**ORIGINAL RESEARCH**

# Assessment of PRP and corticosteroids in management of knee osteoarthritis

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## ABSTRACT

**Background:**Millions of adults suffer with knee osteoarthritis (OA), which is characterized by severe pain, stiffness in the joints, and loss of function. The present study was conducted to compare PRP and corticosteroids in knee osteoarthritis. **Materials & Methods:**50 cases of knee osteoarthritis of both genderswere divided into 2 groups. Group I was PRP group (n = 25) who received an intra-articular injection of PRP (8 mL) and group II was corticosteroids (n = 25) group, in which patients received an intra-articular injection of triamcinolone acetonide (1 mL of 40 mg/mL) plus lidocaine (5 mL of 2%). The pain and function of the target knee were evaluated by the VAS, IKDC, and KSS scales at the baseline, 6 weeks, 28 weeks and 6 months after treatment. **Results:** Group I had 13 males and 12 females and group II had 11 males and 14 females. In group I and group II, KL degree II was seen among 7 and 9 and degree III among 18 and 16 patients. Left knee was involved in 8 and 10 patients and right knee in 17 and 15 patients. The difference was significant (P< 0.05).VAS at baselinein group I and group II was 6.4 and 6.1, at 6 weeks was 5.7 and 5.9, at 28 weeks was 4.2 and 4.8 and at 6 months was 2.5 and 3.6 respectively. IKDC at baseline was 36.4 and 30.5, at 6 weeks was 60.2 and 55.4, at 28 weeks was 65.3 and 48.6 and at 6 months was 62.1 and 38.4 respectively. KSS at baseline was 56.4 and 52.4, at 6 weeks was 60.2 and 67.4, at 28 weeks was 76.8 and 70.2 and at 6 months was 85.2 and 72.6 respectively. **Conclusion:** PRP intra-articular injection is safe, helps individuals with mild to moderate symptomatic knee OA, and improves knee function and short-term pain scores efficiently as compared to corticosteroids.

**Keywords:** Corticosteroids, knee osteoarthritis, PRP



## INTRODUCTION

Millions of adults suffer with knee osteoarthritis (OA), which is characterized by severe pain, stiffness in the joints, and loss of function. Even though more than 50% of patients with knee OA eventually have a total knee replacement, almost all of them will need long-term pain management.[1] Symptom relief and functional restoration by non-pharmacologic means, such as weight loss, exercise, physical therapy, and orthotic devices, are the first steps in standard treatment. Pharmacologic analgesics are more often used in conjunction with these treatments since they frequently offer only partial pain relief.[2]

Topical and oral NSAIDs, viscosupplements, intra-articular (IA) corticosteroid injections, and blood-derived products, such as platelet-rich plasma (PRP)which is strongly advised in cases where oral analgesics or anti-inflammatories are ineffective in relieving disease symptoms- are among the pharmacological treatments available.[3] In order to relieve moderate to severe pain in individuals with OA, intra-articular (IA) infiltration of corticosteroids is thought to be a useful complement to core treatment.[4] However, this method is not very effective at slowing the course of the disease, and it may have unfavorable side effects if used frequently and in high quantities.

PRP is proposed as a potential treatment, capable of improving the clinical condition of patients with osteoarthritis.[5] A limited number of publications in PRP, in which PRP has been compared to corticosteroid for the treatment of early knee OA, are available in the literature.[6]The present study was conducted to compare PRP and corticosteroidsin knee osteoarthritis.

## MATERIALS & METHODS

The present study consisted of 50 cases of knee osteoarthritisof both genders. All gave their written consent to participate in the study.

Data such as name, age, gender etc. was recorded. Patients were divided into 2 groups. Group I was PRP group (n = 25) who received an intra-articular injection of PRP (8 mL) andgroup II was corticosteroids(n = 25) group, in which patients received an intra-articular injection of triamcinolone acetonide (1 mL of 40 mg/mL) plus lidocaine (5 mL of 2%). The pain and function of the target knee were evaluated by the VAS, IKDC, and KSS scales at the baseline, 6 weeks, 28 weeks and 6 months after treatment.Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

## RESULTS

**Table I Distribution of patients**

| Groups | Group I | Group II |
|---|---|---|
| Method | PRP | corticosteroids |
| M:F | 13:12 | 11:14 |

Table I shows that group I had 13 males and 12 females and group II had 11 males and 14 females.

**Table II Assessment of parameters**

| Parameters | Variables | Group I | Group II | P value |
|---|---|---|---|---|
| KL degree | II | 7 | 9 | 0.02 |
| | III | 18 | 16 | |
| Knee | Left | 8 | 10 | 0.05 |
| | Right | 17 | 15 | |

Table II shows that in group I and group II, KL degreeII was seen among 7 and 9 and degree III among 18 and 16 patients. Left knee was involved in 8 and 10 patients and right knee in 17 and 15 patients. The difference was significant (P< 0.05).

