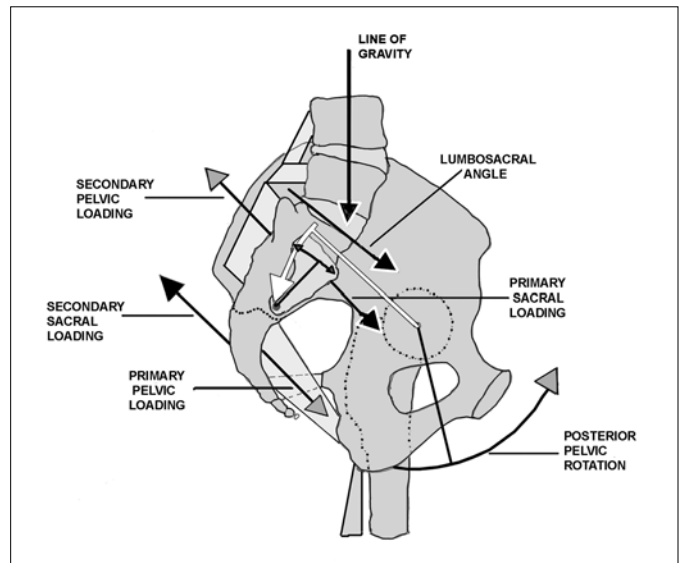


Figure 4. Because the line of gravity is posterior to the acetabular axis, loading of the sacrum causes a simultaneous sequential loading of the pelvis resulting in a posterior pelvic rotation on that acetabular axis. The secondary loading of the pelvis further balances the ligaments, decreases the lordosis and decreases the lumbosacral angle.^{9, 11}

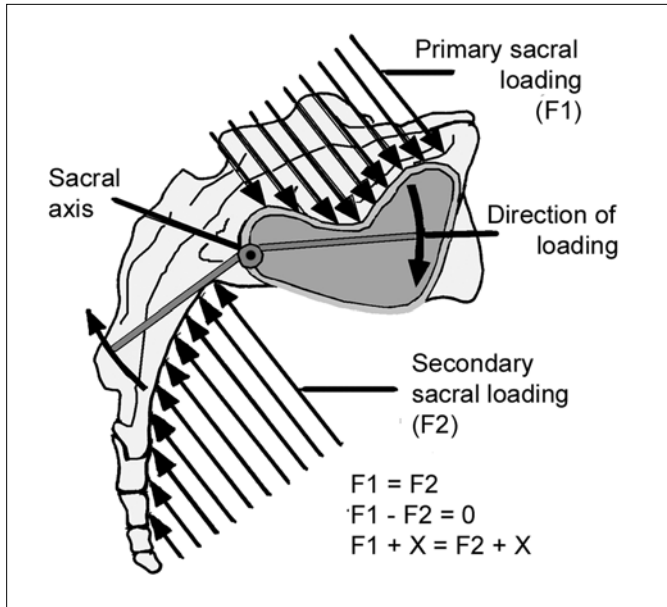


Figure 5. The force couple. Two equal and parallel forces acting in opposite directions define the sacral axis. Note that adding additional weight (X) to the primary sacral loading is also added to the secondary sacral loading.^{9,11}

in a tendency to rotate around a transverse axis created by and perpendicular to the force couples. Force couples absorb, balance and redirect various forces such as linear velocity, linear acceleration, angular velocity, angular acceleration, linear momentum, angular momentum, the rate of change of momentum, force and moment of force.¹¹

MOVEMENT ON THE ASYMMETRIC PELVIS

The pelvis is very stable when it is loaded and symmetrical. In order to extend the length of the stride when walking the pelvis swings horizontally so it is asymmetrical and oblique to the line of travel. When the pelvis moves into asymmetry, the innominate on the side of loading moves the sacrum caudad, while the innominate on the side of the trailing leg rotates cephalad, each rotating on an axis through the pubic symphysis. This innominate rotation causes the sacrum to flex laterally toward the side of loading as it rotates on a force dependent mid-sacral axis in the center of the sacral loading axis. The lateral sacral flexion creates a force-dependent oblique axis from the superior margin of S1 on the side of loading to S3 on the contra lateral side.¹¹

The line of gravity is anterior to this oblique axis and the sacrum is obliquely unstable so it rotates on that oblique axis anteriorly at the S1 segment on the side of the

trailing leg and posteriorly at the S3 segment on the side of loading. The sacral rotation on the oblique axis drives counter rotation of the trunk to decrease the forces of loading on the side of loading.⁹ (See Figure 6.) Gracovetsky termed this a controlled instability.¹⁰ The piriformis and the sacral origin of the gluteus maximus function as prime movers of the sacroiliac joint as they work together with the sacrotuberous ligament to pull the sacrum erect so the pelvis is again symmetrical at mid-step.¹¹ (See Figure 7.)

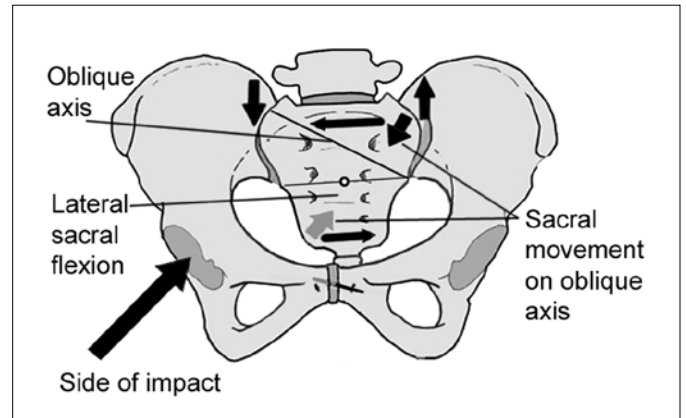


Figure 6. Oblique axis. Posterior rotation on the side of loading and anterior rotation on the side of the trailing leg cause a sacral rotation, which, in turn creates an oblique axis of rotation. The sacrum then rotates on that oblique axis to drive counter rotation of the trunk.^{9,11}

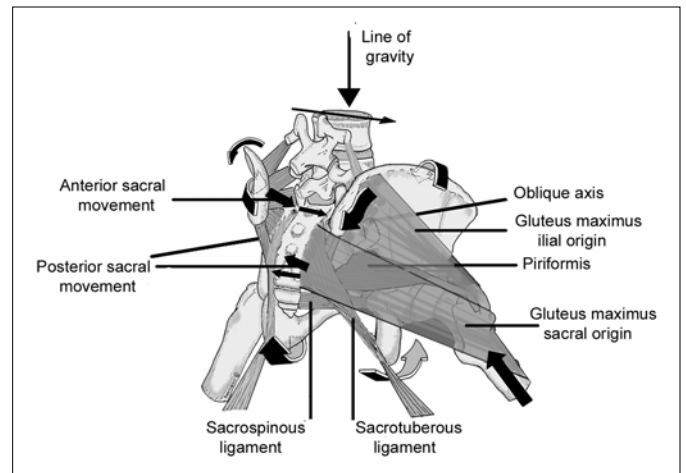


Figure 7. Function of the prime movers on the asymmetric pelvis. The sacral origin of the gluteus maximus (GMS), in order to overcome the controlled instability, pulls the sacrum caudad and obliquely in the same direction as the sacrotuberous ligament (STL). The GMS also pulls the body forward until the leg is perpendicular. The piriformis (P) pulls the sacrum laterally and in the same direction as the sacrospinous ligament (SSL). The ilial origin of the gluteus maximus (GMI) sequentially undergoes an eccentric contraction to decrease loading on the contra lateral side with the next step.^{9,11}

Other factors also help to decelerate the loading side prior to impact. The sacral origin of the gluteus maximus on the contra lateral side undergoes an eccentric contraction from mid-stance until impact. The triceps surae and toe flexors on that side also function to decelerate the side of loading. This action is usually mistaken for a push-off of the trailing leg, but in actuality the function is that of a decelerator.^{11, 13} Pierrynowski noted that sacral flexion and rotation is repeated each step and causes an oscillation of the sacrum with an increase in lumbar lordosis and the spinal curves from the sacrum cephalad.¹⁴ The spinal curves recover when the pelvis is again symmetrical at the single support phase. (See Figure 8.) This rhythmic sacrocranial vertebral oscillation was measured by Thorstensson, et al. in treadmill studies and found to be about 2-2.5 cm at L3 and 1-1.5 cm at C7.¹⁵ The spine functions as a decreasing waveform to damp this oscillation in order to keep the head stable while ambulating. It appears to function as a biological image stabilizing system.^{11, 13} The posterior movement of the spine just prior to symmetry at single support then facilitates the hip flexors in the forward propulsion of the trailing leg.

X-RAY EVIDENCE OF PELVIC MOVEMENT ON THE SACROILIAC JOINTS

When the pelvis moves obliquely to the line of travel in order to extend the length of the stride it moves from a position of symmetry into asymmetry. This position with

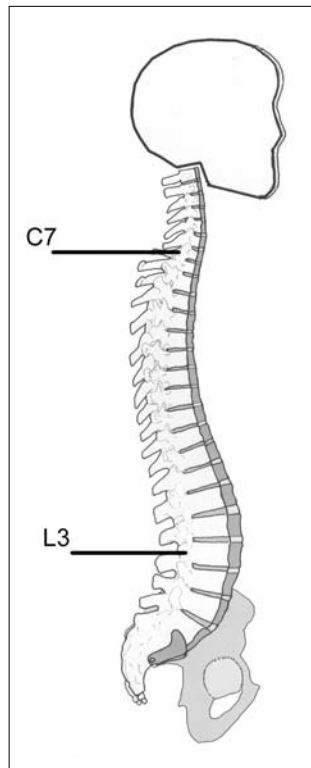


Figure 8. The lateral sacral flexion and rotation during normal gait creates a rhythmic sacrocranial vertebral oscillation. The gray area indicates the approximate amount of vertebral movement caused by the sacral movement. Thorstensson measured this in treadmill studies to be 1-1.5 cm at C7 and 2-2.5 cm at L3. The spine appears to function as a decreasing waveform to damp this oscillation and control head movement.^{9, 11}

one leg in the extreme forward position and the other in the extreme back position is called the extreme long straddle position.

Many practitioners believe that the SIJ does not move more than just a few degrees. Smidt measured up to 30° of motion in the SIJ with the subject in the extreme long straddle position. Subjects were professional gymnasts and well stretched out.^{16, 17} Sturesson, et al. measured a subject in that position and found movement in the sacroiliac joint of only about 5°. ^{18, 19} In examining the method used by Sturesson, I found that he had made an inadvertent error in his positioning that was responsible for a substantial error in the amount of movement measured. Most practitioners accept Sturesson's measurements as accurate principally because of his use of implanted tantalum balls in the pelvis. This has led to the myth that the SIJ essentially has no movement and no important function.

X-rays of a 78 year-old male were done in the extreme long straddle position with the pelvis in asymmetry and with strong counter rotation. Loading was on the right and the left leg. X-rays were in the frontal plane of the pelvis, but oblique to the line of travel. (See Figure 9.)

Movement of the PSIS on the sacrum is obvious and much greater than reported. Clearly, there is ample movement at the sacroiliac joint and not minimal as is commonly believed. This position is clearly static. Dynamic movement would surely demonstrate greater movement than presently observed. (See Figure 10.) In order to demonstrate normal movement in the sacroiliac joint the joint must be loaded, the pelvis must be in extreme asymmetry and with strong counter rotation. If possible this should be done at the moment of impact to demonstrate dynamic sacral movement.

X-rays taken of the pelvis as per Sturesson had the subject with the direction of travel straight into the x-ray and with the pelvis perpendicular. (See Figure 11.) Sturesson did not have the pelvis in an oblique or asymmetrical position nor did he include counter rotation. Although his measurements were extremely accurate in this position he inadvertently measured some slight movement on the symmetrical pelvis rather than normal movement on the oblique pelvis with counter rotation.

