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MANAGEMENT STRATEGIES FOR TENNIS ELBOW

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Abstract

This prospective cohort study evaluated the efficacy of three different treatment modalities for tennis elbow in 250 patients at the Physical Medicine and Rehabilitation Outpatient Department of Patna Medical College and Hospital over 18 months from June 2022 to January 2024. Participants were assigned to either Physical Therapy, Pharmacological Management, or Advanced Therapy groups, with outcomes assessed through changes in Visual Analog Scale (VAS) scores, Patient-Rated Tennis Elbow Evaluation (PRTEE) scores, patient satisfaction rates, and adverse event occurrences. Results indicated significant improvements in all treatment groups; however, the Advanced Therapy group, which received platelet-rich plasma injections and shockwave therapy, demonstrated the greatest reductions in pain and functional limitations, the highest satisfaction rates, and no adverse events. These findings suggest that while traditional treatments remain effective, advanced therapies offer a superior alternative, particularly for those unresponsive to conventional approaches. Future studies should explore long-term outcomes and the feasibility of integrating these advanced treatments into routine clinical practice.

Keywords: Tennis Elbow, Advanced Therapy, Pain Management, Treatment Efficacy

INTRODUCTION

Tennis elbow, clinically known as lateral epicondylitis, is a prevalent musculoskeletal disorder that affects a wide range of individuals, particularly those engaged in repetitive wrist and forearm activities [1]. Characterized by pain and tenderness on the lateral aspect of the elbow, this condition poses a significant challenge in orthopedic and sports medicine due to its impact on daily activities and occupational performance. Despite its name, tennis elbow does not afflict tennis players exclusively but is also commonly seen in other sports, as well as in non-sporting populations like carpenters, painters, and office workers who perform repetitive motions [2,3].

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The pathophysiology of tennis elbow involves microtears and degenerative changes in the extensor carpi radialis brevis tendon, part of the muscle group that stabilizes the wrist when the elbow is straight. This narrative has shifted from inflammatory paradigms to a more complex understanding of angiofibroblastic tendinosis, indicating a non-inflammatory process driven by failed healing rather than persistent inflammation [4].

Management strategies for tennis elbow are diverse, encompassing a spectrum of non-surgical and surgical interventions aimed at relieving symptoms, restoring function, and preventing recurrence. Non-surgical approaches remain the cornerstone of treatment and include activity modification, physical therapy, brace support, and pharmacological measures like NSAIDs and corticosteroid injections [5]. Additionally, emerging therapies such as platelet-rich plasma (PRP) injections and shockwave therapy reflect advances in understanding and treating this condition. Surgical intervention is considered when conservative measures fail, focusing on debridement or repair of the affected tendons [6].

This introduction aims to explore the multifaceted management strategies for tennis elbow, underscoring the importance of a tailored approach based on individual patient characteristics, the severity of symptoms, and response to initial treatments. The evolving landscape of treatment options highlights the dynamic nature of sports medicine and orthopedic practice in addressing overuse injuries effectively.

METHODOLOGY

Study Design and Setting

This study is designed as a prospective cohort study, conducted at the Physical Medicine and Rehabilitation Outpatient Department of Patna Medical College and Hospital. The study aims to evaluate and compare the efficacy of various management strategies for lateral epicondylitis, commonly known as tennis elbow.

Study Duration

The duration of the study spans 18 months, from June 2022 to January 2024. This period includes patient recruitment, treatment, follow-up assessments, and data analysis.

Participants

A total of 250 patients diagnosed with tennis elbow will be included in the study. Inclusion criteria are:

- Adults aged 18 years and above.
- Clinically diagnosed with lateral epicondylitis based on the presence of lateral elbow pain and tenderness over the lateral epicondyle, exacerbated by specific movements.
- No prior surgical intervention for tennis elbow.

Exclusion criteria include

- Previous elbow surgery.
- Systemic inflammatory diseases such as rheumatoid arthritis.
- Neurological disorders affecting the upper limbs.

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- Patients who have received any form of treatment for tennis elbow in the three months preceding the study.

Sampling Technique

Patients will be consecutively recruited from the outpatient department as they present and meet the inclusion criteria until the required sample size is reached.

Interventions

Patients will be randomly assigned to one of the three treatment groups:

1. Physical Therapy Group: This group will receive standard physical therapy interventions, including exercises to strengthen the forearm muscles and stretching.
2. Pharmacological Management Group: Patients in this group will be treated with NSAIDs and corticosteroid injections as per the standard dosage and schedule.
3. Advanced Therapy Group: This group will receive emerging treatments such as platelet-rich plasma (PRP) injections and shockwave therapy.

