

Platelet Rich Plasma in Prolotherapy

Case reports on lateral elbow pain, low back pain, and medial knee pain indicate a remarkable improvement in outcomes after prolotherapy incorporating platelet rich plasma.

by Donna Alderman, DO



Prolotherapy is a method of injection treatment designed to stimulate healing.¹ Many different types of musculoskeletal injuries and pain lend themselves to prolotherapy treatment including low back and neck pain, chronic sprains and/or strains, whiplash injuries, tennis and golfer's elbow, knee, ankle, shoulder or other joint pain, chronic tendonitis/tendonsitis, and musculoskeletal pain related to osteoarthritis. Prolotherapy works by raising growth factor levels or effectiveness in connective tissue ligaments and tendons to promote repair or growth.² Prolotherapy has been used in the United States since the 1930s, and the first text on its use was published in the 1950s.³ Various solution formulas can be used in prolotherapy—the most popular being those which are dextrose-based.

Background of PRP

Since the early 1990s, and especially within the last couple of years, the use of platelet rich plasma (PRP) as a prolotherapy formula has gained popularity. PRP involves the use of an individual's blood—centrifuged to concentrate the growth factor-rich platelets—to intensify and accelerate the healing response. PRP has been used not only for tendon, ligament, and muscular injuries but also joint conditions including arthritis, articular cartilage defects, and meniscus injuries.⁴ Crane and Everts wrote an excellent review of PRP and published in *Practical Pain Management* in 2007.⁵

Platelet Rich Plasma was first reported for its use in cardiac surgery in 1987 for the purposes of autologous transfusion.⁶ Since that time, PRP has been used in dental procedures such as implant surgery, and has been shown to be beneficial in the treatment of periodontal defects.⁷ It has also been used in cosmetic and other surgical procedures to enhance healing.⁸ In 2006, Mishra and Pavelko at Stanford University, reported the successful use of PRP for chronic elbow tendonosis after a 140 patient study showed a 93% reduction in pain two years post treatment.⁹ Other musculoskeletal areas helped by PRP in reported cases are similar to those helped with dextrose prolother-

apy and include plantar fasciitis,¹⁰ recalcitrant enthesopathy of the hip,¹¹ rotator cuff injury,¹² thigh muscular strain, hip osteoarthritis, and lumbar spondylosis.¹³ While there exists several case reports and some, albeit limited, clinical trials of the use of PRP for musculoskeletal injuries, there is not a set protocol for its use in conjunction with routine dextrose prolotherapy treatment. This paper presents three case reports where PRP was successful after a series of dextrose prolotherapy injections relieved some, but not all, of each patient's pathology and symptomatology.

Case Report 1

50-year-old male complaining of right lateral elbow pain for three months. He began feeling the pain after beginning bowling as a new sport. After that, he noticed elbow burning after doing hammer curls at the gym, along with decreased strength and inability to lift things when his palm was down. The problem progressed until he could not twist a doorknob or shake hands without pain. He tried resting the elbow but the pain would return when used. Acupuncture gave no relief but deep tissue cross massage gave him some small improvement. Past medical history/review of systems was noncontributory. The patient began a course of dextrose prolotherapy treatments (15% dextrose, 10% sarapin, 0.1% lidocaine). After four dextrose prolotherapy treatments at four week intervals, the patient reported 80% improvement overall but still had pain with some exercises, had not returned to bowling, and was still experiencing some gripping and lifting weakness. He indicated he felt that he had plateaued in terms of improvement with the dextrose prolotherapy. He then received 3cc of PRP at the lateral epicondyle and extensor tendons. At his follow up visit six weeks later, he reported that the improvement after PRP had been dramatic and he had regained the ability to lift again, including being able to lift his thirty pound son. He also was able to grip up to 20 pounds and had begun bowling again without pain.

Case Report 2

34-year-old female complaining of a long history of low back pain over many years. The pain would come and go but had been especially troubling over the past few years. Past medical history: hysterectomy three years prior, elevated blood pressure (on Rx), and thyroid dysfunction (on Rx). Review of symptoms negative except for back pain. Medications: lisinipril 20mg and levoxyl 0.125 mg. L spine MRI revealed: L4-5, 1 to 2mm disc bulging and bilateral facet joint hypertrophy; L5/S1, 1mm disc central bulging and bilateral facet joint hypertrophy, no spinal stenosis or neuroforaminal narrowing. Patient had been receiving dextrose prolotherapy treatments on her low back over a two-year period, approximately every two months but not at regular intervals. Her self-assessment improvement ranged from 10% to 85% over that time, with some re-injuries. At the time of her PRP treatment it had been three months since her last dextrose prolotherapy treatment and she rated her overall improvement at 75%. She received a treatment of 10cc of PRP to her L4 and L5 facets, iliolumbar, sacroiliac, and inferior and superior sacrotuberous ligaments. The patient reported a dull achy pain immediately after treatment which resolved within 24 hours at which time she felt almost immediate relief. She indicated that she felt so good the following weekend she went on a ten mile hike with no pain or discomfort, something she had not done in years. Over the ensuing weeks, she experienced an ebb and flow of post-treatment pain, sometimes radiating but brief and episodic and always temporary and resolving. Four months post-treatment she reports sustained improvement and decreased pain levels, with 90% improvement overall prior to any prolotherapy treatments.

Case Report 3

51-year-old female, complaining of medial knee pain ongoing for six months, worse with extension. No prior trauma or history of knee pain but had been increasing squat type exercise at the gym and noticed onset of this pain after a particularly difficult workout. No past medical history, review of symptoms negative. No medications. The patient received two sets of dextrose prolotherapy injections to medial collateral ligament six weeks apart. She reported 60% improvement overall three months post-second treatment, but still felt the localization of pain at the medial aspect of the knee at the joint line with extension. Patient then received 3cc of PRP to the medial collateral ligament localized to the area of discomfort. Initial response was reported as "achy" but tolerable. Over the ensuing few weeks post-treatment, patient reports brief episodic waves of discomfort, some radiating up and down the leg, but all brief and quickly resolving. Three months post-treatment, patient reports 99% improvement of pain with increased stability of knee, inability to locate area of previous discomfort even with extension, and back to full workout without discomfort. ■

Donna Alderman, DO is a graduate of Western University of Health Sciences, College of Osteopathic Medicine of the Pacific, Pomona, California, with undergraduate degree from Cornell University. She has extensive training in prolotherapy and has been using prolotherapy in her practice for ten years. Dr. Alderman is the Medical Director of Hemwall Family Medical Centers in California and can be reached through her website www.prolotherapy.com. In 2008, she authored the book "Free Yourself from Chronic Pain and Sports Injuries" (ISBN 9780981524207) published by Family Doctor Press, Glendale, California.

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