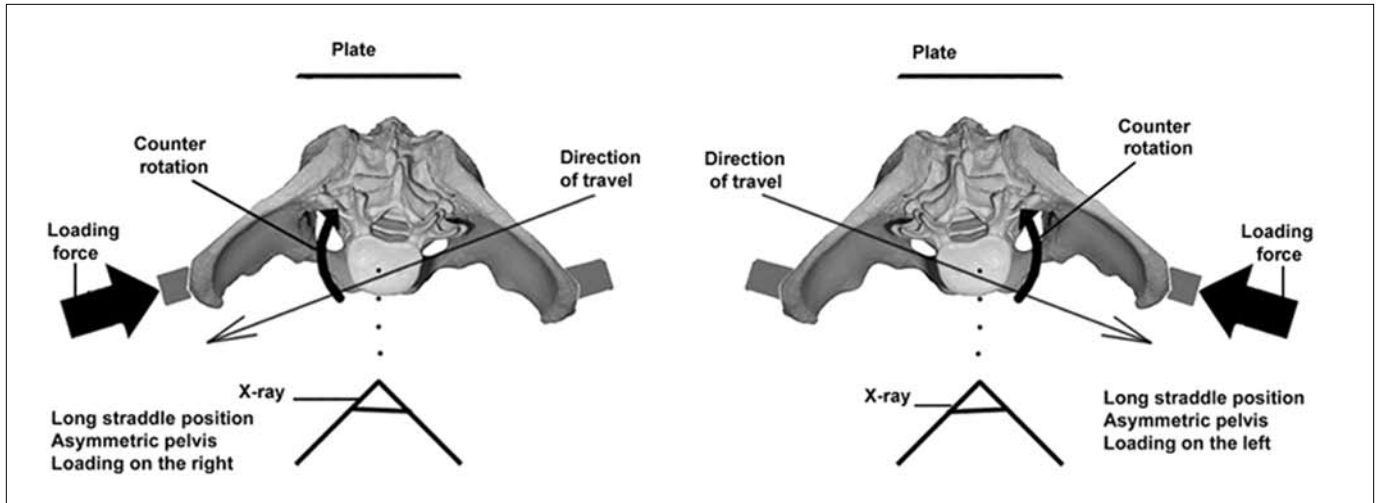


Figure 9. In order to view innominate movement on the oblique asymmetric pelvis it was necessary to have the front of the pelvis square to the camera, but oblique to the line of travel.

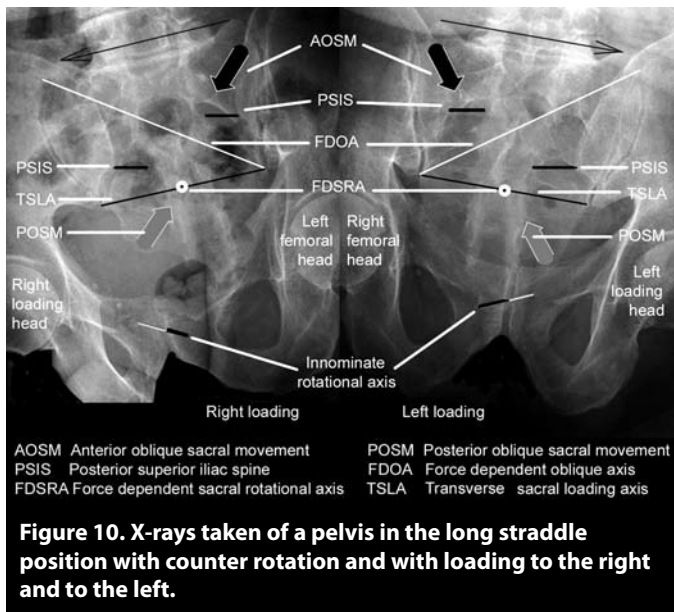


Figure 10. X-rays taken of a pelvis in the long straddle position with counter rotation and with loading to the right and to the left.

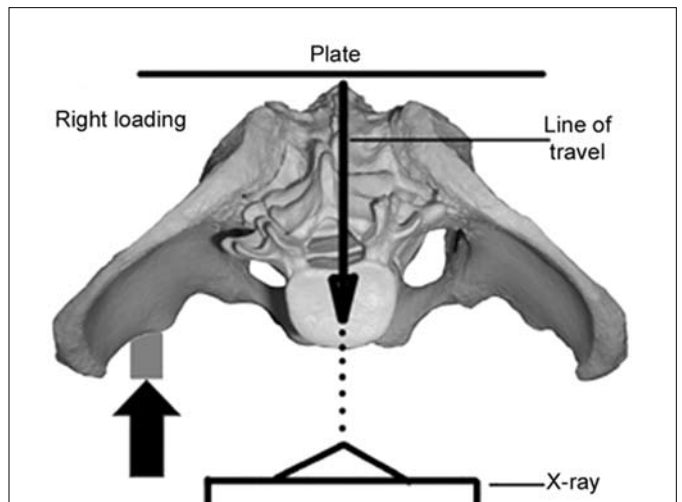


Figure 11. Position as per Stuesson. Pelvis is frontal to the x-ray and the line of travel is directly toward the x-ray.

X-rays were taken of the subject in the long straddle position with loading on the right. (See Figure 12. Left side) The x-ray on the left is with the pelvis as per Stuesson, with travel toward the front, no asymmetry and no counter rotation. The one on the right is with the pelvis facing the x-ray, with the direction of travel oblique to the x-ray, the pelvis is asymmetrical and with counter rotation to the right.

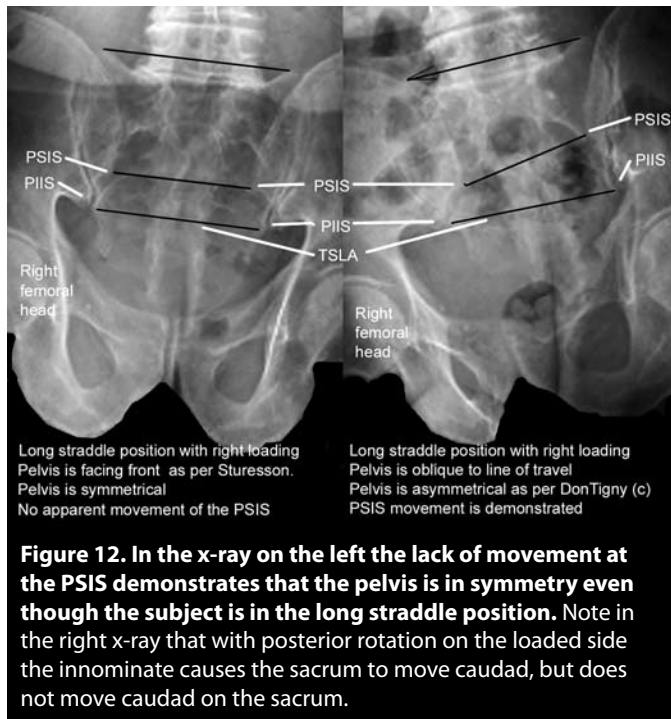
Clearly the x-ray on the left is symmetrical with no movement of the posterior superior iliac spines even though the subject was in the extreme long straddle position. Accurate measurements of movement in the

sacroiliac joints must be done in the extreme long straddle position with the pelvis in asymmetry and counter rotation.

Pay close attention to the right PSIS on each x-ray in Figure 12. Note that in the right hand figure the innominate on the side of loading rotates caudad and carries the sacrum caudad on that side. *The innominate does not and cannot move caudad on the sacrum, principally because of the structural effect of the iliac tuberosities.*

SUMMARY

The sacrum hangs suspended from the ilia by the dense posterior sacroiliac ligaments and functions as the reverse



of a keystone by hanging more deeply between the ilia with increased weight loading. Primary loading is on the posterior interosseous ligaments with a balanced secondary loading on the sacrotuberous ligaments in the opposite direction. The force of closure at the SIJ is probably essentially nil. The balanced loading creates a force couple, which serves to decrease loading forces. When the sacrum is loaded and the pelvis is symmetrical there is essentially no movement in the sacroiliac joint.

Movement occurs during normal ambulation. When the pelvis swings obliquely into asymmetry the sacrum flexes laterally toward the side of loading to create a force-dependent oblique axis. It then moves on that oblique axis to drive counter rotation of the trunk to decrease the forces of loading on that side. At least two muscles function as prime movers to reposition the sacrum to symmetry at mid-stance.

Repeated sacral flexion during ambulation causes an oscillation of the lumbar spine, which is diminished as it travels cephalad. The spine functions as a diminishing waveform to stabilize the visual plane making it more stable for such purposes as hunting or observing variances in gait patterns in vivo. ■

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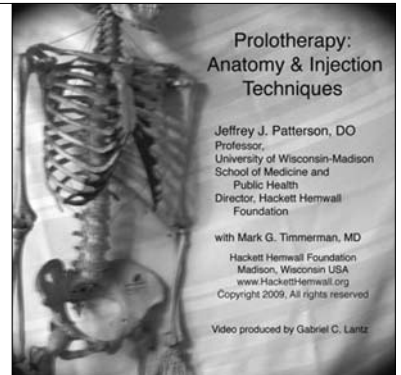
ACKNOWLEDGEMENT

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W O N D E R W H Y ?

Prolotherapy as an Alternative Treatment for Osteochondritis Dissecans: Two Cases of Young Baseball Players

Ross A. Hauser, MD

Osteochondritis dissecans (OD) is a localized injury or condition affecting an articular surface of a joint, that involves separation of a segment of cartilage and subchondral bone. It is found most commonly in the knee although other joints can be affected, notably the elbow, ankle and hip. OD affects two distinct populations of patients as differentiated by the status of the physes (growth plates). Children and adolescents between the ages of five and approximately 16 years old, who have open physes, are classified with as having the juvenile form of the disease. Older adolescents, who have closed physes, and adults are classified as having the adult form.¹ The incidence of this condition has increased recently because of the growing participation in competitive sports.² Repetitive microtrauma is thought to be the primary mechanism responsible for the development of OD, however, other causes including acute trauma, ischemia, ossification abnormalities and genetic factors have also been proposed.^{3,4}

The symptoms of OD of the knee depend on the stage of presentation. Lesions early in their course are associated with poorly defined symptoms including pain and swelling. As the lesion progresses, catching, locking, and giving way are noted. The presence of loose bodies is associated with more constant symptoms of catching or locking, swelling, and pain.⁵

While the presenting symptom of OD is typically unresolved pain, the diagnosis, is made by either plain radiograph or MRI, showing the breaks in the cartilage and whether lesions are partially or firmly attached to the underlying bone.^{6,7} The stability of the articular cartilage fragment is typically what determines treatment. It varies from observation, splintage and rest to drilling, fixation or excision of the lesion, and osteochondral autogenous grafting.⁸⁻¹⁰ While Prolotherapy has a long history of being used for osteochondral injuries and to stimulate

cartilage healing,¹¹⁻¹³ this is the first case report of its use in osteochondritis dissecans.

CASE REPORT #1- OSTEOCHONDRITIS OF THE KNEE IN A 13 YEAR-OLD

In August 2003, J.C., an active 13 year-old baseball player, presented to Caring Medical for evaluation of his bilateral knee pain, diagnosed as osteochondritis dissecans. He was a very active young athlete, playing on soccer and baseball teams in addition to participating in rollerblading, swimming and bicycle riding. He was being followed by an orthopedic surgeon who told J.C. to stop all forms of athletics in order to see if his knees would get better. If they did not improve, he would have to undergo surgery.

At the time of the initial consultation, J.C. had restricted athletics and was using ice and ibuprofen for the pain. The pain was located throughout the knees and increased significantly with activity, especially running. On physical examination, he was found to have several tender points about the knee, as well as some generalized laxity. His X-rays confirmed the diagnosis of osteochondritis dissecans. (See *Figures 1 & 2*.) J.C. and his parents were explained the process of Prolotherapy but decided to hold off treatment.

Despite two more months of rest, the knee pain did not abate. J.C. received his first Hackett-Hemwall dextrose Prolotherapy treatment in October 2003. At each visit a total of 30 injections with 40cc of solution was used. A 15% dextrose, 10% Sarapin, and 0.2% lidocaine solution was used. Two IU of human growth hormone was added to the solution and injected intraarticularly as well. He was told to stop the ice and ibuprofen, and encouraged to start cycling. He could also begin light running, as long as it did not elicit pain. When he returned in one month, his pain had decreased by 25%. He was encouraged with

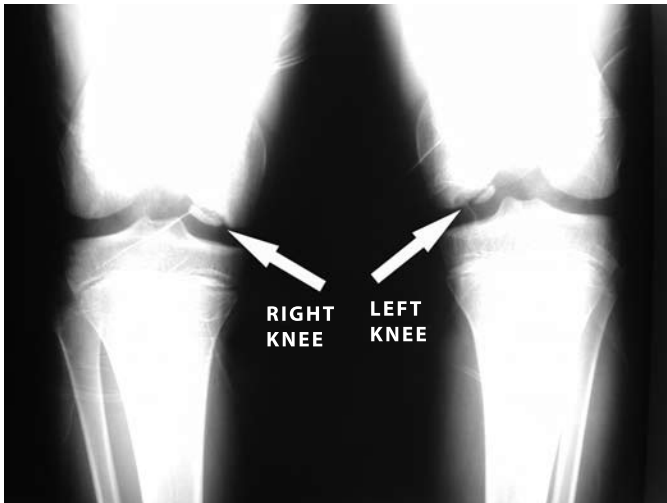


Figure 1. Plain X-ray of both knees. Osteochondrotic lesions of both medial femoral condyles is seen. The appearance of the osteochondritis dissecans shows significant fragmentation on both knees.

the results after only one treatment because he was able to run. After receiving his second Prolotherapy treatment, his pain diminished 75%, and now running and jumping were possible, which included playing basketball. He was doing a lot of sporting activities which included a lot of running with minimal pain. Because of the significant pain relief, he did not come for his third visit until two months later. His last visit was in February 2004. He reported both knees were at least 90% improved. He was able to play baseball at a high intensity level and was basically back to sports 100%. Physical examination revealed full stability in his knees at this time.