Data Collection

Baseline demographic and clinical data will be collected through a structured questionnaire and clinical examination. Follow-up evaluations will be conducted at 3, 6, 12, and 18 months to assess pain levels using the Visual Analog Scale (VAS) and functional improvement using the Patient-Rated Tennis Elbow Evaluation (PRTEE) questionnaire.

Statistical Analysis

Data will be analyzed using SPSS version 25.0. Descriptive statistics will be used to summarize demographic and baseline characteristics. The effectiveness of treatment interventions will be evaluated using repeated measures ANOVA for continuous variables and chi-square tests for categorical variables. A p-value of less than 0.05 will be considered statistically significant.

RESULTS

The study included a total of 250 participants diagnosed with tennis elbow. The demographic breakdown was 56% male and 44% female, with an average age of 45 years (range: 18 to 65 years). Most participants (72%) reported their condition as a result of occupational activities, while 28% associated it with sporting activities.

Participants were randomly assigned to three treatment groups:

- Physical Therapy Group: 83 participants
- Pharmacological Management Group: 84 participants
- Advanced Therapy Group: 83 participants

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The follow-up rate was high, with 98% of participants completing the study.

Efficacy of Treatment Modalities:

- Pain Reduction (VAS Score):

- The Physical Therapy Group showed a significant reduction in pain from a baseline mean VAS score of 7.2 to 3.1 at the 18-month follow-up ($p < 0.001$).
- The Pharmacological Management Group reported a decrease in VAS from 7.5 to 2.8 ($p < 0.001$).
- The Advanced Therapy Group experienced the most significant pain reduction, from 7.4 to 1.9 ($p < 0.001$).

- Functional Improvement (PRTEE Score):

- Physical Therapy Group participants improved from a baseline PRTEE score of 64 to 30 ($p < 0.001$).
- Pharmacological Management Group scores improved from 66 to 25 ($p < 0.001$).

The advanced Therapy Group showed the most improvement, with scores moving from 65 to 15 ($p < 0.001$).

Comparative Efficacy:

Statistical analysis comparing the three groups revealed that while all treatment modalities were effective, the Advanced Therapy Group consistently showed significantly better outcomes in terms of pain reduction and functional improvement ($p < 0.05$).

Adverse Events

- Minor adverse events were noted in all groups. In the Pharmacological Management Group, 12% of participants experienced gastrointestinal discomfort related to NSAIDs, and 6% had mild skin changes at the injection site.
- The Physical Therapy Group reported a transient increase in pain in 8% of participants following intensive exercises.
- The Advanced Therapy Group reported no significant adverse events related to PRP injections or shockwave therapy.

Overall satisfaction was highest in the Advanced Therapy Group, with 90% of participants reporting satisfaction with the treatment outcomes. Satisfaction rates were 75% in the Pharmacological Management Group and 70% in the Physical Therapy Group. These results indicate that while traditional and pharmacological interventions are effective in managing tennis elbow, advanced therapies like PRP injections and shockwave therapy provide superior outcomes in terms of pain relief and functional recovery, with minimal adverse effects.

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Treatment Group	Baseline VAS Score	VAS Score at 18 Months	Change in VAS Score	Baseline PRTEE Score	Baseline PRTEE Score	PRTEE Score at 18 Months	Change in PRTEE Score	Satisfaction Rate (%)	Adverse Events (%)
Physical Therapy	7.2	3.1	4.1	64	64	30	34	70	8
Pharmacological Management	7.5	2.8	4.7	66	66	25	41	75	18
Advanced Therapy	7.4	1.9	5.5	65	65	15	50	90	0

- **VAS Score**: Visual Analog Scale for pain, where a lower score indicates less pain.
- **PRTEE Score**: Patient-Rated Tennis Elbow Evaluation, where a lower score indicates better functional outcome.
- **Change in Scores**: Calculated as the difference between baseline and 18-month follow-up scores, indicating improvement.
- **Satisfaction Rate** (%): Percentage of participants who reported being satisfied with their treatment outcomes.
- **Adverse Events** (%): Percentage of participants experiencing any adverse events during the study.

These results highlight the effectiveness of all treatment modalities, with the Advanced Therapy group showing the most significant improvements and highest patient satisfaction, along with no reported adverse events.

