

To Study The Role Of Platelet Rich Plasma In Tendinopathy- A Prospective Study.

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Abstract:

Introduction: Musculoskeletal disorders include a wide range of degenerative and inflammatory problems, which can affect any part of the muscular and skeletal system. Platelet-rich plasma (PRP) has been a breakthrough in musculoskeletal medicine, especially with its effects to speed up soft tissue, cartilage, and bone healing. Tendinopathy is a major medical problem. It can be defined as a syndrome of tendon pain, localized tenderness, and swelling that impairs performance. It is now thought that stem cells are able to reverse the degenerative process and promote rapid healing. Platelet-rich plasma (PRP) has received special attention in treating tendinopathy.

Materials and Methods: A prospective interventional study was undertaken in the Department of Orthopaedics Sancheti Institute for Orthopedics & Rehabilitation Pune. The study was undertaken from March 2019 to February 2020. A detailed history was obtained for evaluating the mode of trauma, visual analogue score, chronicity, physiotherapy etc. Patients with tendo A chilles tendinopathy, planter fasciitis, medial and lateral epicondylar tendinopathy, supraspinatus tendinopathy, came to hospital included in the study. Clinical parameters pain and tenderness at respective joints, more on movements and detail investigations like blood and X ray for sclerosis at greater tuberosity in shoulder, calcanealspur. And whenever required in some cases sonography of local part done which showed changes of tendinosis. Total of 80 patients included in the study based on inclusion and exclusion criteria. After complete analysis injections were given. All the patients were followed up in OPD at 3 weeks, 6 weeks, 3 months and 6 months.

Results: The chronic tendinopathy was more common in form of tennis elbow and plantar fasciitis. 40% of patients are having plantar fasciitis and 38% tennis elbow. Golfer's elbow was more common in males than females. Older age patients had poor pain Range of Visual Analogue Scale while younger age group shown excellent result. Follow up shows that 35 patients got good relief and 8 patients got excellent score within 3 months after injection. 45 patients got good relief and 25 patients got excellent score within 3 months after injection

Conclusion: PRP may be used as a new therapeutic option for chronic tendinopathies. PRP treatment has many advantages in terms of relative safety, easy production, and cost-effectiveness. platelet rich plasma injection takes time to act and this will result in gradual decrease in symptoms.

Keywords: PRP, tendinopathy, Orthopedics, Dentistry, VAS, FAS

Introduction:

The use of Platelet-Rich Plasma (PRP) in the treatment of orthopedic injuries has been widely reported in recent years^{1,2}. PRP is defined as a high concentration of platelets in plasma after special processing. Platelets are known to contain more than 300 bioactive proteins, including vascular

endothelial growth factor (VEGF), insulin-like growth factor (IGF), fibroblast growth factor, platelet-derived growth factor (PDGF), platelet-derived epidermal growth factor (PD-EGF), transforming growth factor beta (TGF β), and epidermal growth factor (EGF)³⁻⁵. Tendinopathy is defined as a syndrome of tendon pain, localized tenderness, and swelling that impairs performance. In chronic tendinopathy there is an increasing degree of degeneration with little or no inflammation present. Exercise is effective as a treatment for regaining function in addition to reduction of pain in tendinopathy⁶. However, exercise takes a long time for recovery, and patient compliance is needed to attain maximal effect⁷.

PRP advocates promoted the procedure as an organically based therapy that enabled healing through the use of one's own natural growth factors. Jumper's knee also known as patellar tendonitis characterized by inflammation of patellar tendon. It is seen in athletes participating in sports⁸. Associated with various risk factors like age and body weight. a younger age and higher body weight seem to be risk factors. The objective of this study was to evaluate treatment outcomes with PRP.

MATERIALS AND METHODS

A prospective interventional study was undertaken in the Department of Orthopaedics Sancheti Institute for Orthopedics & Rehabilitation Pune. The study was undertaken from March 2019 to February 2020. A detailed history was obtained for evaluating the mode of trauma, visual analogue score, chronicity, physiotherapy etc. Patients with tendo A chilles tendinopathy, planter fasciitis, medial and lateral epicondylar tendinopathy, supraspinatus tendinopathy, came to hospital included in the study. Clinical parameters pain and tenderness at respective joints, more on movements and detail investigations like blood and X ray for sclerosis at greater tuberosity in shoulder, calcanealspur. And whenever required in some cases sonography of local part done which showed changes of tendinosis were done. Total of 80 patients 48 male and 32 female included in the study based on inclusion criteria, Detail clinical examination and investigations including complete blood count were carried out before giving injection. Platelet count of blood was checked with that of PRP before giving the injection. Patients who gave consent were enrolled and any skin pathology at local site, Patients having muscular dystrophy, Symptoms of less than 3 months duration and Patients who have taken chronic anti-platelet therapy for conditions like stroke, myocardial infarction were excluded. After complete analysis injections were given. All the patients were followed up in OPD at 3 weeks, 6 weeks, 3 months and 6 months. VAS Scale used Visual Analogue Scale is less than 20 then the result is excellent; if VAS is between 20 to 40 then the result is good; if VAS is between 50 -60 then the result is fair and if VAS is greater than 70 then the result is poor.