**Graph I Assessment of parameters**

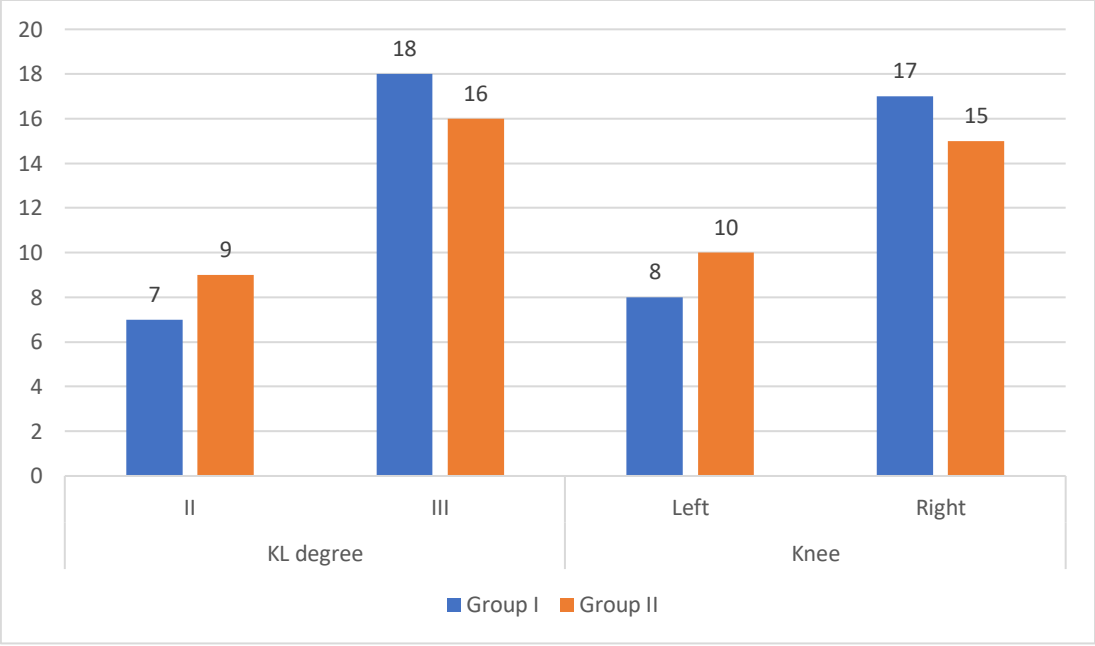


**Table III Comparison of VAS, IKDC and KSS**

| Parameters | Variables | Group I | Group II | P value |
|---|---|---|---|---|
| VAS | Baseline | 6.4 | 6.1 | 0.05 |
| | 6 weeks | 5.7 | 5.9 | |
| | 28 weeks | 4.2 | 4.8 | |
| | 6 months | 2.5 | 3.6 | |
| IKDC | Baseline | 36.4 | 30.5 | 0.04 |
| | 6 weeks | 60.2 | 55.4 | |
| | 28 weeks | 65.3 | 48.6 | |
| | 6 months | 62.1 | 38.4 | |
| KSS | Baseline | 56.4 | 52.4 | 0.01 |

| | | | | |
|---|---|---|---|---|
| | 6 weeks | 60.2 | 67.4 | |
| | 28 weeks | 76.8 | 70.2 | |
| | 6 months | 85.2 | 72.6 | |

Table III shows that VAS at baseline in group I and group II was 6.4 and 6.1, at 6 weeks was 5.7 and 5.9, at 28 weeks was 4.2 and 4.8 and at 6 months was 2.5 and 3.6 respectively. IKDC at baseline was 36.4 and 30.5, at 6 weeks was 60.2 and 55.4, at 28 weeks was 65.3 and 48.6 and at 6 months was 62.1 and 38.4respectively.KSS at baseline was 56.4 and 52.4, at 6 weeks was 60.2 and 67.4, at 28 weeks was 76.8 and 70.2 and at 6 months was 85.2 and 72.6respectively.

## DISCUSSION

A degenerative joint condition that affects the knee joint is called osteoarthritis (OA). It is a common disorder that often affects elderly folks, although younger people with knee injuries or other medical conditions that affect the knee joint may also be affected.[7,8] The degeneration of the cartilage that cushions the bones in the knee joint is the hallmark of osteoarthritis (OA), resulting in pain, stiffness, and swelling.[9,10] Individual differences exist in the signs and symptoms of osteoarthritis (OA), but commonly observed indications include pain in the knee joint, particularly during walking, climbing stairs, or standing up from a sitting position; stiffness in the knee joint, particularly in the morning or after prolonged sitting; and swelling and tenderness.[11,12]The present study was conducted to compare PRP and corticosteroids in knee osteoarthritis.

