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Research Article

Efficacy of Platelet-Rich Plasma Vs Corticosteroid Injection in Biceps Tendinitis: A Prospective Comparative Study

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ABSTRACT

Introduction: Biceps tendinitis is a common cause of anterior shoulder pain. Corticosteroids provide short-term relief but may impair tendon healing. Platelet-rich plasma (PRP), rich in growth factors, offers a regenerative alternative.

Objective: To compare the efficacy of PRP versus corticosteroid injections in managing biceps tendinitis over 12 weeks.

Methods: A prospective comparative study was conducted on 40 patients diagnosed with biceps tendinitis. Participants received either PRP (n=20) or corticosteroid (n=20) injections under ultrasound guidance. Pain, function, and mobility were assessed using the Visual Analog Scale (VAS), Shoulder Pain and Disability Index (SPADI), and Range of Motion (ROM) at 0, 4, 8, and 12 weeks.

Results: Both groups showed significant improvement in all parameters. At 12 weeks, PRP group had significantly lower VAS scores (1.15 vs. 2.45, $p < 0.001$) and higher ROM (138.9° vs. 130.15°, $p = 0.02$). SPADI scores were comparable between groups.

Conclusion: PRP provided superior pain relief and mobility improvement compared to corticosteroids. PRP, being autologous and regenerative, is a promising option for long-term management of biceps tendinitis.

Keywords: Biceps Tendinitis, PRP, Corticosteroid Injection, Shoulder Pain, VAS, SPADI, Regenerative Therapy.

INTRODUCTION

Anterior shoulder pain is often caused by biceps tendinitis, specifically involving long head of the biceps tendon (LHBT). Because the LHBT enters the shoulder joint through the bicipital groove, it is vulnerable to inflammation and mechanical stress, especially in people who perform repetitive overhead tasks [1]. Athletes, manual laborers, and the elderly are all susceptible to this illness because of degenerative changes and usage [2]. Localized tenderness over the bicipital groove, pain upon resisted elbow flexion or supination, and discomfort during overhead shoulder movements are common symptoms of biceps tendinitis [3]. Its diagnosis and treatment are made more difficult by the fact that the illness frequently coexists with other shoulder pathologies such subacromial impingement or rotator cuff tendinopathy.

The first line of treatment is still conservative management, which includes activity restriction, NSAIDs, rest, and physiotherapy. However, injectable treatments are taken into consideration when symptoms last longer than six weeks [4]. Because of their strong anti-inflammatory properties, corticosteroid injections have been a popular choice among these. By blocking phospholipase A2, they reduce the release of pro-inflammatory mediators and cytokines [5]. Numerous studies have demonstrated that frequent use may hinder tendon repair and raise the risk of tendon rupture, despite the fact that they provide quick pain relief [6].

On the other hand, Platelet-Rich Plasma (PRP) injections are becoming a more popular regeneration therapy choice. PRP is an autologous concentration of platelets made from the patient's own blood that has high concentrations of growth factors that help heal

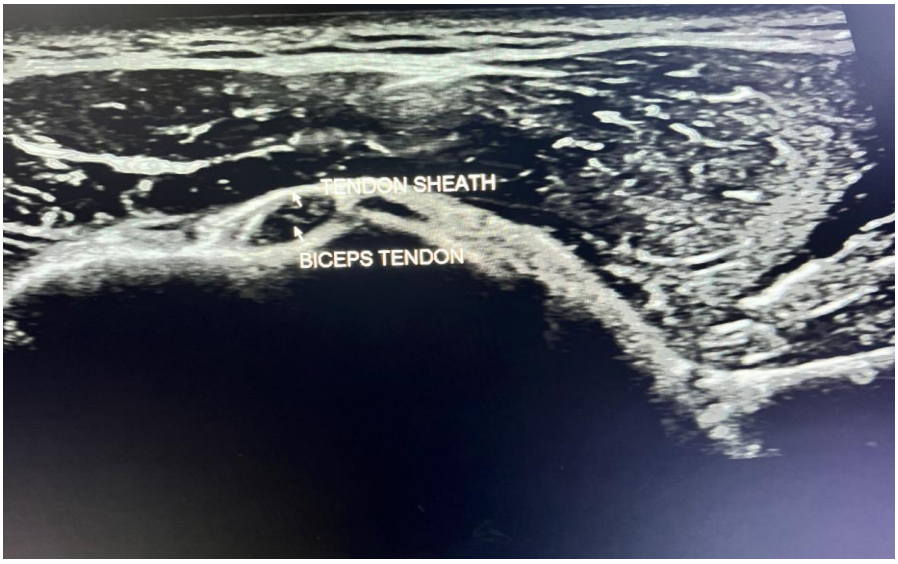
and repair tissue, such as vascular endothelial growth factor (VEGF), transforming growth factor-beta (TGF-β), and platelet-derived growth factor (PDGF) [7]. In contrast to corticosteroids, PRP seeks to support tendon regeneration and functional restoration in addition to symptom relief [8].