After this fourth visit, J.C. was able to play all sports without any knee pain. He was able to fulfill his long term goal of playing baseball in college. J.C. is now twenty years old and has no knee pain whatsoever with sporting activities.

CASE REPORT #2- OSTEOCHONDRITIS OF THE CAPITELLUM IN A 13 YEAR-OLD

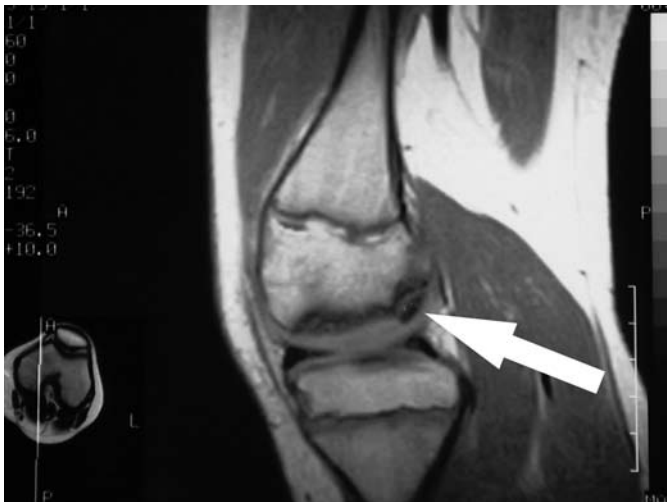


Figure 2. MRI's of both knees prior to Prolotherapy. Because of the patient's rapid improvement with Prolotherapy there has been no need for follow-up scans.

L.M., a 13 year-old, came to Caring Medical on June 14, 2010 for possible Prolotherapy treatment on his elbow. L.M. was a pitcher on a junior boys baseball team for his middle school. He had a six month history of elbow pain, especially severe when pitching. An MRI on 2/24/2010 revealed osteochondritis dissecans of the capitellum. (See Figure 3.) At the time of the initial evaluation the patient was not able to pitch or throw a baseball at all. The patient had seen several orthopedic surgeons, all suggesting he rest for various periods of time, during which time his elbow would feel better, only to have the pain recur with activity. One orthopedist said he would never pitch again. His goal (as well as his father's goal for him) was to be able to pitch again.

On physical examination, tenderness was elicited both in the medial and lateral elbow especially at the locations of the ulnar and radial collateral ligaments. Both radiocapitellar and ulnohumeral joint instability was present, but with full range of motion. No crepitation was noted. Hackett-Hemwall dextrose Prolotherapy was injected into and around the bony attachments of the ligament, tendon and muscle origins of both the medial and lateral elbows, with emphasis on the ligamentous support. A total of 48cc of solution with 35 separate injections were utilized. Human Growth Hormone (2IU) was injected into and around the osteochondritis dissecans injury.



Figure 3. MRI right elbow without contrast, prior to Prolotherapy. The arrow points to the evolving osteochondral defect involving the capitellum typical of osteochondritis dissecans. The defect is stable without evidence of in situ loose body.



Figure 4. MRI right elbow with intra-articular contrast, after Prolotherapy. Arrows show resolution of the articular cartilage fraying, as well as the subchondral cystic changes. Improvement of the subchondral edema with almost complete resolution of the osteochondral lesion.

L.M. was next seen once month later where he reported a 50% reduction in pain and stiffness. He was now able to perform all activities of daily living without pain, including weight lifting, running, and swimming. At this point, however, he had still not thrown a baseball. A second Prolotherapy treatment was given to the same areas as the first.

On L.M.'s third and final Prolotherapy visit, he reported no pain in his elbow and was able to throw a baseball for 15 minutes without pain, along with no other restrictions during his other workouts

L.M. had a repeat MRI on September 20, 2010 which revealed resolution of the osteochondritis dissecans. (See Figure 4.) As of November 2010, L.M. is back to pitching without restriction. He has no elbow pain or disability whatsoever.

DISCUSSION

The juvenile form of OD has a much better prognosis than adult OD.^{14,15} Stability of the OD articular cartilage lesion is the main prognostic factor in determining the likelihood of the OD lesion healing with conservative therapy.^{16,17} Conservative therapy is defined as cessation from all sporting activity until all symptoms resolve, which can often last months to even years.^{18,19} Because it is difficult to restrict the activity of a child or teenager, an immobilizer, splint, or cast may be used.



L.M. back to pitching without restriction after Prolotherapy.

J.C. had an unstable OD lesion as evidenced by the osteochondral fragment barely attached to the subchondral bone at one discreet location. This would be called a flap lesion, with a definable fragment that is displaceable but still attached partially by some cartilage.²⁰ Generally all unstable OD lesions require surgical intervention either to fix internally or to remove the fragment. Surgeries include drilling, pinning, bone grafting, or simple excision of the fragment with or without curettage or drilling of the base.^{20,21,22} Unfortunately, these procedures predispose the young person to long-term osteoarthritis.^{15,23,24,25}

Prolotherapy was thought to be an appropriate treatment for these cases because the primary author (RH) has treated numerous growth plate injuries and young athletes with sports injuries using Prolotherapy.¹¹

The concept of Prolotherapy is radical compared to traditional treatments for chronic pain and sports injuries, yet its mechanism is simple. Inject a mild irritant or proliferant at the site of the pain or injury to stimulate healing to the specific area. In J.C.'s case, this involved Prolotherapy to the medial and lateral collateral ligaments, as well as an intraarticular injection with human growth hormone. Prolotherapy has been shown to stimulate articular cartilage, ligament and tendon repair.^{11, 12, 13, 26, 27} In L.M.'s case, this involved Prolotherapy in and around the bony attachments of both the medial and lateral elbows. The quick response to Prolotherapy seen in each case most likely relates to stabilization of the OD lesion, as well as tightening of the ligament laxity around his knee. Ligament laxity has been postulated as a factor in the development of OD.²⁸

The patients' abilities to continue to play sports while receiving Prolotherapy, as well as after completing the treatment series, in addition to the MRI evidence of resolution of the osteochondritis dissecans, speaks to the success of Prolotherapy. Because this represents just two cases of osteochondritis dissecans, larger, more controlled studies are suggested to determine if Prolotherapy should be a first line therapy to consider in cases of osteochondritis dissecans. ■

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FOUR-LEGGED PROLOTHERAPY

Veterinary Cases treated with Prolotherapy

Babette Gladstein, VMD

LOOK FURTHER – THE BACK MAY NOT BE THE PROBLEM IN CHONDRODYSPLASTICS DOGS

The Dachshund, one of our wonderful and most popular chondrodysplastic dogs, frequently falls victim to spinal disc abnormalities because of the length of their spine. Yet, on occasion, they could have other underlying issues premeditating hind limb lameness conditions.

Lady, a black and tan long haired Dachshund, 8 year-old female spay came into the Humane Society. The owner, a former Riker's Island Prison guard, did not know how to improve the intermittent limping of the six month duration. Lady was a 2 of 5 on the lameness scale and her back X-rays were unremarkable. On physical exam, her left hip and lower back were painful on palpation and there was cranial draw on the left knee. Prior veterinarians had suspected the dog's back was the problem, and were requesting an MRI of her back. New X-rays were taken of her back and both knees. Her left knee showed arthritic changes at the sesamoid, and effusion was noted at the rear of the tibial plateau. (See Figure 1.) These changes indicated a tear or laxity associated with the femopatellar ligament. This was the probable cause for her luxated patella and cranial draw.

Prolotherapy was administered in five sessions, three weeks apart. Four of the five treatment sessions were traditional Prolotherapy injections, and the fifth was Acell's MatriStem™ (5 cc) around the hip, knee and pelvis. The Prolotherapy solution of 50% dextrose, 2% lidocaine, vitamin B12, and Heel's Traumeel, was injected at the

dorsal and lateral aspect of the left hip at four injection sites. In and around the articular capsule surrounding the femoral head, 6cc of the solution were used. The left knee was injected with 4cc of the same solution at the lateral tibial collateral ligament, under the infrapatellar bursa, into the tendon of the long digital extensor, and deeply into the joint space under the patellar ligament. Telazol (0.2cc) was administered for Lady's chemical restraint.

After the third session there was marked improvement. By the fifth and last treatment, she was bounding around like her younger self. There was no lameness noted. The owner was so impressed at the non-invasiveness of the procedure that she requested yet another one of her rescue dogs with luxated patellas to be treated.

CONCLUSION

Chondrodysplastic dogs are also prone to hip and knee problems as well as back problems. Checking for painful hips and cranial draw is purposeful. We are always on the watch for back problems and sometimes overlook simple issues.

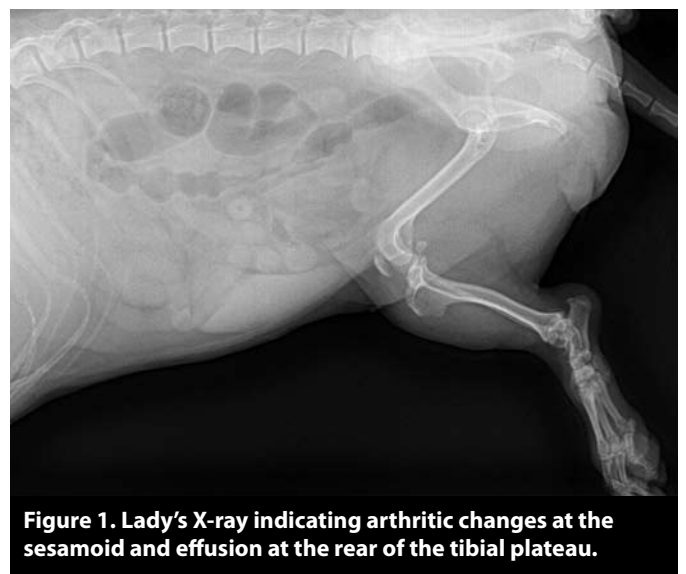


Figure 1. Lady's X-ray indicating arthritic changes at the sesamoid and effusion at the rear of the tibial plateau.

** ACell's MatriStem™ is a natural three-dimensional extracellular matrix (ECM) which provides an optimal environment for the body to regenerate site specific tissue. The body's own progenitor stem cells migrate and attach to the MatriStem™ ECM which provides everything cells need to grow and regenerate, including different types of collagens and growth factors. ACell's MatriStem™ products also contain naturally occurring anti-bacterial, anti-inflammatory and analgesic properties which facilitate healing.*

BETTIS'S STORY

From his owner, Hedy Foster

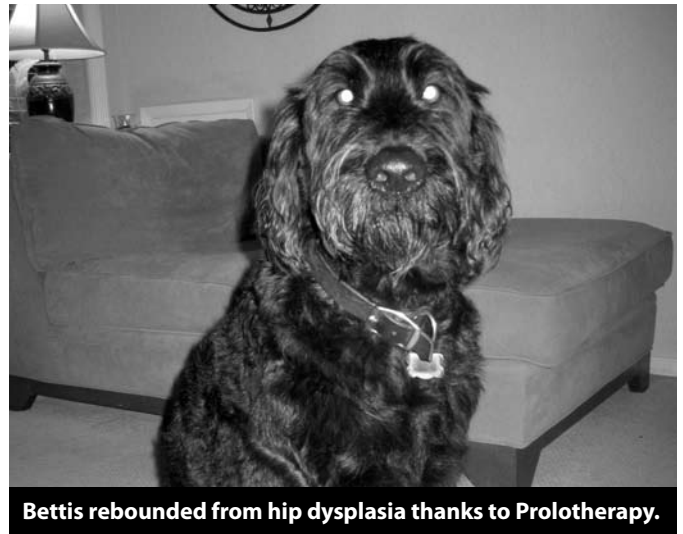
From the very beginning, Bettis was a gift from God. He is a sweet black Labradoodle with big almond amber eyes. When Bettis was 10 months old, like many puppies, he swallowed something he shouldn't have. We took him to the vet and they took an X-ray. There was that sock. What we also found out through that X-ray was that Bettis has hip dysplasia. His hip sockets are so wide open, the only thing holding the ball of his leg in the socket are the ligaments. After a while they get torn and stretched causing great pain. We were told if he didn't have surgery he would be badly disabled, and we would have to put him down by the time he was six years old.