We found that group I had 13 males and 12 females and group II had 11 males and 14 females.Elksniņš-Finogejevs A et al[13]in their study twenty patients from the PRP group (n = 20) received an intra-articular injection of PRP (8 mL) for their forty patients with symptomatic, radiologically confirmed knee osteoarthritis (Kellgren-Lawrence grades II–III). Patients from the CS group (n = 20) received an intra-articular injection of triamcinolone acetonide (1 mL of 40 mg/mL) plus lidocaine (5 mL of 2%). The VAS, IKDC, and KSS scales were assessed. During the follow-up period, no significant side effects were noted. Within the first week following treatment, 15 patients (75%) in the PRP group had minor synovitis.During the brief follow-up visit (1 week), both treatments were successful in reducing pain and enhancing knee function. Up to five weeks, both groups' subjective scores showed a significant improvement; there were no significant differences between the groups' VAS, IKDC, or KSS scores. When compared to the CS group, the PRP group demonstrated significant improvements in all scores after a 15-week follow-up. In a longer follow-up visit (up to a year), patients who had PRP treatment generally fared better than those who received CS.

We observed that in group Iand group II, KL degree II was seen among 7 and 9 and degree III among 18 and 16 patients. Left knee was involved in 8 and 10 patients and right knee in 17 and 15 patients. Bellamy et al[14] in their study twenty-eight trials (1973 participants) compared IA corticosteroid against placebo, against IA hyaluronan/hylan (HA products), against joint lavage, and against other IA corticosteroids, were included.IA corticosteroid was more effective than IA placebo for pain reduction (WMD -21.91; 95% confidence interval (CI) -29.93 to -13.89) and patient global assessment (the RR was 1.44 (95% CI 1.13 to 1.82)) at one week post injection with an NNT of 3 to 4 for both, based on n=185 for pain on 100 mm visual analogue scale (VAS) and n=158 for patient global assessment. Data on function were sparse at one week post injection and neither statistically significant nor clinically important differences were detected. There was evidence of pain reduction between two weeks (the RR was 1.81 to three weeks but a lack of evidence for efficacy in functional improvement.There was little evidence of an impact on pain or function four to 24 weeks after the injection (limited studies revealed advantages that did not approach statistical or clinical value, i.e. less than 20% risk difference). Three studies consistently demonstrated no effect for patients worldwide more than a week after injection. All of the sample sizes, nevertheless, were somewhat small—less than 50 patients in each group.

We found that VAS at baselinein group I and group II was 6.4 and 6.1, at 6 weeks was 5.7 and 5.9, at 28 weeks was 4.2 and 4.8 and at 6 months was 2.5 and 3.6 respectively. IKDC at baseline was 36.4 and 30.5, at 6 weeks was 60.2 and 55.4, at 28 weeks was 65.3and 48.6 and at 6 months was 62.1 and 38.4 respectively. KSS at baseline was 56.4 and 52.4, at 6 weeks was 60.2 and 67.4, at 28 weeks was 76.8 and 70.2 and at 6 months was 85.2 and 72.6 respectively. Di Martino et al[15]compared the long-term clinical outcomes provided by intra-articular injections of either PRP or hyaluronic acid (HA) to treat knee degenerative disease.Both treatments were effective in improving knee functional status and symptoms over time: Mean ± SD IKDC subjective score improved significantly for both PRP and HA groups and remained stable over time up to 24 months (from 53.3 ± 14.3 to 67.3 ± 18.1 and from 50.3 ± 13.2 to 62.1 ± 20.8 for PRP and HA groups, respectively). At final evaluation, a significant IKDC reduction was observed in both treatment groups, with the PRP group still presenting significantly higher values compared with baseline: PRP 60.5 ± 19.0 ($P < .001$ vs baseline), HA 55.7 ± 18.8 (not significant vs baseline). A comparative analysis showed no significant intergroup difference in any of the clinical scores at any follow-up point. The median duration of patient subjective perception of symptomatic relief was 9 months for HA and 12 months for PRP (not

significant). The only significant difference was observed in the rate of reintervention at 24 months, which was significantly lower in the PRP group (22.6% vs 37.1%, P = .036).
The limitation of the study is the small sample size.

## CONCLUSION

Authors found that PRP intra-articular injection is safe, helps individuals with mild to moderate symptomatic knee OA, and improves knee function and short-term pain scores efficiently as compared to corticosteroids.

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