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STUDY OF THE EFFECTIVENESS OF PLASMOLIFTING IN CHRONIC LOW BACK PAIN

Foziljonov Raxmatjon Xikmatjon ugli

Chief physician of the clinic "A-Doctor-A" Fergana city

Abstract: Chronic low back pain (CLBP) is a prevalent musculoskeletal disorder that significantly reduces quality of life and functional capacity. Conventional therapies, including physiotherapy and pharmacological treatment, often provide limited and temporary relief. Plasma lifting, also known as platelet-rich plasma (PRP) therapy, is a regenerative approach that utilizes autologous plasma enriched with platelets and growth factors to stimulate tissue repair and modulate inflammatory responses. This study aimed to evaluate the effectiveness of plasma lifting in patients with CLBP. Sixty patients were divided into two groups: one received plasma lifting in addition to standard therapy, while the control group received only standard therapy. Pain intensity and functional outcomes were assessed using the Visual Analog Scale (VAS) and Oswestry Disability Index (ODI) over six months. Results demonstrated that plasma lifting significantly reduced pain and improved functional mobility compared to the control group. The procedure was well-tolerated with minimal adverse effects. These findings suggest that plasma lifting is an effective, safe, and minimally invasive intervention for chronic low back pain, supporting its incorporation into comprehensive treatment strategies.

Keywords: Chronic low back pain, plasma lifting, platelet-rich plasma, regenerative therapy, pain management, functional recovery.

Introduction

Chronic low back pain (CLBP) is one of the most common musculoskeletal disorders affecting people of all ages and occupations worldwide. It represents a major public health issue, leading to decreased quality of life, limited mobility, work absenteeism, and significant socioeconomic burden. According to the World Health Organization (WHO), nearly 80% of adults experience low back pain at some point in their lives, and a substantial proportion of these cases develop into chronic conditions lasting more than 12 weeks.

Traditional management of chronic low back pain includes pharmacological therapy (analgesics, nonsteroidal anti-inflammatory drugs, muscle relaxants), physical therapy, and, in some cases, surgical intervention. However, these methods often provide only temporary relief and may be associated with side effects or complications. Therefore, there is a growing interest in regenerative medicine techniques that aim to restore damaged tissues and improve functional outcomes.

Plasmolifting, also known as platelet-rich plasma (PRP) therapy, is a modern regenerative procedure that involves the injection of autologous plasma enriched with platelets and growth factors into the affected area. Platelets release bioactive molecules such as platelet-derived growth factor (PDGF), transforming growth factor-beta (TGF-β), and vascular endothelial growth factor (VEGF), which stimulate tissue regeneration, angiogenesis, and anti-inflammatory responses.

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Recent studies have demonstrated that PRP or plasmolifting can reduce pain intensity, improve spinal mobility, and accelerate tissue healing in patients with chronic musculoskeletal disorders, including degenerative disc disease and facet joint syndrome. However, despite its increasing use, the effectiveness of plasmolifting in chronic low back pain remains a subject of ongoing research and clinical evaluation.

This study aims to assess the effectiveness of plasmolifting in patients with chronic low back pain by analyzing clinical outcomes such as pain reduction, functional improvement, and quality of life enhancement following treatment. The findings may contribute to developing evidence-based recommendations for incorporating plasmolifting into the complex management of chronic back pain.

Materials and Methods

This prospective clinical study was conducted to evaluate the therapeutic effectiveness of plasma lifting in patients with chronic low back pain. The study included 60 participants aged between 25 and 65 years, all of whom had experienced nonspecific low back pain for more than three months. Participants were recruited from the rehabilitation and orthopedic departments of a multidisciplinary medical center, and all subjects provided informed consent prior to participation.

Patients were divided into two groups. The main group (30 patients) received plasma lifting therapy in addition to standard physiotherapeutic treatment, while the control group (30 patients) received only standard physiotherapy and analgesic treatment without plasma therapy.

Autologous platelet-rich plasma (PRP) was obtained by drawing 15–20 mL of venous blood from each patient, which was then centrifuged at 4000 rpm for 10 minutes. The resulting plasma, rich in platelets and growth factors, was injected into the lumbar paravertebral region under aseptic conditions. The procedure was repeated once every two weeks for a total of three sessions.

Pain intensity was assessed using the Visual Analog Scale (VAS), and functional ability was measured using the Oswestry Disability Index (ODI). Assessments were conducted at baseline, and then one, three, and six months after treatment.

Data were analyzed using SPSS version 26.0. The results were presented as mean ± standard deviation. Statistical significance was determined using the Student's t-test, with $p < 0.05$ considered significant.

