

Platelet Rich Plasma Injections for Orthopedic Conditions

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Background & Purpose

This project explores the potential benefits of PRP injections in orthopedic conditions such as osteoarthritis, herniated disks, and fractures, particularly relevant due to the aging baby boomer population and increasing prevalence of these conditions since the 20th century. It aims to determine whether PRP injections significantly alleviate pain and improve function in these conditions or if further research is needed. Platelet rich plasma (PRP) has been a hot topic in the field of medicine for the past decade with highlights in orthopedics, cosmetics, and post-operative healing. PRP was first used as a treatment in the 1980s and was used for cardiac disease, dental damage, and facial surgery. With an increase in skepticism from the general community regarding “Big Pharma”, more and more patients are becoming attached to the idea of a natural approach as opposed to pharmacological to both increase efficacy and decrease adverse outcomes.

PICOT

In patients with common orthopedic conditions, do PRP injections compared to standard treatment have an impact on both function and pain over the course of one year?

Design & Methods

Keywords: Platelet Rich Plasma (PRP), Healing, Function, Pain, Orthopedic Conditions

Inclusion: studies published between 2019-2024, PRP usage, and orthopedic injuries.

Exclusion: PRP alternative utilizations outside the orthopedic realm, studies outside the past five years, and non-orthopedic injuries.

Summary of Evidence Search:

Database	Yielded	Reviewed	Included in Analysis
Google Scholar	9,127	19	6
Summon Library	7,173	12	5
Total:	16,300	31	11

Synthesis of Evidence

Five studies were included in which were triple blinded randomized control trial, randomized control trial, meta-analysis, and a systematic review. The data was analyzed using measurement of outcomes and multiple pain scales including: Visual Analog Scale (VAS) and Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC).

Abbreviation Key:

- 1- PRP- Platelet Rich Plasma
- 2- PRGF- Platelet Rich Growth Factor
- 3- HA- Hyaluronic Acid

Results:

Osteoarthritis of the Knee

Group	WOMAC pain score	VAS pain score
PRP	45.52% ↓	42.37% ↓
PRGF	45.37% ↓	42.38% ↓
HA	33.68% ↓	31.59% ↓
Ozone	21.72% ↓	18.69% ↓

Raeissadat et al.

Lisi et al:

Fourteen of thirty (48.3%) of patients in the PRP group receiving PRP had at least 1 grade improvement on the repeat MRI. The control group had two out of twenty-five (8%) patients who had a grade 1 improvement. There was also improvement noted in symptoms and functional scales that was higher in the PRP group. Both groups reported no significant side effects

Filardo et al:

