Plasma-Rich Protein Injection Associated With Greater Improvements in Study of Chronic Hip Bursitis

Written by **Mary Mosley**

A single-center, prospective, randomized, longitudinal study with blinded evaluation has shown that platelet-rich plasma (PRP), compared with the corticosteroid methylprednisolone (MP), provided a greater and more durable improvement in pain relief in patients with chronic greater trochanteric bursitis (GTB).

PRP has shown promise in other musculoskeletal injuries, such as lateral epicondylitis and anterior cruciate ligament, and its use is being studied in other clinical settings [Zhang N et al. *ScientificWorldJournal* 2013; Bava ED, Barber FA. *Phys Sportsmed* 2011]. Raymond Rocco Monto, MD, Nantucket Cottage Hospital, Nantucket, Massachusetts, USA, examined the use of PRP in his sports medicine practice to treat GTB, which is common but often not amenable to traditional treatment of rest, physical therapy, nonsteroidal anti-inflammatory drugs, and local nonsurgical modalities. Chronic tendonopathies, such as GTB, are associated with treatment failure rates ranging from 10% to 31% [Davies H et al. *Hip Int* 2009; Ege Rasmussen KJ, Fano N. *Scan J Rheumatol* 1985; Schapira D et al. *Arch Phys Med Rehabil* 1986].

Although the mechanism of action of PRP is unknown, Dr. Monto hypothesized that bioactive components in the some 11,000 proteins and cytokines in the concentrated platelets drives repair of the damaged tissue.

A total of 40 patients were evenly randomized to MP or PRP. The two groups were similar, with an average age of 64 years (range, 43 to 74) and 66 years (range, 47 to 77), 13 and 15 women, and refractory to 10 and 11 months of traditional treatment (minimum of 6 months required for inclusion), respectively.

All patients underwent magnetic resonance imaging to distinguish GTB from other musculoskeletal injuries such as arthritis and complex nerve syndrome, and to primarily identify injuries to the gluteus medius tendon. A single ultrasound-guided injection at the injury site was given to each patient: 4 mg of MP or 3 cc of unbuffered, unactivated autologous PRP.

The primary outcome measures of benefit were the Harris Hip Score (HHS) to assess hip function before and after treatment and the Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) to measure pain, stiffness, and functional limitation.

The average pretreatment HHS was similar at 50.52 in the MP and 51.67 in the PRP groups (Table 1) [Monto RR. AAOS 2014 (paper 778)]. At 3 months, HHS improved to 75.32 and 84.23 in the MP and PRP groups, respectively. At 6 months, the difference between the groups increased, and at 12 months the HHS was near the pretreatment level in the MP group (58.81) although it had continued to improve in the PRP group (87.42).

Table 1. Harris Hip Scores Before and After Treatment

	MP Group Average Score (range)	PRP Group Average Score (range)
Baseline	50.52 (43.03–54.03)	51.67 (46.90–54.63)
3 months	75.32 (65.03–83.60)	84.23 (76.03–92.03)
6 months	68.40 (53.90–83.90)	87.81 (83.03–93.03)
12 months	58.81 (53.90–73.85)	87.42 (80.58–92.03)

The average pretreatment WOMAC score was 58.3 in the MP and 58.8 in the PRP groups, and improved to 83.6 and 91.4 at 3 months, respectively (Table 2) [Monto RR. AAOS 2014 (paper 778)]. Again, at 6 months the improvement with MP was diminished while the improvement with PRP was maintained. At 12 months, the WOMAC score in the MP group was near the pretreatment level (63.4) and the improvement was maintained (89.3) in the PRP group.

Table 2. WOMAC Scores Before and After Treatment

	MP Group Average Score (range)	PRP Group Average Score (range)
Baseline	58.3 (53.9–66.4)	58.8 (54.7–60.9)
3 months	83.6 (61.7–87.5)	91.4 (80.5–96.9)
6 months	74.3 (60.2–82.8)	90.2 (82.8–95.3)
12 months	63.4 (57.8–79.7)	89.3 (82.8–96.1)

WOMAC=Western Ontario and McMaster Universities Osteoarthritis Index.