The specialist wanted us to do hip surgery. They wanted to break Bettis' hips in three places to correct his problem. But, we had to do it before he was one year old. And, you couldn't do the surgeries at the same time, not to mention the recovery for each surgery was 6-8 weeks. My husband and I were really sad to think we would cause such agony to a puppy that was perfectly happy at the time. We elected not to do the surgery and prayed for a solution.

Bettis' first three years were very happy. It was when he turned four we noticed he got up from chairs very slowly, etc. He still liked to run at the park, but he couldn't run as fast as any of the other dogs. This made him sad as he is very competitive. He wanted that ball!

Still waiting for an answered prayer my husband heard of Dr. Babette Gladstein, from New York, on the news! She offered an alternative to surgery for hip dysplasia. He looked her up on the internet and reached out. Thank you God! You are so glorious. It turns out that Dr. Gladstein makes the trip to L.A. once a month to take care of her west coast clients, and that's how often she would need to see Bettis. She explained we brought Bettis in at exactly the right time. There was damage done, but her procedure fixes the damage, and makes the ligaments tight again, and this all evens out his stride and relieves his pain.

Each session is just under two hours. It consists of acupuncture, electric stimulation, and many shots into the hips, and his one knee that was damaged because of the hip problem (we didn't even know about that). The doctor is very sensitive to the animal and the amount of pain she may cause. She takes all the precautions to keep the patient comfortable. I loved that. After each session Bettis has to remain calm for one week, just walking.



Bettis rebounded from hip dysplasia thanks to Prolotherapy.

After one treatment I was shocked to notice that Bettis could get up from a laying position much quicker, not to mention he would jump over our other large Labradoodle. The reason being was he was not in so much pain any more. After three treatments Bettis could run as fast as all the other dogs in the park, and always got the ball first! Now, after all five sessions he is "regal" again. We haven't seen our dog be "regal" since he was two years old. He used to sit funny. Now he sits with his knees fully bent in underneath him, because he has no pain!

From the very first time I met Dr. Gladstein I knew she was the answer to our prayers. By her exam of Bettis she could show us how she knew he was in pain. She showed us how his muscles in his thighs were so different from one leg to another and that his knee was torn, all due to overcompensation from the hip dysplasia. I trusted the doctor because I have three chiropractors in my family and understand that overcompensation changes your skeletal and muscular systems. Her confidence and many successes gave us great joy and hope that we wouldn't have to put down our wonderful family member in another 24 months.

I am so incredibly grateful to God for answering our prayers through Dr. Gladstein. She saved the life of a cherished family member. We look forward to seeing her every 9 months as maintenance for Bettis. His hip dysplasia is not fixed, but the ligaments that hold his ball joint into the hip socket are tight again and repaired, which means he is pain free! I strongly recommend Dr. Gladstein to take care of your wonderful family member. Unlike many other vet visits, this one you won't regret. :0)

Warm Regards,
Hedy Foster

This testimonial is what Bettis' owner wrote to me—when I asked for a short narrative about Bettis, male neuter, 80 lb Labradoodle. (See *Figures 1 & 2.*)

Bettis received five Prolotherapy treatments in all, spaced approximately one month apart. Four were a series of injections of dextrose, lidocaine, vitamin B12, and Heel's Traumeel in equal parts. The fifth was a combination treatment which added Acell (5cc) injected into the hip and knee. Normal needle size was 1.5-inch by 22 gauge for hip injections, and 1-inch by 25 gauge for injecting in and around the knee. Bettis' hip treatments consisted of approximately 10cc and were injected at the dorsal and lateral aspect of the hip at four injection sights in and around the articular capsule surrounding the femoral head, of both hips. His knee treatments of 7cc were injected in and around the right knee where cranial draw had been found—the left knee was treated twice, as well during the series. Injection sights for the knee: lateral tibial collateral ligament, under the infrapatella bursa, into the tendon of the long digital extensor and deeply into the joint space under the patella ligament.

No other chemical restraint was used during treatment. During each treatment session, acupuncture with electric stimulation was administered, as well as laser and ultrasound post-Prolotherapy injections. These additional treatments help with controlling the pain normally associated with post-injections.



Figure 1. Bettis' X-rays show shallow acetabulums (hip sockets) and extensive remodeling of the femoral head with degenerative changes around that bone.

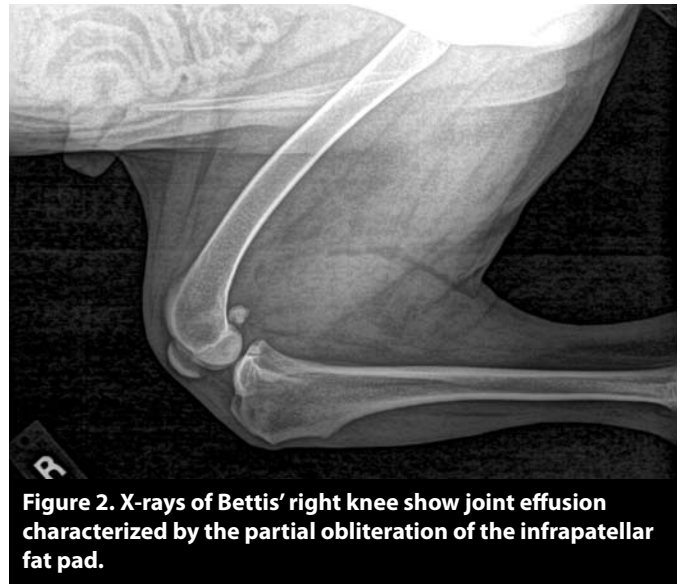


Figure 2. X-rays of Bettis' right knee show joint effusion characterized by the partial obliteration of the infrapatellar fat pad.

The results were outstanding, with Bettis literally bounding into the last appointment when Acell was administered. He had full range of motion with no stiffness noted and all muscle atrophy on the right hind limb had resolved. Follow up treatments will be scheduled every 9-12 months to maintain his present condition.

CONCLUSION

Caught early enough in a large, powerful athletic dog, the knee can completely resolve if the hip is treated at the same time. Using Acell to complete the Prolotherapy treatments enhances the overall healing of both areas and lengthens the time in between needed follow up visits.

PROLOTHERAPY VERSES SURGERY—THE DUEL—FOR THE ANTERIOR CRUCIATE LIGAMENT

Gizmo, an 8 year-old neutered male Shihtzu, initially presented to the Humane Society with a 3 of 5 lameness. He was only occasionally toe touching on the right hind limb. His owner noted that he had been limping for several weeks prior to presentation.

X-rays indicated joint effusion and slight cranial displacement of the tibia. (See *Figure 3*.) Surgery was scheduled for a potential cranial cruciate tear. The surgical team went in and found no tear—everything was fine—with no cause for the lameness. They closed him up and he wound up at my door three weeks later. He was still totally contracting the leg up, not placing it down to the floor at all. To restate, Gizmo did not have surgical repair because they could find nothing “wrong” after surgical incision and inspection of the knee.

On physical exam, besides the noted lameness, he was extremely painful on his knee and surrounding ligaments. Mild cranial draw was noted. There was nothing else remarkable about the case. My suspicions were that the ligament laxity surrounding the joint caused the effusion and the swelling. This effusion caused the pain. If the ligament laxity had continued surely Gizmo would have torn his anterior cruciate ligament.



Gizmo regained his ability to walk normally after Prolotherapy.



Figure 3. Gizmo's X-ray indicating joint effusion and slight cranial displacement of the tibia.

After the very first Prolotherapy session there was improvement and the dog started to toe touch. The client wrote a few days after the first session: “Wanted to let you know that my family and I are very grateful for what you did on Sunday. Gizmo is doing great, and when I came home today he was walking on his leg, and even stretching the leg.” By the second and third Prolotherapy sessions, he was walking normally. The 4th session was Gizmo's last and he was scheduled to follow up six months later.

Treatments in this case were spaced three weeks apart. The Prolotherapy solution injected was equal parts of 50% dextrose, 2% lidocaine, vitamin B12 and Heel's Traumeel. Gizmo's knee was injected with 4cc of the solution, at the lateral tibial collateral ligament, under the infrapatella bursa, into the tendon of the long digital extensor, and deeply into the joint space under the patellar ligament. Chemical restraint of Telazol (0.2cc) was used for the procedure.

CONCLUSION

Ligament laxity can cause the same symptoms as an ACL partial tear or rupture. Gizmo's case is another perfect example of the need for a more logical progression of treatment in these patients—Prolotherapy first—surgery last resort. ■

TEACHING TECHNIQUES

Ankle and Foot Treatment with Prolotherapy

Rodney S. Van Pelt, MD

INTRODUCTION

My ankle hurt A LOT immediately! I had gone up to block the spike and came down on the foot of the spiker (who followed through under the net!). The ankle quickly swelled and the throbbing pain prevented me from sleeping at all that night. I had severely sprained the lateral ligament complex while playing my favorite sport, volleyball. I quickly began a series of Prolotherapy treatments on my own ankle. It went like this (initially). I sprained my ankle on Thursday night. On Friday morning I treated the ankle with Prolotherapy. By the following Thursday it felt good and the swelling was down, I played volleyball Thursday night which led to swelling and pain again (you think?). I repeated this scenario for about six treatments before pausing to consider why I wasn't getting better, like my patients did with Prolotherapy!

It didn't take much reflection to realize I wasn't "avoiding strenuous exertion of the treated body area," which is my standard advice to the Prolotherapy patients I treat (along with "Be active, as long as it feels good."). I love volleyball and it was difficult, but I gave up my Thursday evening recreation while treating myself weekly (I was in a hurry) with Prolotherapy. After six treatments and two and a half months I returned to my beloved volleyball without pain or swelling!

It has been 15 years since my ankle was restored by Prolotherapy. Since then I have done any recreational activity without pain or swelling of my ankle! Currently, I hike, water and snow ski, snow shoe, and cross country ski without pain or swelling!

The ankle is a small but important joint. Injuries to the ankle are the most common orthopedic injuries in sports, especially volleyball, basketball, football, and jogging.

So we see many patients with ankle pain/sprain. In this article, we will look at the treatment of ankle and foot injury with Prolotherapy.

Prolotherapy treatment of the ankle and foot is very successful. It takes an average of four to six treatments, spaced two to six weeks apart, to achieve full healing.

ANKLE

Arthritis: There are two primary joints at the ankle: the ankle joint proper, and the sub-talar joint. I almost always treat them both when either one is involved. Ankle arthritis can be set up by repeated severe sprains and the ensuing instability. Osteoarthritis is another common cause of ankle arthritis. Identify the ankle joint by feeling anteriorly while flexing and extending the foot at the ankle. Feel for the dorsalis pedis artery so the injection can be given lateral or medial to it (and the accompanying anterior tibial nerve). Cleanse the skin, extend the ankle to open up the joint, then insert a 25G, 1.5-inch needle. Inject 3-4cc of 25% dextrose directly into the joint. (See Figure 1.) After withdrawing the needle, repeatedly flex and extend the joint to distribute the proliferant throughout the ankle joint. HGH may be added to the Prolotherapy solution if the joint is severely degenerated.



Figure 1. Prolotherapy injection to the ankle joint.

The sub-talar joint is readily identified as a palpable depression about 1 cm anterior and distal to the lateral malleolus. It is opened up by extending and internally rotating the foot at the ankle. (See Figure 2.) The skin is again cleansed, and a 25G 1.5-inch needle is inserted into the joint. Three to 4cc of 25% dextrose are injected and the needle withdrawn. The joint is flexed and extended several times to distribute the fluid throughout the sub-talar joint. As with the ankle joint, HGH may be added depending on the clinical indication.