According to recent research, PRP may offer better long-term results than corticosteroids, especially in cases of chronic tendinopathies [9]. There aren't many studies that compare PRP and corticosteroids specifically for biceps tendinitis, though. According to some data, PRP may provide longer-lasting advantages with fewer adverse effects, although corticosteroids may provide quicker symptom alleviation [10].

MATERIALS AND METHODS

This was a prospective comparative study conducted over 18 months in the Department of Orthopaedics, PESIMSR Hospital, Kuppam.

Adults aged 18–65 years with clinical and sonographic evidence of biceps tendinitis unresponsive to conservative management were included. Patients with rotator cuff tears, shoulder fractures, systemic inflammatory conditions, or previous injections/surgeries were excluded.



Ultrasound image of Long Head of Biceps Tendon along the Sheath

PRP Group (n=20): 3–5 mL of autologous PRP was injected into the bicipital groove under ultrasound guidance.

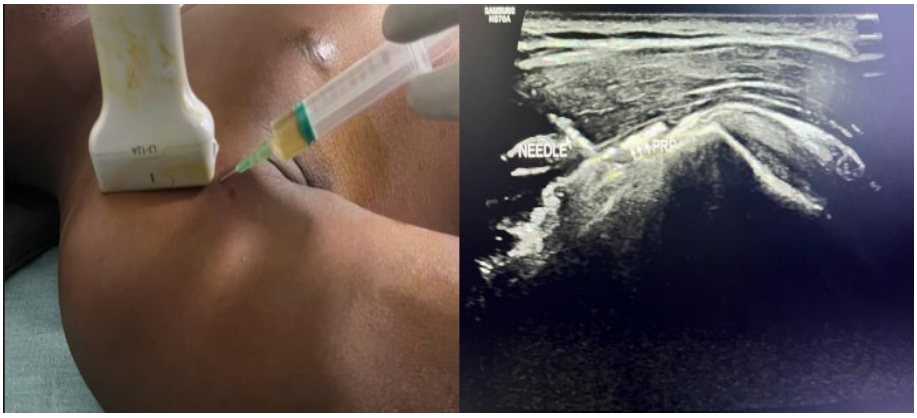


Image Showing Ultrasound Guided PRP Infiltration

Steroid Group (n=20): 2 mL of triamcinolone acetonide (40 mg/mL) + 3 mL lignocaine was injected under ultrasound guidance.

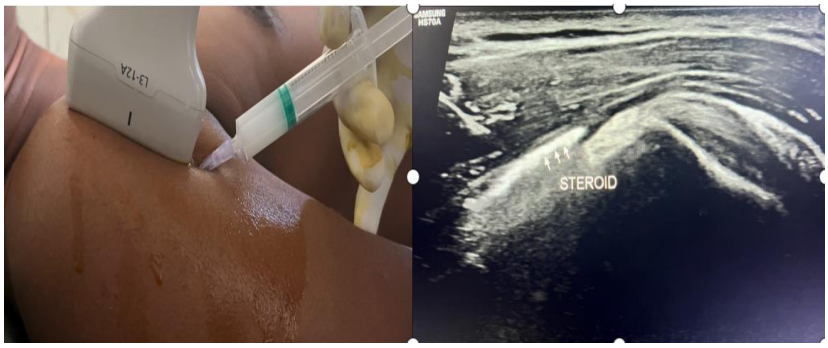


Image Showing Ultrasound Guided Steroid Infiltration

Outcome Measures
- VAS (0–10): Pain intensity
- SPADI (0–100): Pain and disability index
- ROM (°): Forward shoulder flexion

Assessments were done at baseline (0 weeks), and at 4, 8, and 12 weeks.

SPSS v25.0 was used. Paired and unpaired t-tests were applied. $p < 0.05$ was considered statistically significant.

