ORIGINAL RESEARCH

Intra articular autologous platelet rich plasma injection in the management of adhesive capsulitis of shoulder joint

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ABSTRACT
Background: Capsulitis of the shoulder joint, also known as adhesive capsulitis or frozen shoulder, is a condition characterized by pain and stiffness in the shoulder joint. The present study was conducted to assess intra articular autologous platelet rich plasma injection in the management of adhesive capsulitis of shoulder joint. **Materials & Methods:**72 patients with capsulitis of shoulder joint of both genders were administered PRP injection. Patients were followed up for 2 weeks, 4 weeks, 8 weeks and 6 months post injection. DASH, VAS and ROM were recorded. **Results:** Out of 72 patients, males were 40 and females were 32.DASH score at 2 weeks was 76.2, at 4 weeks was 67.4, at 8 weeks was 46.2 and at 6 months was 20.8. The difference was significant (P< 0.05).VAS at 2 weeks was 6.1, at 4 weeks was 4.2, at 8 weeks was 3.1 and at 6 months was 1.8. The difference was significant (P< 0.05). The mean external rotation (degrees) at 2 weeks was 12.1, at 4 weeks was 23.2, at 8 weeks was 34.5 and at 6 vmonths was 42.6. The mean abduction at 2 weeks was 42.8, at 4 weeks was 68.2, at 8 weeks was 102.5 and at 6 months was 128.6. Internal rotation at 2 weeks was 14.2, at 4 weeks was 21.5, at 8 weeks was 32.7 and at 6 months was 38.4. The difference was significant (P< 0.05). **Conclusion:** There was significant improvement with PRP in pain in terms of DASH, VAS and functionalROM in patients with adhesive capsulitis.
Keywords: Capsulitis, shoulder joint, DASH

INTRODUCTION

Capsulitis of the shoulder joint, also known as adhesive capsulitis or frozen shoulder, is a condition characterized by pain and stiffness in the shoulder joint. It typically develops gradually over time and can significantly limit the range of motion and function of the shoulder.[1] The shoulder joint is a ball-and-socket joint formed by the head of the humerus (upper arm bone) and the glenoid cavity of the scapula (shoulder blade).Surrounding the shoulder joint is a fibrous capsule, which provides stability to the joint and is lined with synovial fluid to lubricate and nourish the joint structures.[2]

The exact cause of capsulitis of the shoulder joint is not fully understood, but it is believed to involve inflammation and thickening of the joint capsule, leading to adhesions and stiffness.[3]Risk factors for developing shoulder capsulitis include age (more common in individuals aged 40-60), gender (more common in women), certain medical conditions (such as diabetes, thyroid disorders, or heart disease), shoulder trauma or injury, prolonged immobilization or lack of use of the shoulder, and certain genetic factors.The hallmark symptom of shoulder capsulitis is pain and progressive stiffness in the shoulder joint.[4]The pain is typically diffuse and may be worse at night, especially when lying on the affected side.Stiffness in the shoulder joint gradually worsens over time and may limit the ability to perform daily activities, such as reaching overhead, dressing, or sleeping comfortably.[5]Platelet-rich plasma (PRP) therapy is a regenerative treatment that has been explored for various musculoskeletal conditions, including capsulitis of the shoulder joint.[6] PRP contains a higher concentration of platelets and growth factors derived from the patient's own blood, which are believed to promote tissue healing and reduce inflammation.[7]The present study was conducted to assess intra articular autologous platelet rich plasma injection in the management of adhesive capsulitis of shoulder joint.

MATERIALS & METHODS

The present study consisted of 72 patients with capsulitis of shoulder jointof both genders. All gave their written consent to participate in the study.

Data such as name, age, gender etc. was recorded. 20 mL of autologous blood were placed in an ACD tube and centrifuged for 10 minutes at 2400 RPM. Following erythrocyte separation, PRP is transferred to a new tube and centrifuged once more for 15 minutes at 3600 RPM. The extracted PRP is then administered by injection.Patients were followed up for 2 weeks, 4 weeks, 8 weeks and 6 months post injection. DASH, VAS and ROM were recorded. Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Total- 72		
Gender	**Male**	**Female**
Number	40	32

Table I shows that out of 72 patients, males were 40 and females were 32.

Table II Assessment of DASH

Period	DASH Score	P value
2 weeks	76.2	0.01
4 weeks	67.4	
8 weeks	46.2	
6 months	20.8	

Table II, graph I shows that DASH score at 2 weeks was 76.2, at 4 weeks was 67.4, at 8 weeks was 46.2 and at 6 months was 20.8. The difference was significant (P< 0.05).