Lateral: The lateral ligament complex is all too easily sprained. The lateral ligament complex is weaker than the medial, resulting in ankles being sprained laterally much more commonly than medially. The anterior talofibular is the most common injury at the ankle, usually at the fibular attachment. Examine carefully for injury to each of the major ligaments extending from the distal fibula (anterior and posterior talofibular, and the calcaneal-fibular ligaments). (See Figure 3.) Also, check the calcaneo-cuboid ligament 1 cm proximal and above the fifth metatarsal prominence laterally. This ligament is often injured along with the sprain to the lateral ankle.

Place a double paper towel under the foot. Cleanse the area to be treated. A 10cc luer lock syringe is filled with standard Prolotherapy solution and fitted with a 25G



Figure 2. Prolotherapy injection of the sub-talar joint.

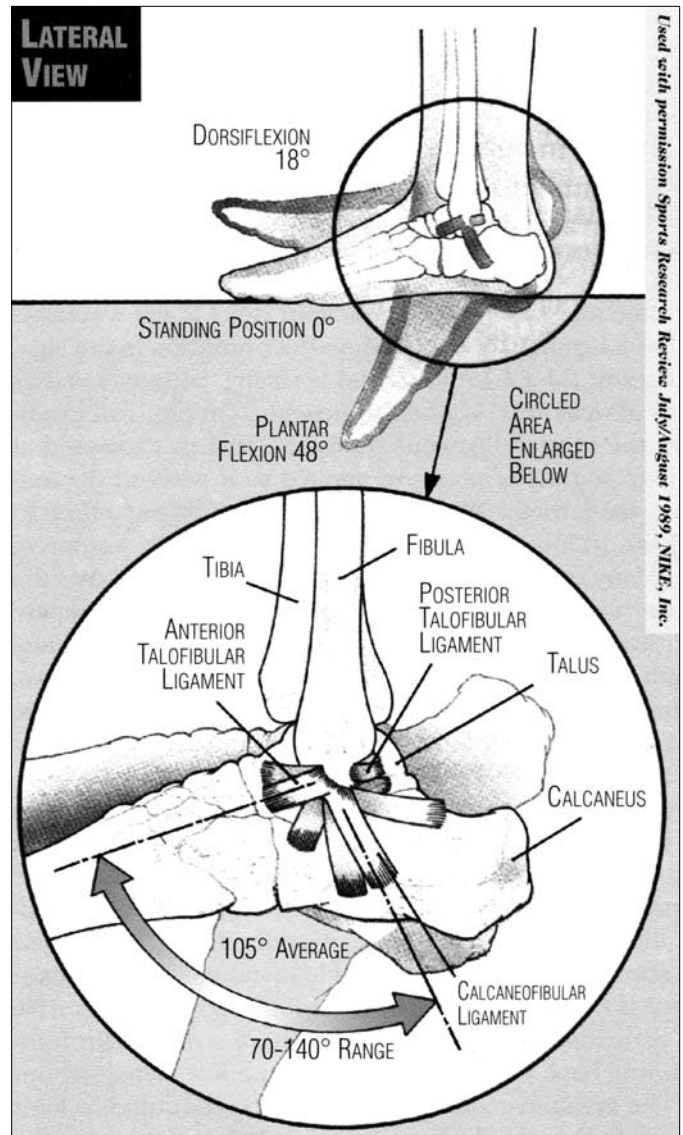


Figure 3. Joint motion and stability. Injury to the above ligaments leads to chronic ankle instability and its associated symptoms. These include ankle pain, weakness, and frequent sprains.

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1.5-inch needle. I begin at the posterior distal fibula and inject 0.5cc at each injured area around to the anterior aspect as indicated. (See Figure 4.) Next, I will inject the injured ligament attachments to the calcaneus and talus including the calcaneo-cuboid ligament, if necessary. (See Figure 5.)

Medial: The medial (deltoid) ligaments are injured much less commonly. Examination will reveal tenderness at the ligament attachments to the medial malleolus and



Figure 4. Prolotherapy injection of the lateral ligament.

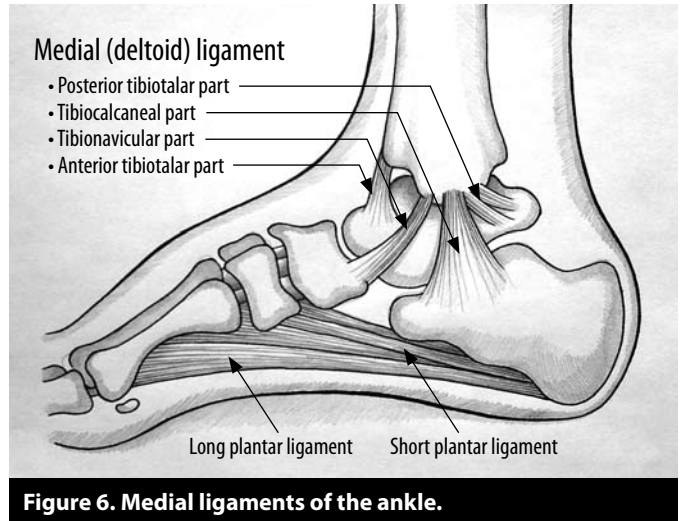


Figure 6. Medial ligaments of the ankle.

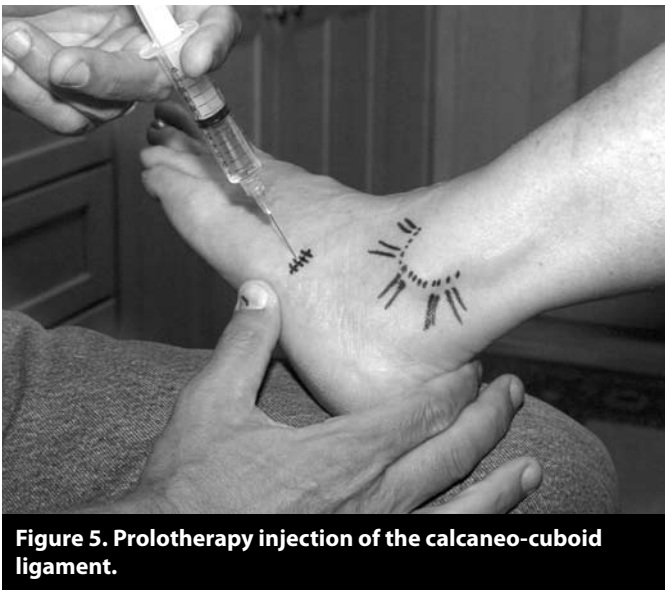


Figure 5. Prolotherapy injection of the calcaneo-cuboid ligament.



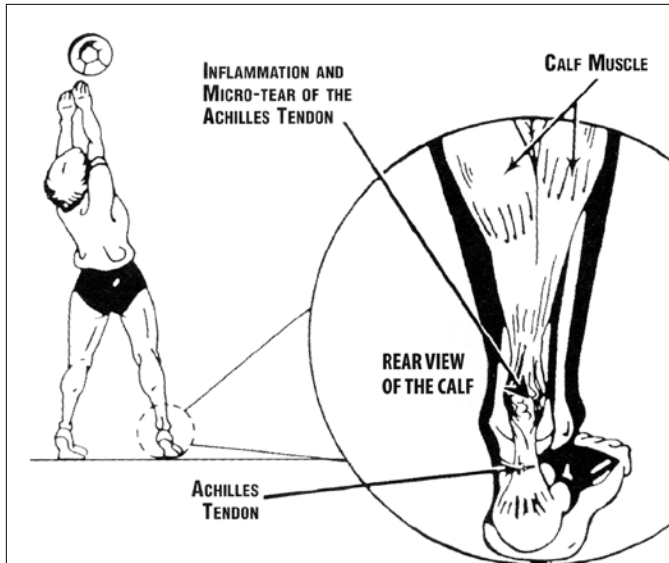
Figure 7. Prolotherapy injection into the medial ligaments.

calcaneus, navicular and talus (anterior and posterior talo-fibular ligaments, calcaneo-fibular ligament, and talo-navicular ligament. (See figure 6.) In this area, we will exercise caution at the posterior aspect of the medial malleolus due to the tibial nerve and posterior tibial artery. We will only give the injections with the needle touching the bone and will reposition the needle if the patient reports “lightning” shooting into the foot. After identifying the injured areas and prepping the skin, we utilize 6 to 10cc of standard Prolotherapy solution. Using a 10cc luer lock syringe with a 25G 1.5-inch needle we will inject 0.5cc at each point of the injured ligaments of the medial malleolus. (See Figure 7.) Next we will inject 0.5cc into each spot of injured deltoid tendon at its attachment to the calcaneus, talus and navicular.

ACHILLES

Injury to the Achilles tendon is common. (If the tendon has a complete rupture then orthopedic surgery is required and referral will be made promptly). This injury is not difficult to identify. The offending spots are very tender to palpation and in many cases there is a tender swelling mid-tendon (not merely at the teno-osseous junction). (See Figure 8.) Treating injury to the Achilles tendon is one of the exceptions to “injecting only with the needle touching bone” guideline.

After identifying the injured areas I will draw up 3 to 6cc of standard Prolotherapy solution. Using a 25G 2-inch needle, I will “pepper” (See A.) (See Figure 9.) the attachment to the calcaneus with 3cc of Prolotherapy solution, as indicated, and further “pepper” any mid-tendon tear with an additional 3cc of solution. (See Figure 10.)



Used with permission: *Achilles Tendonitis* in *Play Healthy, Stay Healthy*, pp. 101-152, by Gary N. Champaign, IL: Human Kinetics Publishers, © 1991.

Figure 8. Achilles Tendon Injury. Prolotherapy is an excellent treatment to strengthen the Achilles tendon.

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Figure 10. Prolotherapy injection of the mid Achilles.

A. Peppering is a technique where an area is peppered with injections of 0.5cc of solution. The technique is begun with an injection of 0.5cc into the injured structure then the needle is partially withdrawn and redirected slightly and reinserted around the injured area and another 0.5cc are injected there. This is repeated multiple times thus "peppering" the fibro-osseous insertion of the tendon or ligament.

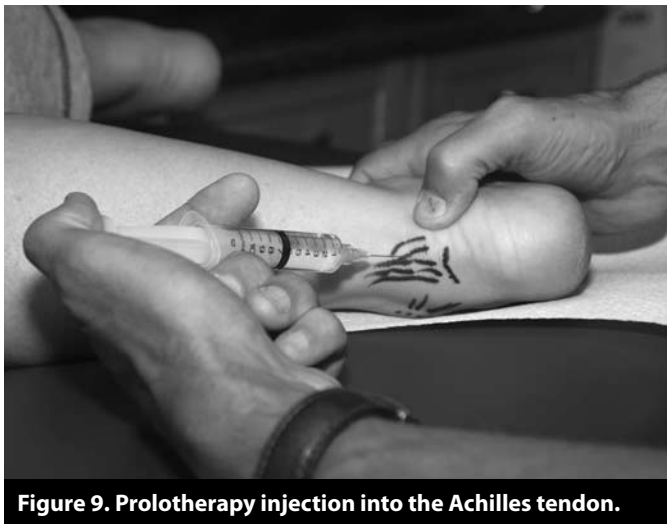


Figure 9. Prolotherapy injection into the Achilles tendon.

The patient will be requested to do no jumping, running, climbing, or sudden starts and stops. I routinely ask them to wear a heel (about 1.5 inches works well). For men, this is challenging, cowboy boots work for many.

HEEL

Plantar fasciitis: plantar fasciitis and heel pain are vexing problems that are frustrating and debilitating to patients. Fortunately they have come to us for treatment with Prolotherapy! There are three primary areas for the injury to the plantar fasciitis: the calcaneous, mid-arch, and attachments to the metatarsal heads. The patient can accurately point to the offending spot, and palpation confirms the diagnosis.

Position the patient on the table face down with the knee bent and the foot up in the air. To inject the calcaneal attachment we will avoid the thick plantar heel callus. The entry point is just medial plantar just distal to the heel pad. It is a good idea to warn patients that injecting the heel and ball of the foot is usually very painful. The 25G 2-inch needle is angled back to the attachment on the calcaneous (See Figure 11.) About 3cc of Prolotherapy solution is "peppered" into the calcaneal attachment.

Mid arch pain: there are numerous tendons and ligaments running on the under surface of the arch (long plantar ligament, plantar calcaneo-cuboid ligaments). (See Figure 12.) Prolotherapy to this area is extremely effective. And interestingly, it is not very painful to inject here. The insertion point is just plantar to the navicular tubercle. The needle is inserted straight across the arch to contact



Figure 11. Prolotherapy injection to the heel.