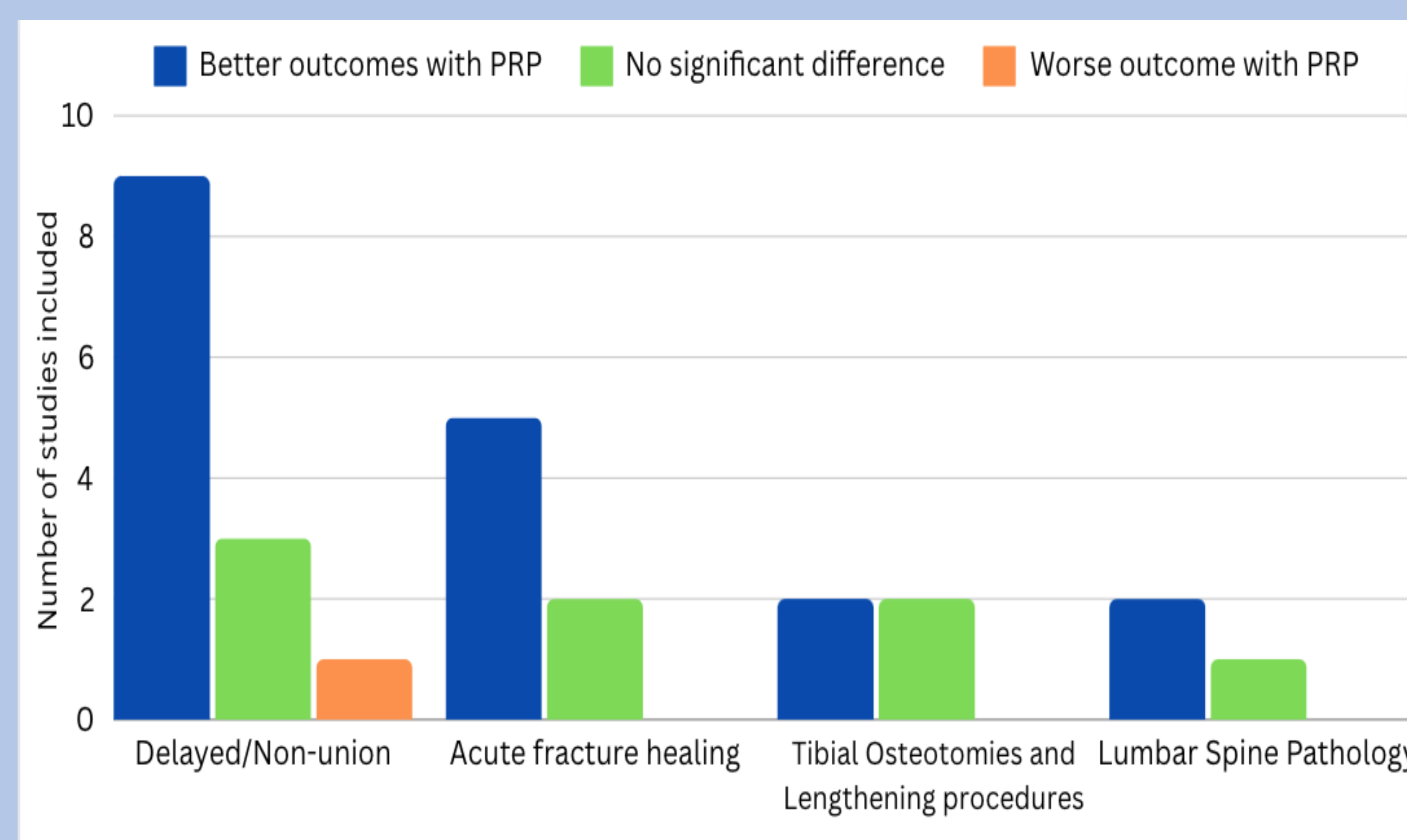
Compared to the placebo group, the PRP injection group who had a follow up of 12 months had a mean difference in WOMAC overall from the baseline pain of -19.38 (95% CI: -36.04, -2.72). Compared to the placebo group, the PRP injection group over 6 months follow-up had a mean difference in pain at 6 months of -3.08 (95% CI: -5.51, -0.65). Compared to the HA group, the PRP injection group had a mean difference of -11.34 (95% CI: -14.78, -7.91) for WOMAC overall. Compared to the HA group, the PRP injection group for WOMAC function had a mean difference of -8.89 (95% CI: -11.87, -5.91)

Lumbar Herniated Discs

	Triamcinolone	PRP	p-value
Baseline	59.67	65.27	1.000
Two Week	21.33	37.27	0.083
Six Week	36.36	22.67	0.006
Twelve Week	32.00	18.33	0.003
Twenty-Four Week	30.00	15.33	0.002

Wongjarupong et al.

Bone Healing



Jamal et al.

Best Practice

Discussion:

PRP injections demonstrate diverse applications in orthopedics, including osteoarthritis, epidural injections, tissue and fracture healing. Despite being less utilized in clinical practice than steroid injections initially, PRP shows long-term efficacy with significant improvements in pain relief, functional capacity, and stiffness over consistent treatment spanning a year. Unlike steroids, PRP has minimal to no side effects reported, making it a promising alternative for patients seeking lasting benefits and effective pain relief. As ongoing research continues to refine understanding and applications of PRP, its potential popularity as a treatment option grows, emphasizing the importance of healthcare providers staying informed about its benefits for patients prioritizing long-term outcomes.

Limitations/Further study:

The research on PRP injections in orthopedics highlights a prevalent limitation due to small sample sizes in reviewed studies, which compromises the credibility and generalizability of findings. Despite initial promising outcomes, further investigation with larger and more diverse samples is essential to strengthen the evidence base. Future studies should focus on comprehensively assessing the long-term effects of PRP injections, particularly concerning tissue regeneration and potential complications from extended use. As interest and research in PRP continue to grow, upcoming studies have the potential to provide critical insights into both the safety profile and efficacy of PRP injections, contributing significantly to informed decision-making in orthopedic care.

Conclusion:

PRP injections are natural, offer benefits, and have a low side effect profile making them an appealing alternative to patients who seek a natural approach to medicine as opposed to pharmaceutical, however more research needs to be conducted to understand the long-term efficacy and side effect profile heading into the future

References:

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