Results

The study demonstrated a significant improvement in both pain intensity and functional status among patients who received plasma lifting therapy compared to the control group. At baseline, the mean Visual Analog Scale (VAS) score was similar between the two groups. However, by the third and sixth months, a marked reduction in pain scores was observed in the plasma lifting group. Similarly, the Oswestry Disability Index (ODI) showed notable improvement, indicating enhanced mobility and quality of life.

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After one month of therapy, the VAS score in the plasma lifting group decreased by an average of 38%, while in the control group, the reduction was only 15%. By the third month, the plasma lifting group showed a 62% reduction in pain intensity, whereas the control group improved by 32%. At six months, sustained improvement was maintained in the plasma lifting group, with minimal recurrence of pain symptoms.

The ODI results also supported the superior outcomes of plasma therapy. Patients in the plasma lifting group demonstrated a 55% improvement in daily activity performance, compared to 28% in the control group. No severe adverse effects were observed in any of the participants, except for mild local discomfort at the injection site, which resolved spontaneously within 24 hours.

Table 1. Comparison of Pain and Functional Improvement Between Study Groups

Parameter	Group	Baseline (Mean ± SD)	1 Month	3 Months	6 Months	p-value
VAS score (0–10)	Plasma Lifting Group	7.8 ± 1.1	4.8 ± 1.0	3.0 ± 0.9	2.9 ± 0.8	<0.05*
	Control Group	7.6 ± 1.0	6.5 ± 1.2	5.1 ± 1.0	4.8 ± 0.9	
ODI (%)	Plasma Lifting Group	62 ± 8	43 ± 7	28 ± 6	27 ± 5	<0.05*
	Control Group	61 ± 7	53 ± 8	44 ± 7	43 ± 6	

*Statistically significant difference ($p < 0.05$) between groups.

Overall, plasma lifting significantly reduced pain severity and improved lumbar function over time, demonstrating greater clinical effectiveness compared to conventional therapy alone.

Discussion

The results of this study indicate that plasma lifting is an effective therapeutic intervention for patients with chronic low back pain. The significant reduction in pain intensity (VAS) and improvement in functional status (ODI) observed in the plasma lifting group can be attributed to the regenerative properties of platelet-rich plasma. PRP contains a high concentration of growth factors such as platelet-derived growth factor (PDGF), transforming growth factor-beta (TGF-β), and vascular endothelial growth factor (VEGF), which stimulate tissue repair, promote angiogenesis, and modulate inflammatory responses.

Compared to conventional therapy alone, plasma lifting showed faster and more sustained pain relief. Within the first month, patients reported a marked decrease in pain, suggesting an early onset of therapeutic effects. By the third and sixth months, improvements were further enhanced, indicating long-term benefits in both symptom relief and functional recovery. These

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findings are consistent with previous studies reporting that PRP injections can accelerate healing in degenerative disc disease, facet joint syndrome, and other musculoskeletal disorders.

Moreover, plasma lifting demonstrated a favorable safety profile. No severe adverse effects were reported, and only mild, transient discomfort at the injection site was observed. This supports the suitability of PRP as a minimally invasive, low-risk treatment option for chronic low back pain, especially for patients who have limited response to pharmacological and physiotherapeutic interventions.

The study also emphasizes the importance of integrating regenerative therapies into comprehensive treatment plans for CLBP. By combining plasma lifting with standard physiotherapy, patients can achieve better outcomes in pain management, functional mobility, and quality of life. However, further large-scale randomized controlled trials are needed to establish standardized protocols, optimal dosing, and long-term efficacy of plasma lifting in chronic low back pain management.

Conclusion

This study demonstrates that plasma lifting is a highly effective and safe intervention for patients with chronic low back pain. Compared to conventional therapy alone, plasma lifting significantly reduces pain intensity, improves functional mobility, and enhances overall quality of life. The regenerative properties of platelet-rich plasma, including the release of growth factors and modulation of inflammatory processes, likely contribute to the observed clinical benefits.

Plasma lifting showed rapid onset of pain relief within the first month and maintained sustained improvement over six months, highlighting its potential for long-term management of chronic low back pain. The procedure was well-tolerated, with only minor transient discomfort at the injection site, confirming its safety as a minimally invasive therapeutic option.

Incorporating plasma lifting into comprehensive treatment plans for chronic low back pain may provide superior outcomes compared to standard physiotherapy and pharmacological interventions alone. Further large-scale, randomized studies are recommended to optimize treatment protocols, determine long-term efficacy, and establish standardized guidelines for clinical practice.

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