Figure 13. Mid-foot Prolotherapy injection.

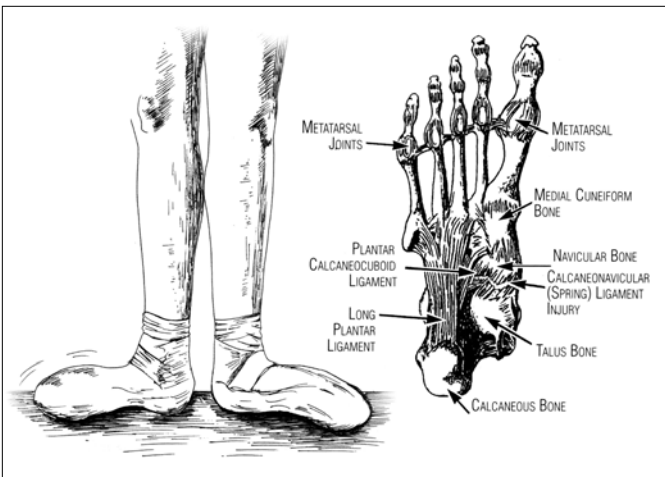


Figure 12. Abnormal foot biomechanics in a ballet dancer. Dancers develop a “dropped” arch to compensate for tightness in the hip, so successful treatment of the foot includes Prolotherapy to the plantar fasciia and spring ligament, as well as physiotherapy to the hip. Spring ligament injury is a common cause of a “dropped arch,” especially in ballet dancers.

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the bone on the lateral side of the under-surface of the arch. (See Figure 13.) The metatarsal and tarsal bones are “peppered” in a fan-like figure. Approximately 3 to 5cc of Prolotherapy solution are injected here using a 25G 2-inch needle. For an hour or two after the injections the patient will feel like he or she is walking on a golf ball.

For plantar fasciitis, there are a couple of concurrent treatments that are helpful. The most important is Functional Orthotics. If the patient has hyper-pronation at the ankle, and they almost all do, then orthotics are

a must. Otherwise, the plantar fasciitis is likely to recur (if we can get it to heal in the first place). The second helpful treatment is again, elevating the heel about 1.5 inches. This decreases tension on the plantar fascia and is effective in relieving pain (this will not, however, heal the plantar fasciitis by itself).

METATARSAL-PHALANGEAL

Injuries at and around the MTP joints are quite painful. Careful palpation will reveal if the injury is at the plantar fascia attachment to the distal metatarsal, or to the joint itself or between the MTP joints. Each joint is palpated individually and sometimes while moving the joint. After identifying the injuries, we will treat the distal metatarsal head by cleansing the skin and if the injury is plantar, will enter through the skin just proximal to the callus of the ball of the foot and pepper the fibro-osseous junction (See Figure 14.) For injury at the proximal end of the MTP phalanx, approach is made from the skin just distal to the callus of the ball of the foot directly over the phalanx. (See Figure 15.) When the injury is on the dorsal side of the MTP, the approach is from the top. (See Figure 16.) 0.5 to 1cc is injected at each affected site.

BUNIONS

This is a fairly common condition. Often it hurts, however, some people merely don’t like the way it looks. Here we have some good news and some bad news. The good news is that we can heal the injured ligaments and tendons so the pain is relieved. The bad news is that we can’t improve its cosmetic appearance.



Figure 14. Prolotherapy injection of the proximal plantar MTP.



Figure 15. Prolotherapy injection of the distal plantar MTP.



Figure 16. Prolotherapy injection to the dorsal MTP.

The treatment is straight forward. Begin by cleansing the skin over the first MTP medially. Using a 25G 1.5-inch needle we will inject about 2cc of Prolotherapy solution around and into the joint on its medial aspect. (See Figure 17.)



Figure 17. Prolotherapy injection to a bunion.

The foot and ankle are very complex structures with many more ligaments and tendons and joints than we have covered in this article. I have tackled the most common conditions. Now we can Prolo our patients' foot and ankle pains away! ■

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Building a Rationale for Evidence-Based Prolotherapy in an Orthopedic Medicine Practice

Part II: How To Meld Scientific Methodology into the Daily Practice of Prolotherapy

Gary B. Clark, MD, MPA

*To establish a clinical plan
Ask the right question.
Identify the right premises.
Minimize the variables.
And test the outcome.*

Part II of a series of four¹ explains how one may apply scientific reasoning to the daily practice of Prolotherapy in an Orthopedic Medical Clinic. In doing so, this article focuses on a real-time, outcome-centered, database management approach.

An outcome-centered database can provide a platform for intra-practice monitoring and modification of diagnosis and treatment protocols. Such a database might provide a basis for formulating retrospective case series studies. In turn, such case series reporting may offer significant support for controlled pilot studies. Such studies might also point the way toward more controlled investigation. All of these activities, combined, can expand the existing body of evidence to promote universal acceptance of Prolotherapy by Orthopedic Medical doctors and patients, American medical educators, medical peer societal organizations, the FDA, Medicare, and commercial healthcare insurance companies.

GENERAL GUIDELINES FOR IMPLEMENTING THE SCIENTIFIC METHOD

In the practice of Orthopedic Medicine, every patient encounter should be considered a potentially new event, promising potentially brand new revelations! Every practitioner should hope that every patient who walks through the clinic door—whether a new or long-established patient—literally embodies new clinical observations waiting to be experienced, questioned, and analyzed at every office visit. And . . . every patient should expect to be considered by the physician as a potentially unique clinical challenge at each visit.

For those hopes to be met, it would be helpful to have a plan for implementing the Scientific Method in a typical Orthopedic Medical Clinical environment. Although it is important not to rely on a rigid “formula,” it is certainly advantageous to have a guide map that illustrates the general process of the Method. The following model demonstrates how an Orthopedic Medical Clinic might be organized on sound scientific principles.

MODEL OF THE SCIENTIFIC METHOD CHARACTERIZING PROLOTHERAPY IN AN ORTHOPEDIC MEDICAL CLINIC

There are five phases with multiple steps in performing the Scientific Method:

- Formulate a Question.
- Formulate a Hypothesis as an Answer to the Question.
- Experimentally Test the Hypothesis.
- Formulate a Conclusion as to Whether the Question is Answered.
- Exercise Peer Review to Reappraise the Outcome Results and Conclusion.²

FIRST PHASE: FORMULATE A QUESTION

Step 1. Describe an observation (e.g., empirical or experimental) regarding a specific subject of interest.

This observation could represent patient symptoms, physical signs, or a treatment outcome that is begging for an explanation or verification. The observation might be stated as narrative, as measurements, or both.

Example Observation: A seemingly distinct cohort of patients in an Orthopedic Medical Clinic consistently presents with severe low back pain and multiple symptoms and signs consistent with

a dysfunctional sacroiliac joint—a constellation of seemingly consistent findings referred to herein as “Low Back Pain-Sacroiliac Syndrome (LBPSS).”

Step 2. Formulate a fundamental question as to the cause or resolution of the phenomenon that has been observed, based on Deductive, Inductive, and Abductive Reasoning, as outlined in Part 1 of this series.¹

Example Question: If LBPSS is due, at least in part, to sacroiliac ligament sprain injury, could Prolotherapy—in this clinic—be a procedurally safe, therapeutically effective, and managerially efficient therapy that can significantly correct that sprain injury and resolve patient pain and dysfunction?

SECOND PHASE: FORMULATE A HYPOTHESIS AS AN ANSWER TO THE QUESTION

Step 1. Gather all existing information relevant to the subject issue of inquiry.

The basic source of information would be LBPSS patient records. Those records should provide all relevant data and information perhaps including:

- Past and current medical history
- Subjective pain locating and scoring
- Objective physical examination findings such as tenderness, decreased joint function, muscle weakness, and joint misalignment
- Additional ultrasound and radiological imaging and laboratory findings
- The course of whatever treatments have been provided, and
- A chronology that trends the patients' clinical response to those treatments.

Step 2. Identify all basic assumptions based on known truths and established principles that are relevant to the inquiry at hand.

Assumptions are supportive premises or maxims and are the foundation of Deductive Reasoning.¹ Identifying these assumptions provides a basis for planning and designing a feasible experiment—or an entire clinical practice.

Managerial and Fiscal Preconditions might include:

- There will be adequate time available to reach the experimental or trial goal.
- There will be adequate monetary support available.
- There will be adequate office staff needed to perform the clerical work required, including database entry.

Clinical Preconditions: The most basic clinical premise might be that performing Prolotherapy is a scientifically rational medical decision. The legitimacy of Prolotherapy is supported by all measures and levels of scientific confidence:

- Prolotherapy is authenticated by compelling clinical research literature as shown in past literature reviews in this Journal.
- It is authenticated by compelling tutorial literature and well established training programs, which award legitimate continuing education credits from reputable medical education organizations, e.g., the American Academy of Osteopathy, the American Association of Orthopedic Medicine, and the Hackett-Hemwall Foundation.
- Prolotherapy is taught and performed at accredited osteopathic and medical schools and clinics, including the University of New England's College of Osteopathic Medicine and the University of Wisconsin.

Other clinical preconditions might include:

- Generally, all Orthopedic Medical therapies will be consistently, correctly performed technically and safely, according to current state-of-the-science-and-art instruction and professional standards.
- Specifically, all treatment of musculoskeletal sprain injuries by Prolotherapy will be based on the most current scientific evidence regarding ligament and tendon enesthiopathy (i.e., sprain injury) and the role of inflammation in sprain injury healing.
- All patients will be adequately educated by informed consent as to the nature of their specific injury, how Prolotherapy heals that injury, how Prolotherapy is performed, what therapeutic alternatives are available, what the potential risks and complications are, and what the cautionary do's and don'ts are regarding medications not to take and activities not to pursue during the course of treatments.

- All patients will be followed for compliance with all instructions.
- All patients will perform a “Use of Medical Data Agreement,” allowing the clinician’s use of the data derived from the patients’ treatment for case study reports, anonymity being assured.
- One maintains constancy of a *controlled variable* (what we maintain unchanged—e.g., patient’s avoidance of anti-inflammatory medications, needle gauge) to prevent its influencing the effect of an independent variable on a dependent variable.
- An *extraneous variable* (e.g., patient gender) is an inherent characteristic of the population being studied. It is not directly part of the independent-dependent variable relationship, but the extraneous variable might be useful in further characterizing or clarifying that independent-dependent relationship.³

Experimental preconditions might include:

- Data integrity: All medical records of medical history, examination, treatment, and outcome will be legible, complete, consistent (standardized), accurate, transparent, and objective (unbiased)—including those reflecting adverse events.
- The number of patients (i.e., the statistical lower case “n”) will be large enough to confer statistical significance to the resultant data.
- The Scientific Method will be used at every date of service as reflected by use of SOAP notes, pain level scoring, and clinical database entry.

Step 3. Formulate a theoretical hypothesis as to the cause or resolution of the observed phenomenon.

Example Hypothesis: Prolotherapy is a procedurally safe, therapeutically effective, and managerially efficient therapy for the sacroiliac joint sprain injury of LBPSS.

THIRD PHASE: EXPERIMENTALLY TEST THE HYPOTHESIS

Step 1. Using all current information on the subject, identify all variables.

There are independent, dependent, controlled, and extraneous variables:

- Alteration of an *independent variable* (ie, what we change—e.g., introduction of inflammation via Prolotherapy) causes alteration of the *dependent variable* (ie, what we observe—e.g., change in patient’s symptoms and signs). In an experiment, one purposefully alters the independent variable (e.g., introduction of inflammation via Prolotherapy) to some measurable degree while observing for measurable changes in the dependent variable (e.g., change in the patient’s symptoms and signs).

Independent variables: In this case, the independent variables might be all those treatment modes that are manipulated by the experimental method—or clinical practice. Some medical treatments used for treating LBPSS might include Osteopathic Manual Therapy (OMT), Neural Therapy, and Prolotherapy. Also, Rolwing, Pilates Instruction, and Physical Therapy are often recommended for supportive rehabilitation.

One needs to take into account ahead of time the various components of the Prolotherapy procedure, itself, that might produce some ancillary healing effects. First, OMT joint realignment and restriction relief is often performed in concert with Prolotherapy. The OMT may very well reduce symptomatic evidence of ligament/tendon stress—as well as reduce nerve impingement symptoms and signs. Why not? That is why we perform it!! Ancillary rehabilitative bodywork therapy, such as Rolwing, Pilates, and Physical Therapy, also may reduce musculoskeletal stress or nerve impingement symptoms.

