CASE REPORT

Treatment of Recalcitrant Enthesopathy of the Hip with Platelet Rich Plasma - A Report of Three Cases

Mark Scioli, MD
Center For Orthopedic Surgery
Lubbock, TX

The use of platelet-rich plasma has gained popularity in orthopedic, as well as general and plastic surgical procedures. Growth factors harvested in autologous platelet-rich plasma are released from activated platelets and have been clearly shown to modulate healing in both soft tissues and bone.[1-6] The successful use of platelet-rich plasma for treatment of lateral epicondylitis and plantar fasciitis has been reported.[3]

There are no reports in the literature with respect to treatment of recalcitrant greater trochanteric bursitis, an often disabling and painful condition difficult to treat even with surgical modalities. This report of the successful treatment of three cases of recalcitrant trochanteric bursitis underscores the need for further research as to benefits and applications of platelet-rich plasma.

Background

Platelet-rich plasma blood components are sequestered hemocytes which can be formed into a cellular matrix or coagulum and function as a bioactive sealant and may be implanted into patient's wounds or incisions, or injected into the enthesis to stimulate a healing response with the local tissue environment.[2,3,5]

Physician directed intraoperative harvest of blood components is a procedure in which autologous, viable platelet-rich plasma is taken from the patient by drawing whole blood and processing it via centrifugation. The platelet-rich concentrate produced can be used to control bleeding, aid in wound healing, and control inflammation. Twenty to fifty milliliters of whole blood is spun down in order to sequester the Buffy coat, separating out leukocytes, erythrocytes, fibrinogen, stem cells, platelets, and plasma. The cytokines, or growth factors carried within the inactivated platelets, include platelet-derived growth factor (PDGF), transforming growth factor-Beta (TGF-B), insulin-like growth factor (IGF), and vascular endothelial growth factor (VEGF).[5,6] During normal wound healing, trapped platelets become activated and degranulate, releasing mitogenic and chemotactic growth factors. With the harvested platelet-rich plasma, an activator such as fibrin and CaCl are added to form a coagulum, or the solution is injected with a carrier as a viable tissue graft, removed from one part of the body and implanted or attached to another location.

Platelet-derived growth factor has been most extensively investigated and produces chemotactic effects on monocytes, neutrophils, fibroblasts, mesenchymal cells, and osteoblasts. It is also a powerful mitogen for fibroblasts and smooth muscle cells involved in all three phases of wound healing; angiogenesis, formation of fibrous tissue and reepithelialization.[4,5]

Transformational growth factor Beta is also a mitogen for fibroblasts, smooth muscle, and osteoblasts with additional enhancement of angiogenesis and extracellular matrix formation.

Methods

The GPS Gravitational Platelet Separation System (Biomet) was utilized in a series of patients to harvest a platelet-rich concentrate. It has been shown that this system safely produces an eight-fold concentration of platelets as compared to whole blood.[5]

Fifty cc of whole blood was withdrawn from each patient for each hip to be injected (100cc for both hips) and centrifuged according to protocol. Eight to ten cc of platelet-rich plasma was sterilely sequestered and injected with a 23-gauge spinal needle down to bone, gently withdrawn, and repositioned into the bursal tissue beneath the fascia lata. The points of maximal tenderness were marked preoperatively with the hip flexed to 45° (the patient lying supine with foot flat on the gurney).

Usually three or four sites would be injected with two to three cc of platelet solution. The patients were under IV sedation unless they were to undergo a simultaneous, more involved procedure requiring general anesthesia. Post-injection, the patients were followed at one, three and six months. All three noted dramatic pain relief with improved ability to get up and down, walk, and rollover at night. All would have the procedure again.

Case 1

A 39-year-old female with bilateral chronic internal coxa saltans and greater trochanteric bursitis with pain greater than two years duration. After undergoing staged iliopsoas lengthening procedures with complete resolution of her groin pain, the trochanteric bursal irritation persisted. She had transient relief of pain with corticosteroid and local anesthetic injections. She had failed to respond to physical therapy, oral anti-inflammatories, and topical agents. She underwent injections of platelet-rich plasma into both hip bursae with dramatic results, noting better than 80% reduction in her hip pain at her six-month follow-up.

Case 2

A 64-year-old female with previous history of failed L4-5 laminectomy and subsequent 360° fusion L4-5, returned to traveling sales, requiring vehicle entry and exit 20 times per day resulting in severe left trochanteric bursitis. It was refractory to all treatment including physical therapy, topical agents, and anti-inflammatories, and would transiently respond to corticosteroid and local anesthetic injection. She underwent injection of the left hip bursa reporting excellent relief of pain seven months later.

Case 3

A 72-year-old female post L4-S1 fusion six years ago with gradual

collapse of the arches due to degenerative arthritis underwent mid-foot arthrodesis three years prior. She developed intractable greater trochanteric bursal pain bilaterally and was intolerant of anti-inflammatories and topical agents. She underwent bilateral GPS injections and, seven months post-injection, reports excellent control of the hip pain.

Conclusion

Treatment of chronic, severe greater trochanteric bursal pain with platelet-rich plasma should be considered as an alternative when other modalities fail. Further evaluation of this treatment is warranted as many questions are yet to be answered. How long does it last? How soon could the injections be repeated? Is it to be considered a first line intervention? Only time will tell, but it appears to be promising!

References:

1. Stromal stem cells and platelet-rich plasma improve bone allograft integration. *Clinical Orthopedics and Related Research.* 2005 Jun; (435): 62-68.
2. The use of autologous concentrated growth factors to promote syndesmosis fusion in the agility total ankle replacement. A preliminary study. *Foot and Ankle International.* 2005 Oct; 26 (10): 840-846.
3. Treatment of chronic severe elbow tendinosis with platelet-rich plasma. Podium presentation 2005 Annual American Academy of Orthopedic Surgeons Meeting.
4. The use of autologous platelet gel to treat difficult-to-heal wounds: A Pelot study. *Transfusion* 2004.
5. Platelet quantification and growth factor analysis from platelet-rich plasma: Implications for wound healing. *Plastic and Reconstructive Surgery*, 2004 Nov; 1503-8.
6. Wound healing: The role of platelet-derived growth factor and transforming growth factor beta. *Vet. Surg.* 22: 490, 1993.

Reprinted with permission by Mark Scioli, MD, Center For Orthopedic Surgery - Lubbock, TX Source: COSNEWS, An Official Publication of The Clinical Orthopaedic Society Spring 2006 Edition.