



INTRODUCTION

Low back pain (LBP) is one of the most common sources of chronic pain for all ages and socioeconomic strata [1]. LBP is the leading cause of activity limitation, work absence, and the highest percentage of primary care visits and referrals to physical therapy [2-4].

Platelet-rich plasma (PRP) has shown promising results as a biological agent to repair ligaments, cartilage, and tendons [5]. In this meta-analysis, we aimed to evaluate the clinical efficacy of PRP injections for back pain.

METHODS

We thoroughly screened Embase and Web of Science for English papers that utilized PRP in back pain. Our inclusion criteria were strict, focusing on prospective randomized controlled trials of patients older than 18 years with vertebrogenic or discogenic pain.

Since the use of PRP in chronic pain is an emerging and novel method, we included all indications and sites of injections for chronic back pain in both groups and steroid, local anesthesia, or contrast agent for the contrast group.

Statistical analysis was performed using R software version R-4.3, with a P value < 0.05 considered statistically significant.

First Author	Pain type	Total Number	Age	Male Number	Intervention detail	Control detail	Route of administration	Follow up (months)
Taukli, Wosornu	Chronic lumbar discogenic pain	29 vs 18	41.40 ± 8.08 vs 43.80 ± 8.91	14 vs 2	3 – 4 mL of PRP	Contrast agent	Intradiscal	12
Singla	Sacroiliac joint pain	20 vs 20	35.20 ± 12.86 vs 37.00 ± 10.89	16 vs 16	3 mL of PRP with 0.5 mL of calcium chloride	1.5 g of methylprednisolone and 1.5 mL of 2% lidocaine with 0.5 mL 0.9% sterile saline	Sacroiliac joint	3
Xu	Lumbar disc herniation	61 vs 63	56.0 (44.5–60.0) vs 56.0 (50.0–59.0)	28 vs 37	3 mL of PRP	2 ml betamethasone + 0.5 ml 0.9% sterile saline + 0.5 ml 2% lidocaine	Transforaminal	12
Won	Chronic non-specific low back pain	14 vs 16	51.0 ± 18.1 vs 50.5 ± 17.0	6 vs 6	5 – 6 mL of PRP, intradiscal	6 mL 0.5% lidocaine	Ligament and muscular	6
Ruiz-Lopez	Chronic degenerative spinal disease	25 vs 25	68 ± 13 .06 vs 61 ± 12 .60	11 vs 10	16.5 mL of PRP with 3.5 mL 0.9% sterile saline	60 mg of triamcinolone acetonide and 3.5 0.9% sterile saline	Epidural	6
Saraf	Discogenic Low Back Pain		NR	NR	PRP	CS	Transforaminal injections	6

RESULTS

- ❖ This meta-analysis included six articles, resulting in 178 cases and 173 controls.
- ❖ Patients in the case group underwent intradiscal, transforaminal, or epidural autologous PRP injections for chronic back pain.
- ❖ Control patients underwent corticosteroid and/or local anesthesia injections or only contrast agent injections at the correlating injection site.

Subjective pain report was evaluated with the Visual Analogue Score (VAS) or numerical pain scale at four weeks, three months, and six months. Disability score was reported with the Oswestry Disability Index (ODI) score at four weeks, three months, and six months.

- ❖ At four weeks, PRP worsened the pain score with no statistically significant difference (MD=0.19, 95%CI [-0.3762; 0.7636], P=0.505).
- ❖ At three months, PRP improved the pain level with a statistically significant difference at three months for the same sample size of cases and control (MD= -0.4851, 95%CI [-0.7797; -0.1906], P=0.001).
- ❖ After six months, the above-mentioned improvement was not statistically significant (MD=-0.0074, 95%CI [-1.3548; 1.3401], P=0.991), although follow-up after six months was reported in a smaller number of cases (N=129) and control (N=135).

Disability scoring was reported for 104 cases and 110 controls.

- ❖ At four weeks, there was a significant worsening of disability following PRP compared to the control group (MD=0.5316, 95%CI [0.0966; 0.9666], P=0.0166).
- ❖ After three months, PRP improved the disability, although there was no statistical significance (MD=-0.0836, 95%CI [-0.4421; 0.2749], P=0.647), same as follows up at six months (MD=-0.5821, 95%CI [-1.3328; 0.1685], P=0.128).

CONCLUSION

- ❖ After one month, PRP injection worsened pain level and disability for back pain compared to the control group.
- ❖ After three months, PRP improved both pain level and disability compared to local corticosteroids and/or local anesthesia.
- ❖ More randomized-controlled clinical trials with longer follow-up periods are needed to investigate the clinical significance of PRP injections in back pain.

REFERENCES

1. <https://www.cdc.gov/mmwr/volumes/72/wr/pdfs/mm7215a1-H.pdf>
2. Global, regional, and national incidence, prevalence, and years lived with disability for 354 diseases and injuries for 195 countries and territories, 1990–2017: a systematic analysis for the global burden of disease study 2017
3. V.J. Dzau, P.A. Pizzo Relieving pain in America: insights from an institute of medicine committee
4. W.F. Stewart, J.A. Ricci, E. Chee, D. Morganstein, R. Lipton Lost productive time and cost due to common pain conditions in the US workforce
- 5.Charalampos Pitsilos, et al, The Biological Effect of Platelet-Rich Plasma on Rotator Cuff Tears: A Prospective Randomized In Vivo Study. 2024 Jul 21, Int J Mol Sci

Contact

Mohamed Hesham El Refaey
SUNY Upstate Medical University Hospital
Email: Elrefaem@upstate.edu