Injecting local anesthetic before the Prolotherapy also might produce some Neural Therapy effect. Since the Prolotherapy proliferant solution is diluted in local anesthetic, that additional anesthetic may also produce Neural Therapy effect.

Then, there is a lot of needle puncturing involved in the local anesthetizing and performing the actual Prolotherapy. That needling, alone, might produce some acupuncture effect experienced as pain relief.

As always, one might expect some patients to react with the, so-called, Placebo Effect. The patient might demonstrate some healing effect just because he or she is in a doctor’s hands, going through a procedure—perhaps

changing something in the patient's physical or mental constitution, daily routine, or lifestyle unbeknownst to the patient or the physician. There is nothing wrong with this. The more placebo the better.

We must recognize that all of these potential independent therapeutic variables undoubtedly have some impact on the effect of the Prolotherapy treatment—and there might be others. Suffice it to say that the entire palette of Orthopedic Medical techniques, including Prolotherapy, can produce a positive—or negative—healing effect. We can sort out at least some of the relative importance of those individual elements as we proceed through our Scientific Method.

Dependent variables: The dependent variables are all those variables that are being measured throughout the course of the experiment or clinical practice that characterize the patient's diagnosis—exemplified in this case by LBPSS. The precise characterization of the patients' low back problem may vary as determined by individual causal complexity.

Such dependent variables might include:

- The patient's symptoms of pain and dysfunction, including documented pain locating and scoring based on a 10-point Visual Analog Scale or Verbal Analog Score, all varying in type, location, severity, and complexity.
- The physician's physical findings, including physician illustrations, all varying as to exact musculoskeletal function, severity, and complexity.
- Imaging findings, e.g., radiological or ultrasound.
- Laboratory findings.

Step 2. Design an unbiased experimental test or clinical practice protocol, taking into account all known, important assumptions and variables.

An Orthopedic Medical Clinic can adopt a formally written clinical practice protocol that takes into account the above-mentioned question, hypothesis, assumptions, and variables. That protocol can be written out at length for each diagnosis that is being treated, reflecting the scientifically-based guidelines presented in this article. On the other hand, the protocol might be simply incorporated into the clinic's medical records forms and database

system. Such standardized forms and database can ensure and protect all the major aspects of a written practice protocol, as well as simplify all of the paper work of a scientifically-based practice. In a sense, such a system—no matter how documented—acts as an “SOP”—a standing operating procedure, which implies that it can be easily modified based on ongoing outcome assessment—it is not written in stone.

In designing a clinical protocol based on the scientific method, it is most ideal to incorporate a control group—controlling for the independent variable for Prolotherapy. As in this example of LBPSS, it is very difficult to exercise control in the normal clinical setting. Thus, controlled studies are usually carried on in the more academic clinical environment.

Clinical Practice Protocol Database Model for LBPSS: Design a database matrix to test the previously determined scientific hypothesis by recording the most basically relevant independent (e.g., treatments) and dependent (e.g., sacral alignment) variables for patients with low back pain presumably due to sacroiliac joint dysfunction on a visit-by-visit basis. This database matrix should provide adequate reporting of current patient symptoms, salient physical examination parameters, treatment description, and any adverse incident as a visit-by-visit record. That's a rather large order for a relatively small area on the computer screen! But it is very possible. (See *Figure 1*.)

Therefore, it is important to select the least number of symptoms and physical examination parameters that are most important diagnostically. This simplifies and focuses the examination process. Select only important enough parameters that are also sufficiently redundant to cross-confirm each other. Be consistent and thorough.

Step 3. Perform unbiased experimental testing to prove or disprove the hypothesis.

Such testing may be at the laboratory bench, the clinical bedside, the treatment table—or the computer. For example, the illustrated database matrix for low back pain-sacroiliac joint dysfunction can be incorporated into your clinic's medical records system using a personal computer. One can use the simple, “stubby pencil” Windows Excel® Table function or the more elegant, automated Access—or hire a programmer to develop a customized system, even melding it into a larger electronic medical record system.

Figure 1. Sample Database Parameters for LBPSS Patients.

Low Back Pain-Sacroiliac Syndrome Patient Database									
Date of visit	Patient's Name Gait	Patient's Report of Pain	Functionally Short Leg	Weak Gluteus medius	Restricted Sacroiliac Joint tested at the Anterior Superior Iliac Spine Pub Sym Alignment	Sacral Base Alignment Inferior Sacral Angle Alignment	Lumbar Spine Alignment	Diagnosis Treatment	Adverse Event
08/11/04	Patient A R Limp	Central Low Back Pain 8/10	L 8 mm	L 4 fingers	L Restricted Anterior L Posterior Inferior	L Inferior Anterior L Inferior Anterior	L45 Rot L	Dx: L SIJ Dysfunction Prolotherapy	None

Each patient's identification is encrypted. Each individual patient's database information is reviewed at the beginning of every office visit, providing a real-time window into each patient's past and present disease process and recovery. All new data are entered at the end of every office visit.

Thus, performance of the clinical testing of the safety and efficacy of Prolotherapy can be concurrent with each patient encounter, examination, and treatment. Informal (nonstatistical) trend finding is easily achieved by concurrent review. It is relatively simple to bring up the individual record of any patient encounter at the click of a mouse and "eyeball" the patient's treatment and response trends.

FOURTH PHASE: FORMULATE A CONCLUSION AS TO WHETHER THE QUESTION IS ANSWERED

Step 1. Collect, collate, and analyze the resultant data.

Investigational data is the food for Inductive Thought. With the database matrix immediately available at a simple mouse click, clinical test data are immediately available. Just cut, paste, organize, and print.

Aside from the main cohort grouping of the total patient population that was treated, one can scrutinize various subgroupings or subcohorts of LBPSS patients as to their response to the Orthopedic Medical treatments.

Descriptive statistical analysis may characterize the various cohort groupings in terms of ranges and averages of occurrence of various population dimensions, such as

gender, age, and right versus left-sided physical parameters. Then, inferential statistical analysis may characterize the various cohort groupings, including control groups, as predictors of the general patient population response—or nonresponse—to Prolotherapy.

Step 2. Interpret the resultant data and present all applicable information.

Interpretation requires review, analysis, illustration, and explanation of all of the collected information. This is the opportunity to describe the given cohorts and their variables in statistical terms and in terms of inferential relationships between the independent and dependent variables—projecting how these sample groupings might predict the larger, general patient population's response to the treatments provided. These descriptive and inferential population characteristics of comparison, correlation, and trending are the springboard for conclusive Deductive, Inductive, and Abductive Thought.¹

Step 3. Draw a conclusion in reference to the original hypothesis.

The conclusion as to the efficacy of Prolotherapy in treating LBPSS would be based on interpretation of the information, which has been derived from the test data that have been collected by exercising the database matrix. The conclusion might offer a starting point for a new hypothesis.

FIFTH PHASE: EXERCISE PEER REVIEW TO REAPPRAISE THE OUTCOME RESULTS AND CONCLUSION

Step 1. Distribute the results to other clinicians and researchers.

Distribution of the results and conclusion(s) derived from analyzing the clinical database is accomplished by publishing written reports and offering oral presentations of case reports and case series studies.

Step 2. Reobserve, replicate, retest and form a new, more refined hypothesis.

This step speaks for itself. The scientific process in a medical practice should be a continuously reiterative, recycling intellectual process shared with the Orthopedic Medical Community—and continuously recapitulated within the subject Clinic.

SUMMARY

We have been taught the Scientific Method since grade school and it has been emphasized throughout our professional education and training. But do we really apply it to our Orthopedic Medical Clinic practices? Can we?

The above guidelines might help you organize your Orthopedic Medical Clinic by exercising the Scientific Method in a practical manner—*helping you plan ahead by continually looking behind*—and preventing your embarking and (even worse) continuing down the wrong diagnostic or therapeutic path. Adopting an outcome database system can aid in simplifying and standardizing examination, diagnostic, and treatment parameters ... yet, at the same time, reaping an astounding amount of information out of a relatively small amount of data.

I have stressed the importance of the Orthopedic Medical Clinic and Community. Prolotherapy cannot be practiced as a solo technique in a clinical vacuum, completely apart from other Orthopedic Medical diagnostic and therapeutic approaches. It is important to note, likewise, that the Scientific Method is not practiced as a static event—but as a continuously dynamic reiterative cycle of observational and investigative events that might reinforce your whole Orthopedic Medical approach on a daily basis.

Part III of this series will present a retrospective case study series based on the methodology and database matrix modeled above. The process and conclusions may be of interest.

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AUTHOR'S NOTE:

As in Part I of this series, I have resorted to using Wikipedia extensively for reference material. Although Wikipedia is often faulted for weak reference support, the sites that I have used have been replete in background referencing and illustrations—much better referenced and illustrated and much easier to access than the Encyclopedia Britannica sites.

ACKNOWLEDGMENTS:

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IT'S A WIDE WIDE WORLD

Age Management Medicine Group 2010 Conference

Joseph J. Cukla, LPN

The Age Management Medicine Group (AMMG) held their annual conference in Las Vegas, November 11-14, 2010. The conference was held at the beautiful M Resort & Spa. AMMG was founded five years ago to provide education and information to healthcare professionals. Their mission statement explains, "The basic tenets of age management medicine are patient evaluation through extensive medical history, lifestyle assessment, physical examination and laboratory evaluation to establish personalized, proactive treatment plans consisting of proper diet, exercise, stress management and appropriate medical interventions."

The conference included seminars and presentations by the leading MD's, DO's, PhD's, and pharmacists in the field of age management. Topics included regenerative and cell-based medicine, nutrition, hormones, alternative medicine therapies for stress, pain, and insomnia, and office-based aesthetic medicine.

The International Cellular Medicine Society (ICMS) held their second annual conference in conjunction with the AMMG's, which included a one-day training course in the collection, isolation, and therapeutic uses of adult mesenchymal stem cells (MSC). These stem cells are being harvested from bone marrow, adipose tissue and peripheral blood and either used after minimal manipulation or after being cultured and activated by various growth factors. Some physicians are treating patients with stem cells harvested from umbilical cord blood, especially for neurological and inherited diseases. Presentations were given outlining the research and clinical practice ongoing in the field of regenerative medicine which included the therapeutic use of MSC for resurfacing articular joints, regenerating muscle tissue, improving heart function with patients with heart disease, reversing degenerative disc disease and improving function in Parkinson's patients.

Medical/legal aspects of the various therapies were discussed, especially topical were the presentations given by Christopher Centeno, MD, and his legal counsel, regarding the ongoing legal proceedings between the Centeno-Shultz Clinic, which he partners with John R. Schultz, MD, DABPM, and the FDA. Their clinic in Colorado has been treating patients with autologous stem cells. They have protocols for the harvest, culture in vitro and activation with growth factors and other agents of the patients' own stem cells for use in the regeneration of joint tissue. Similar concepts have been used for decades in the practice of in vitro fertilization, but FDA has not approved stem cells for any use. The main point of the suit is that the FDA is trying to regulate the practice of medicine, which numerous court rulings have shown that it has no jurisdiction to do. The practice of medicine is under the individual states' medical licensing boards. The "practice of medicine" concept allows, for example, for individual doctors to prescribe medications for off-label use, alter a surgical technique, or modify a medical instrument for specialized purpose, if what the doctor is doing has a reasonable expectation of having positive clinical outcomes and poses little or no increased risk to the patient.* (To see Dr. Centeno's article relating to this issue, please refer to: Centeno C. Our patient's autologous stem cells are drugs: the FDA moving down a dangerous slippery slope. *Journal of Prolotherapy*. 2010;2(4):477-479.) The FDA's position is that "manipulation" of the stem cells may cause a risk to the patients. Their take is that stem cells may become tumorigenic, that is, turning into cancer cells. So while all the procedures, growth factors,



Age Management Medicine Group conference setting in Las Vegas.

blood thinners, culture media, all have been approved at some point by the FDA for other uses, they do not want them used with stem cells. This has put clinics like Centeno/Schultz' in limbo as the FDA has refused to look at the stem cells after they have been manipulated, whether after a process such as they use, or even after a truly minimally manipulative process such as exposing them to various spectrums of light for activation. There are many more issues involved in this case: interstate commerce, infection control, and control of the labs doing the culturing, to name a few. In short, Centeno/Schultz agreed to stop culturing and manipulating the harvested stem cells and to just use them only in a harvested and concentrated form with the understanding that the FDA would go to court to resolve the issues, instead of leaving them hanging in regulatory limbo. It is expected in six to 18 months that this issue will be decided.