RESULTS

The groups were statistically comparable in age, gender, duration of symptoms, and baseline scores (VAS, SPADI, ROM).

At 12 weeks

PRP Group
- VAS: 1.15
- SPADI Pain: 11.55
-SPADI Disability: 10.50
- ROM: 138.9

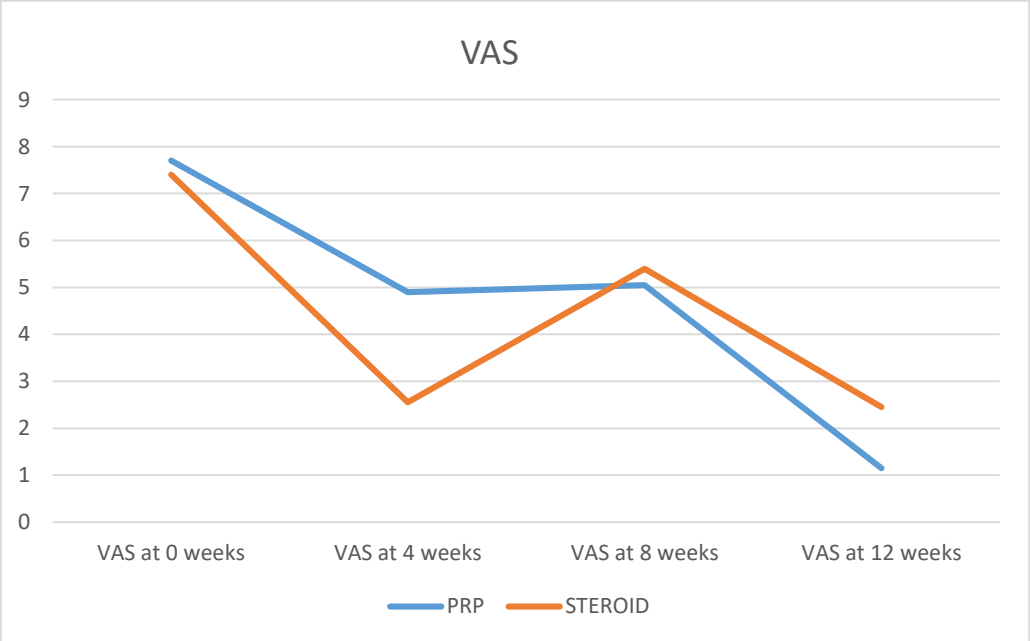


Chart Showing Mean VAS over 0 weeks, 4 weeks, 8 weeks and 12 weeks

Steroid Group
- VAS: 2.45
-SPADI Pain: 11.60
-SPADI Disability:10.35
-ROM: 130.15°

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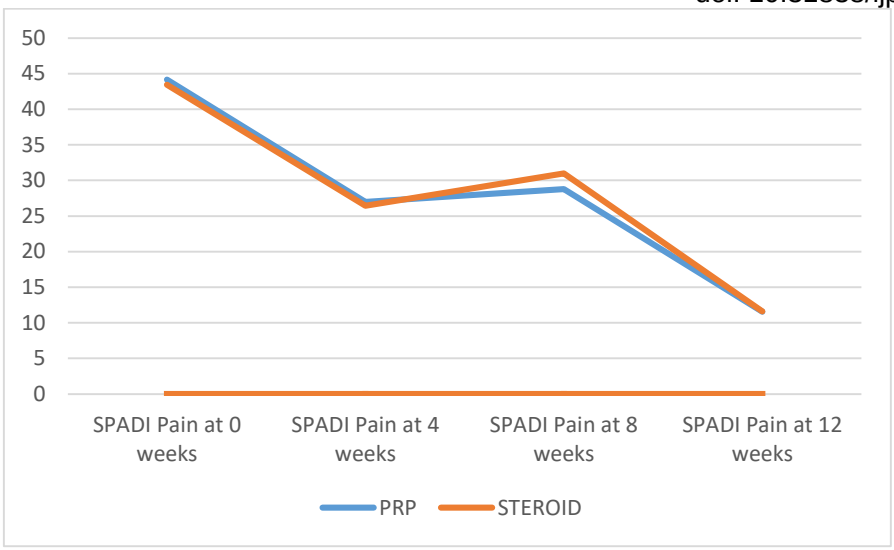