PRP provided short- and long-term improvement in pain and function scores. A limitation of the study, noted Dr. Monto, is the subjective patient-driven scoring systems used to assess outcomes. There were no complications in the study and no patients were lost to follow-up. Treatment with PRP and MP are similarly safe and simple. Ultimately, he stated, the currently unknown balance of cost versus efficacy will determine the use of this experimental approach to treating GTB.

Statins Reduce Postoperative VTE After Total Knee or Hip Replacement

Written by **Emma Hitt Nichols, PhD**

Statins reduce postoperative venous thromboembolism (VTE) events in patients undergoing elective total knee arthroplasty (TKA) or total hip arthroplasty (THA). Katherine Criner, MD, Temple University Hospital, Philadelphia, Pennsylvania, USA, presented data from a retrospective study that evaluated the effect of statin use on postoperative VTE in patients who had undergone total knee or hip replacement.

VTE encompasses deep vein thrombosis (DVT) and pulmonary embolism (PE) and is a frequent complication of orthopedic surgery. Without appropriate prophylaxis, DVT occurs in 50% and 84% of patients that have undergone THA or TKA, respectively, and PE occurs in 20% and 7%. In addition to their effect on cholesterol levels, statins have anti-inflammatory and antithrombotic effects [Paumelle R, Staels B. *Cir Res* 2007; Liao JK, Laufs U. *Annu Rev Pharmacol Toxicol* 2005]. The purpose of this study was to determine if the addition of statins to standard VTE prophylaxis would reduce VTE following THA or TKA.

The retrospective chart review included patients who had undergone THA or TKA and were administered postoperative VTE prophylaxis between 2005 and 2012. Patients who experienced coagulopathy, underwent revision arthroplasty, had taken hormone replacement therapy, or were diagnosed with a fracture were excluded from the review. The follow-up period was a minimum of 11 months and the primary outcome was symptomatic VTE confirmed by venous duplex ultrasonography and computed tomography (CT) angiogram of the thorax.

In the study, 417 patients were assigned to receive no statin or a statin based on their perioperative statin status—patients that were taking a statin prior to surgery maintained the same dose during and after the procedure, whereas patients not taking a statin received only standard VTE prophylaxis. All patients received standard VTE prophylaxis following THA or TKA surgery. The mean age was 65 to 66 years, about half of the study population was African American and one third was white. The mean body mass index was 33 kg/m^2, with 61% of the study population considered obese. In addition, about a third of participants had diabetes mellitus. A majority of the population underwent TKA (77% to 80%), and the mean tourniquet times were similar, with a range of 52 to 54 minutes.

There was a significant reduction in postoperative VTE events in patients who received statins in addition to standard VTE prophylaxis resulting in a relative risk of 0.529 (95% CI, 0.295 to 0.946; Chi-squared p<0.041). The absolute relative risk was 0.068 (95% CI, 0.007 to 0.129), and the number needed to treat was 14 (95% CI, 139 to 8). The overall rate of postoperative VTE was 11.3%, with 7.7% occurring in patients who received statins and 14.5% occurring in patients who did not receive statins (p=0.027; Table 1). When the data were stratified, there was a trend of decreased DVT and PE in the statin arm compared with the arm that did not receive statins (p=0.192 and p=0.324, respectively). There were no fatal PEs. The mean time to VTE event was 6.5 days in the patients who received statins and 36.1 days in patients who did not receive statins.

Table 1. Effect of Statin Use on Postoperative VTE Occurrence

	n=417	Statin	No Statin	p Value
VTE, no. (%)	47 (11.3)	15 (7.7)	32 (14.5)	0.027
DVT	26 (6.2)	9 (4.6)	17 (7.7)	0.192
PE	17 (4.1)	6 (3.1)	11 (5)	0.324
PE/DVT	4 (1)	0	4 (1.8)	0.058
Fatal PE	0	0	0	—
Postop Day of VTE, Mean	26.7 days	6.5 days	36.1 days	0.413

T-tests analysis.

DVT=deep vein thrombosis; no.=number; PE=pulmonary embolism; VTE=venous thromboembolism.

Dr. Criner pointed out that the addition of statins resulted in a reduction of VTE risk by 48%. She stated that, in her opinion, the data from this retrospective chart review suggest that the addition of statins to standard VTE prophylaxis appears to have a protective effect in patients undergoing TKA or THA.