Their counsel made a very good point, however, that if they are to argue that this issue is under the jurisdiction of the individual state's medical licensing and regulatory boards, then the doctors involved in the therapeutic use of stem cells had better strictly follow the guidelines set forth by their own state, or open themselves up to lawsuits. At this point, some states have pretty clear-cut guidelines to follow, such as New York regarding banking tissues, while others have little or no oversight in stem cell treatments.

There is a similarly named organization to the ICMS, called the International Society for Stem Cell Research (ISSCR) which reportedly is sending out to clinics promoting stem cell therapies on their own websites questionnaires for self-reporting their protocols. There is a conspiracy theory of how the ISSCR is a puppet of the mega-pharmaceutical companies and will use that questionnaire to report the clinic to the FDA. The ISSCR is a proponent of the continued funding of NIH studies researching embryonic stem cell therapies, while the ICMS considers the research in this field a dead-end because of the cancer risk associated with these types of stem cells. They feel that the issue is further clouded by the public's perception that embryonic stem cell and adult autologous stem cells are the same, resulting in a furor over the use of "embryos" for treatment and research and the perceived cancer risk with all stem cells. Another theory of conspiracy theorists is that the FDA has not allowed adult MSC research and clinical treatments to move forward because of the influence of the pharmaceutical industry. They believe "Big Pharm" is behind the research curve

and is afraid that these non-patentable MSC's will be able to accomplish the same things they are working on presently with patentable embryonic stem cell lines that have had their genes altered, thus making it a patentable product.

Like stem cell therapies and research, bio-identical hormone replacement therapy has sometimes been misunderstood by the professionals in the field, the mainstream media and thus, the public. Doctors who practice bio-identical or "natural" hormone replacement therapy (NHRT), and the pharmacists and researchers who support them are still vilified regularly, mostly based on a few research studies that were done 20 to 40 years ago, linking hormone replacement with breast cancer and prostate cancer. Many of the speakers addressed these old studies, addressed some newer research claiming the same links to cancer and hormones, then proceeded to debunk these studies. For every negative correlation between cancer and hormones, literally dozens of research articles in peer-reviewed journals were presented that showed a decreased risk of cancer with the correct use of NHRT. The popular media never make clear the distinctions between pharmaceutical hormones and NHRT according to some of the conference presenters. It was brought up that a significant percentage of urologists over the age of 50, for example, never support the use of testosterone in men except in rare circumstances, based a small sample study done 20 years ago showing an increased risk of prostate cancer with testosterone use. It was explained that "seminal" study looked at geriatric men in failing health in a nursing home where a large percentage of them were not even ambulatory. The speaker went on to point out that many of these men would have developed and/or died from cancer with or without testosterone replacement. This was one of the main points of the hormone discussions, that patients will get cancer and other negative health conditions, but few if any studies show a causal link between NHRT and cancer, if in fact, most of them show an inverse correlation, meaning maintaining healthy physiologic levels of hormones in patients reduce the risk of cancer.

Overall, the AMMG conference was well organized and executed, with opportunities afforded for networking, acquiring continuing education credits and learning about new products offered from various vendors. To learn more about the Age Management Medicine Group, visit: www.agemed.org. ■

Prolotherapy Weekend at UNECOM 2010

Peter J. Blakemore, DO

The American Academy of Osteopathy presented a Prolotherapy weekend at the University of New England College of Osteopathic Medicine (UNECOM) in Biddeford, Maine from October 7th-9th 2010. The location in southern Maine, right on the Atlantic coast in early autumn, could not have been more beautiful. The course was presented by Mark Cantieri, DO and George Pasquarello, DO who, with Tom Ravin, MD, have recently released a textbook on Prolotherapy entitled *Principles of Prolotherapy*. The *Principles* text was initially developed in part because the authors wanted to have a modern, practical textbook on the subject to use in these courses. The weekend course format consisted of lecture time and live examination and diagnostic portions, as well as laboratory cadaver anatomy review, and fresh tissue injection instruction and practice. The course was attended by MDs, DOs, and NDs from the United States and Canada with varying experience in Prolotherapy, from those who had recently started to use Prolotherapy on a few patients, to others who had been practicing Prolotherapy for many years. The course was well designed to offer something for everyone—well worth the time for the seasoned Prolotherapy doctors, as well as a great introduction for the beginner.

Lecture portions included an introduction to Prolotherapy and the history of Prolotherapy, as well as specific lectures for treatment of each anatomical area. Background information on traumatic injuries and degenerative postural models were presented to describe etiologies of the major ligament and tendon damage treated with Prolotherapy (basically, how the injuries occur). Wound healing physiology was reviewed to show the process that Prolotherapy is designed to stimulate, as well as review the factors that can improve the healing process and those that can hinder it. Dr. Cantieri spent time discussing the use of a structured rehab program, or physical therapy program, in combination with the Prolotherapy to give optimum results to the patients. There was also time spent reviewing the types of pain medications that can be used



Mark S. Cantieri, DO, FAAO lecturing the course attendees.

in conjunction with Prolotherapy treatments, the pros and cons of narcotic use, and the duration of time patients need to be off anti-inflammatory medications before and after treatments. Dr. Pasquarello also lectured on coding and billing procedures for Prolotherapy.

After the initial introduction lectures, the course format followed a revolving cycle starting with a lecture which described the area of focus to be treated with an anatomy review and areas of danger or other salient features. The course attendees then would move into a room with examination tables for instruction and practice of pertinent physical examination skills on each other. Following this live examination time, the attendees would move into the anatomy lab for a hands-on anatomy review and to practice injections. It was a great honor to be able to study human anatomy using real cadavers, and we were reminded of the debt we owe to those who have donated their bodies for science so that we could learn how to better help those who are living. Due to government regulations, no photography is allowed in the lab and only licensed medical professionals, or those who are training to become medical professionals, are allowed in the anatomy lab. Prior to this course, a group of anatomy and osteopathic manipulative medicine training fellows from UNECOM had dissected an embalmed cadaver to create a very good example of the prosected anatomy that we would be injecting. These same teaching fellows reviewed the anatomy with the course attendees, and we were able to view and palpate the various muscles, tendons, ligaments and bones and closely examine their

relationships to each other and the rest of the body. There were also many helpful models and other dissections to give a clear mental picture of the structures that we were going to inject.

Following the laboratory anatomy review, we moved into the fresh tissue side of the lab for injection instruction. Having a fresh tissue lab is not a common thing, even for a medical school, because most teaching and studying of anatomy is performed on embalmed cadavers that can be stored for long periods of time without degradation of the tissue. Fresh tissue cadavers, on the other hand can, only be used for a short time before normal decomposition advances. The un-embalmed cadavers must be stored in a dedicated cold storage facility and there are numerous regulations that make it difficult to maintain a fresh tissue lab. The problem with using embalmed tissue for injections, however, is that the needle feels like it is going through layers of rubber instead of the texture that a live human's tissue presents. Therefore, injecting un-embalmed tissue is the best way to approximate the feeling of injecting the real thing while removing the inherent dangers of practicing injections on a live person. UNECOM's fresh tissue lab is the main reason this course is held in Maine. In the fresh tissue section of the lab we were required to wear complete protective gear including body smocks, booties, gloves and face masks with eye shields. We were reminded that because the cadaver had not been embalmed there was still the chance that contact with body tissues or fluids could communicate disease and universal precautions were followed, including carefully monitoring the used sharps. For each section, Dr. Cantieri or Dr. Pasquarello would demonstrate the proper injection technique and

then each attendee would have time to practice injections, feeling the needle move through the tissue layers down to the bone and trying different angles and approaches to reach the location of interest. It was very helpful to get the feel of the needle in real human tissue and be able to experiment a little with different approaches without the fear of causing complications to your patient. As an example, when injecting the thoracic region we were able to inject the ribs and march the needle off a rib until we could feel the needle drop into the thoracic cavity, thereby seeing how far you could move. In a live patient this same experiment would most likely cause a pneumothorax and the patient would wish you had experimented on someone else.

The course participants were divided between beginner and advanced groups, and Dr. Pasquarello and Dr. Cantieri taught these groups independently. The groups were divided based partially on practice experience but also on previous course experience. The beginner course focused more on extremities and areas of injections with the least amount of potential danger zones, while the advanced course spent more time on the mid line, spinal and rib injections. By taking both sections, a practitioner can get training in most of the body areas that are usually treated in a normal clinical practice. While one group was getting a lecture or spending time reviewing physical exam techniques, the second group would be in the anatomy lab reviewing anatomy on cadaver dissections or practicing injections on a fresh tissue cadaver.

At the end of the course Dr. Pasquarello and Dr. Cantieri were kind enough to treat any of the course attendees who wanted to be treated, and the rest of the attendees could watch and interact with questions and observations. This was a very informal time and gave great benefit to both the people who were treated, as well as the others who observed the procedures. Overall, the course was a great way for the seasoned Prolotherapy physician to enhance their skills or for a physician who wants to start using Prolotherapy to learn the basics.

For more information on upcoming Prolotherapy courses through the American Academy of Osteopathy, go to <http://academyofosteopathy.org/> or call the AAO at (317) 879-1881. ■



George Pasquarello, DO, FAAO demonstrating Prolotherapy injections.

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The American Osteopathic Association of Prolotherapy Integrative Pain Management (formerly *College of Sclerotherapeutic Pain Management*) will be holding its Spring 2011 Training Seminar "Prolotherapy; A Comprehensive Approach", April 7-10th at the Naples Golf and Beach Resort in Naples, Florida (anticipated

Cat 1A CME: 27). A one day optional pre-conference on Ultrasound Guided Prolotherapy (anticipated CAT 1A CME: 10) will be offered on April 6th.

For more information: contact Linda Pavina at 302.530.2489 or LindaPavina@verizon.net. <http://www.prolotherapycollege.org>.

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For more information: <http://www.aaomed.org> or email register@aaomed.org

If you are sponsoring a Prolotherapy seminar or offer training sessions, please email: info@journalofprolotherapy.com for a free listing of your meeting.

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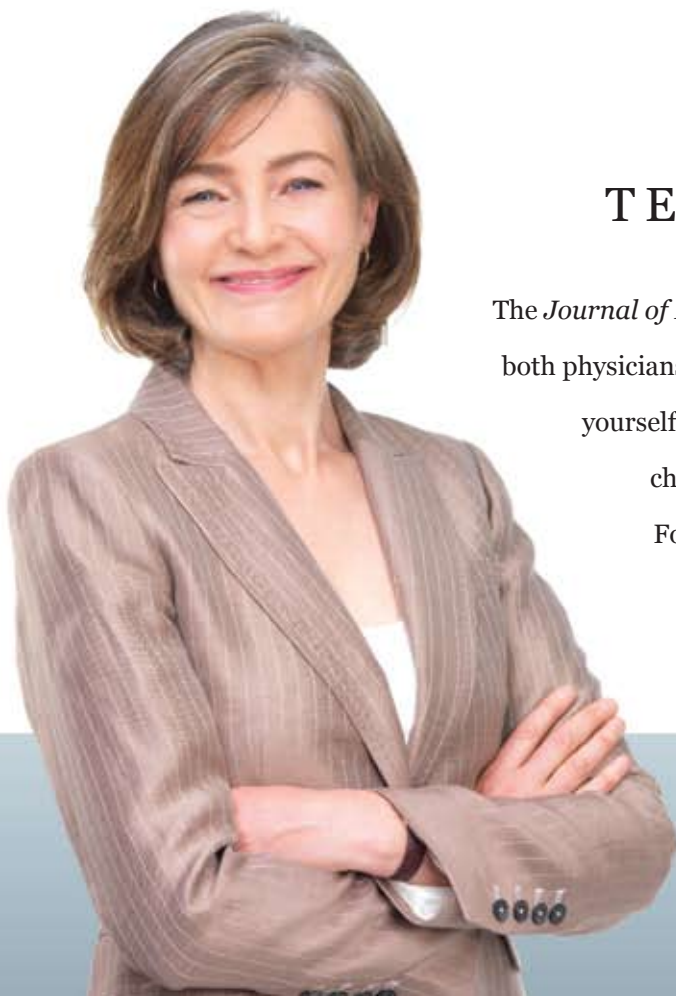


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