Chart 20. Showing Mean SPADI Pain At 0 Weeks , 4 Weeks , 8 Weeks And 12 Weeks

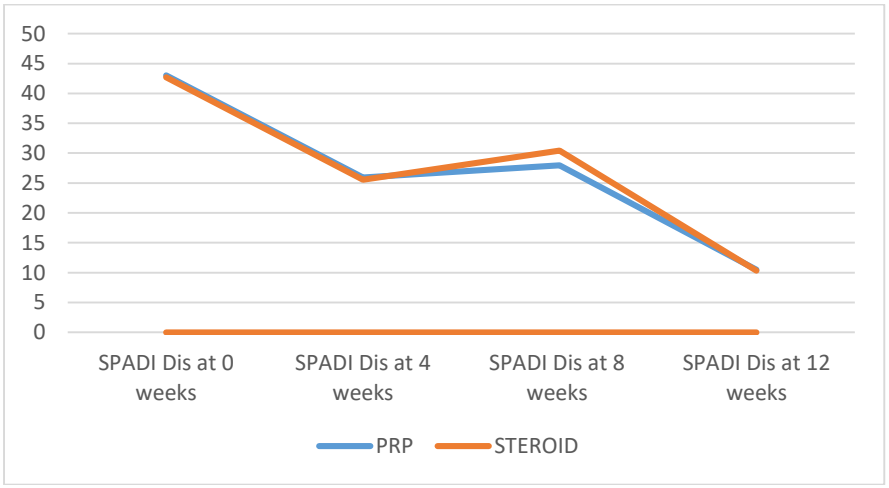

Chart Showing Mean SPADI Disability at 0 weeks, 4 weeks, 8 weeks and 12 weeks

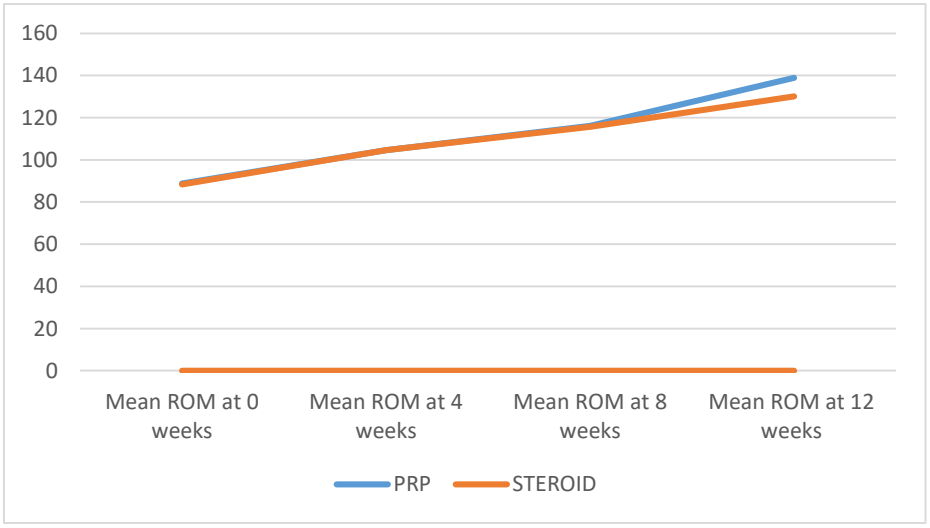

Chart Showing Mean ROM At 0 Weeks , 4 Weeks , 8 Weeks And 12 Weeks

PRP group showed significantly better pain relief and mobility. Both groups had comparable functional improvement (SPADI). No major adverse effects occurred.

DISCUSSION

This study shows that while corticosteroids provide faster short-term relief, PRP offers greater and more sustained improvements in

pain and shoulder mobility at 12 weeks [11,12]
Our findings align with earlier studies. Ahmed et al. and Tei et al [13,14]. Demonstrated that PRP is more effective than corticosteroids for long-term tendon healing. Corticosteroids can inhibit tenocyte proliferation and impair collagen structure, whereas PRP enhances cellular regeneration and matrix remodeling [15].

PRP's autologous nature also minimizes the risk of systemic reactions or infections. Its safety and regenerative profile make it preferable for chronic cases[15].

CONCLUSION

Both PRP and corticosteroid injections are effective in treating biceps tendinitis. However, PRP offers superior long-term relief in pain and shoulder mobility, with fewer risks. PRP is a safe and effective alternative, particularly suitable for patients with chronic or recurrent tendinitis.

Declarations

Ethics Approval

Approved by PESIMSR Ethics Committee

Informed Consent

Obtained from all participants

Conflict of Interest

None

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