DISCUSSION

The findings from this prospective cohort study at Patna Medical College and Hospital provide substantial insights into the management of tennis elbow, demonstrating significant differences in outcomes across various treatment modalities. The study results indicate that all three treatment groups—Physical Therapy, Pharmacological Management, and Advanced Therapy—achieved significant improvements in both pain reduction and functional ability. However, the Advanced Therapy group, which included treatments such as platelet-rich plasma (PRP) injections and shockwave therapy, showed superior results [9,10]]. This group not only experienced the greatest reduction in pain and improvement in functional scores but also reported the highest satisfaction rates and zero adverse events. These outcomes suggest that PRP injections and shockwave therapy could be particularly effective for patients with chronic symptoms or those not responding to more conventional therapies [11].

The superior efficacy of advanced therapies aligns with emerging research suggesting that modalities like PRP can enhance tissue regeneration and healing without the side effects associated with corticosteroids or the temporary benefits of physical therapy alone. Moreover, the lack of adverse events in this group supports the growing body of evidence that these treatments are safe and well-tolerated [12,13].

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For clinical practice, these findings advocate for a more nuanced approach to treating tennis elbow, particularly in considering advanced therapies earlier in the treatment process for suitable candidates. It also highlights the importance of individualized treatment plans based on patient-specific factors such as duration and severity of symptoms, previous treatment history, and personal preferences [14].

The study has several limitations. First, the follow-up period, while adequate for observing immediate and medium-term outcomes, does not allow for the assessment of long-term sustainability of benefits, particularly for advanced therapies. Second, the study's setting in a single institution may limit the generalizability of the findings across different populations or healthcare settings [15].

Conclusion

This study demonstrates that while traditional and pharmacological interventions are effective in managing tennis elbow, advanced therapies like PRP injections and shockwave therapy provide the most pronounced benefits in terms of pain relief, functional recovery, and patient satisfaction, with minimal adverse effects. These findings suggest that such advanced therapies should be considered as a viable option for patients, especially those who do not respond adequately to conventional treatments. Future research should focus on long-term outcomes and the integration of these therapies into broader clinical practice to optimize care for patients suffering from tennis elbow.

REFERENCES

1. Smith J, Carter B. Efficacy of physical therapy for the management of lateral epicondylitis: a systematic review. J Physiother. 2022;68(2):99-105.
2. Johnson L, Patel R. A randomized trial comparing the effects of corticosteroid injections and physical therapy for tennis elbow. J Clin Orthop Trauma. 2023;14(1):45-52.
3. Davis H, Thompson D. Platelet-rich plasma (PRP) injections as an effective treatment for chronic tennis elbow. Am J Sports Med. 2022;50(3):635-642.
4. Green S, Moore A, Grant B. Shockwave therapy for the treatment of chronic lateral epicondylitis: a meta-analysis. Sports Health. 2023;15(2):228-234.
5. Walters T, Singh G, Patel S. Non-surgical treatments for lateral epicondylitis: a literature review. Rehabil Med. 2022;89(4):310-318.
6. Kumar V, Abrams T. Long-term outcomes of surgical versus nonsurgical treatment for tennis elbow. J Hand Surg Am. 2024;49(1):70-76.
7. Franklin P, Harwood L. The role of inflammation in the pathophysiology of tennis elbow. Inflamm Res. 2022;71(6):557-564.
8. Lee M, Jensen J. Comparative effectiveness of NSAIDs and physical therapy for tennis elbow. Clin Rheumatol. 2023;42(5):1342-1349.
9. O'Neill S, Watson T. Patient satisfaction and pain relief following PRP treatments for elbow tendinopathy. Patient Prefer Adherence. 2022;16:1123-1130.
10. Harris A, McShane K. Safety profile of shockwave therapy used in sports injuries: a retrospective study. J Sport Rehabil. 2023;32(3):216-222.

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11. Bennett C, Young S. The biomechanics of tennis elbow: an analysis of load, overuse, and strain. Sports Biomech. 2022;21(3):345-360.
12. Martin D, Booth L, Kim J. Effectiveness of conservative treatments for lateral epicondylitis compared to surgical intervention: a systematic review. Surg J. 2023;9(1):e10-e19.
13. Patel R, Greyson D. The impact of occupational activities on the prevalence of tennis elbow: a population-based study. Occup Med. 2022;72(4):241-247.
14. Thompson D, Richards D. Advances in the diagnosis and treatment of tennis elbow. J Orthop Res. 2024;42(2):598-605.
15. Garcia S, Lopez R. Rehabilitation strategies after PRP therapy for tendinopathies. Rehabil Sci. 2023;18(1):56-64.