Graph I Assessment of DASH

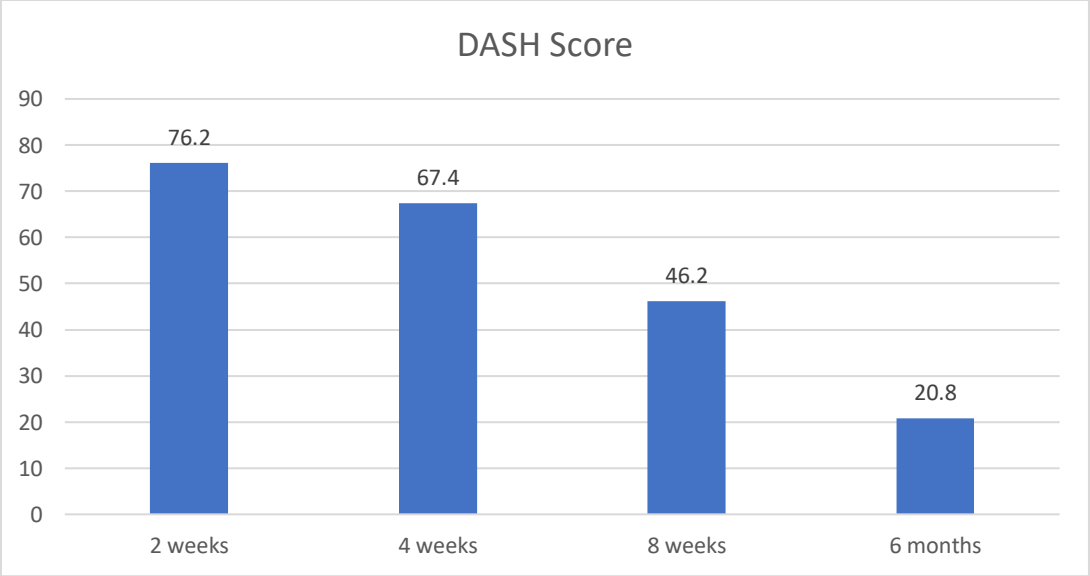

Table III Comparison of VAS

Period	VAS	P value
2 weeks	6.1	0.01
4 weeks	4.2	
8 weeks	3.1	
6 months	1.8	

Table III shows that VAS at 2 weeks was 6.1, at 4 weeks was 4.2, at 8 weeks was 3.1 and at 6 months was 1.8. The difference was significant (P< 0.05).

Table IV Assessment of ROM

ROM	Period	Degree	P value
External rotation	2 weeks	12.1	0.04
	4 weeks	23.2	

	8 weeks	34.5	
	6 months	42.6	
Abduction	2 weeks	42.8	0.02
	4 weeks	68.2	
	8 weeks	102.5	
	6 months	128.6	
Internal rotation	2 weeks	14.2	0.04
	4 weeks	21.5	
	8 weeks	32.7	
	6 months	38.4	

Table IV shows that mean external rotation(degrees) at 2 weeks was 12.1, at 4 weeks was 23.2, at 8 weeks was 34.5 and at 6 months was 42.6. The mean abduction at 2 weeks was 42.8, at 4 weeks was 68.2, at 8 weeks was 102.5 and at 6 months was 128.6. Internal rotation at 2 weeks was 14.2, at 4 weeks was 21.5, at 8 weeks was 32.7 and at 6 months was 38.4. The difference was significant (P< 0.05).

DISCUSSION

PRP therapy is generally considered safe, as it involves the use of the patient's own blood, which reduces the risk of allergic reactions or transmission of infections.[8, 9] However, as with any medical procedure, there is a potential for side effects such as pain at the injection site, temporary swelling, bruising, or infection.[10,11]Overall, PRP therapy may be considered as a potential treatment option for capsulitis of the shoulder joint, particularly in cases where conservative measures have failed to provide adequate relief.[12]The present study was conducted to assess intra articular autologous platelet rich plasma injection in the management of adhesive capsulitis of shoulder joint.

We found that out of 72 patients, males were 40 and females were 32. Kelkar et al[13]evaluated the efficacy of single intra-articular platelet rich plasma injection in the patients with adhesive capsulitis. The study was conducted in thirty patients having established adhesive capsulitis of shoulder joint allocated for intra-articular injection of platelet rich plasma in the shoulder through anterior approach. All the concerned patients assessed pre-operative and post-operative period by using DASH, VAS and ROM at regular intervals. The study resulted in statistically significant improvement in pain in terms of DASH, VAS and functional ROM in patients with adhesive capsulitis.

We found that DASH score at 2 weeks was 76.2, at 4 weeks was 67.4, at 8 weeks was 46.2 and at 6 months was 20.8. We found that VAS at 2 weeks was 6.1, at 4 weeks was 4.2, at 8 weeks was 3.1 and at 6 months was 1.8. We found that mean external rotation (degrees) at 2 weeks was 12.1, at 4 weeks was 23.2, at 8 weeks was 34.5 and at 6 months was 42.6. The mean abduction at 2 weeks was 42.8, at 4 weeks was 68.2, at 8 weeks was 102.5 and at 6 months was 128.6. Internal rotation at 2 weeks was 14.2, at 4 weeks was 21.5, at 8 weeks was 32.7 and at 6 months was 38.4. Campbell et al[14] compared outcomes of treatment with intra-articular platelet-rich plasma (IA-PRP) versus control (intra-articular hyaluronic acid or intra-articular placebo). Use of PRP led to significant improvements in patient outcomes at 6 months after injection, and these improvements were seen starting at 2 months and were maintained for up to 12 months. It is unclear if the use of multiple PRP injections, the double-spinning technique, or activating agents leads to better outcomes. Patients with less radiographic evidence of arthritis benefit more from PRP treatment. The use of multiple PRP injections may increase the risk of self-limited local adverse reactions. After application of the Jadad algorithm, 3 concordant high-quality meta-analyses were selected and all showed that IA-PRP provided clinically relevant improvements in pain and function compared with the control treatment.

The limitation of the study is the small sample size.

CONCLUSION

Authors found that there was significant improvement with PRP in pain in terms of DASH, VAS and functional ROM in patients with adhesive capsulitis.

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