Strict aseptic measures were followed for preparation of PRP and for injection procedure. After giving injection patient was advised to take rest for 3 weeks. At every follow up, range of motion, visual analogue scale (VAS) and functional activity score recorded (FAS). The Functional Activity Scale (FAS) score is a simple three-level ranked. Categorical score designed to be applied at the point of care.

RESULTS:

The chronic tendinopathy was more common in form of tennis elbow and plantar fasciitis. 40% of patients are having plantar fasciitis and 38% tennis elbow. Golfer's elbow was more common in males than females. Older age patients had poor pain Range of Visual Analogue Scale while younger age group shown excellent result (Table 1) (Graph 1). Follow up shows that 35 patients got good relief and 8 patients got excellent score within 3 months after injection. 45 patients got good relief and 25 patients got excellent score within 3 months after injection. Only 05 patients each shown fair and poor scale in VAS after 06months follow up. The follow up shows that most of the patients do not get relief within 3 weeks after injection. The mean of males who got relief within 3 weeks is 0.2 with standard deviation of 0.4. The mean of females who got relief within 3 weeks is 0 with standard

deviation of 0. The Functional Activity Scale (FAS) score is a simple three-level ranked.0,1 and 2. (Table 2 and Graph 2)

Table 1: As per VAS scale

Range of Visual Analogue Scale	Results
<20	Excellent
20-49	Good
50-69	Fair
>70	Poor

Graph 1 : Distribution of Patients as per VAS

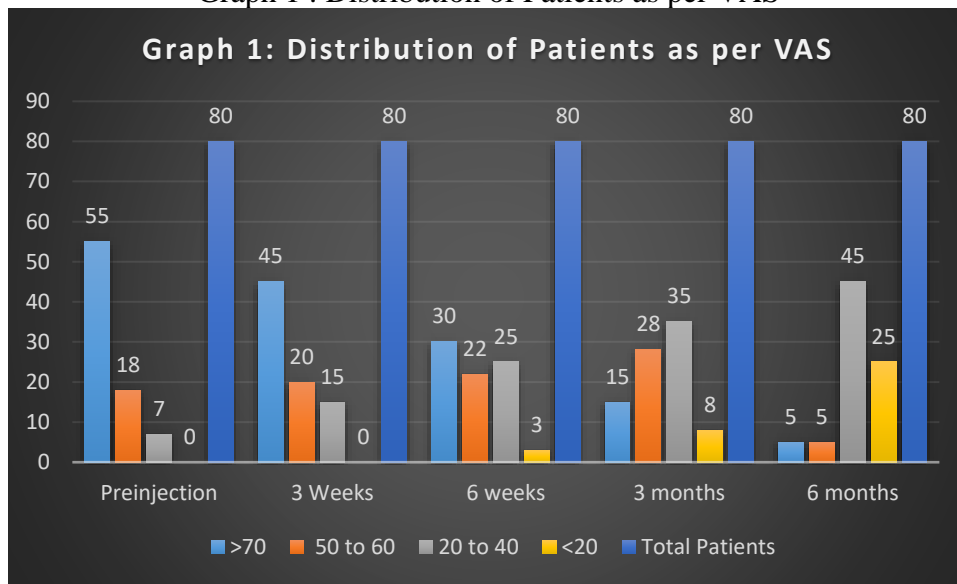
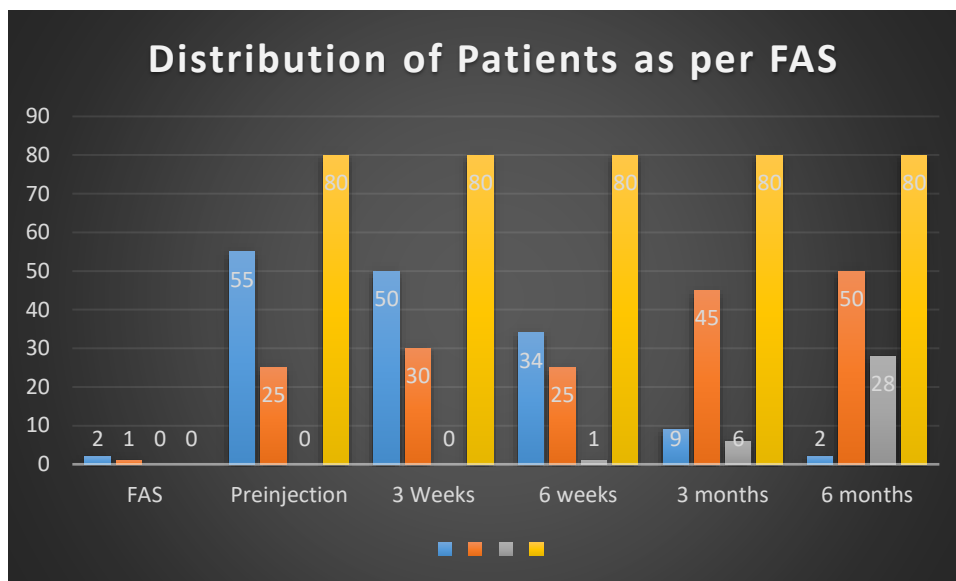


Table 2: Distribution of patients as per FAS

FAS	Pre Injection	03 weeks	06 weeks	03 months	06 months
2	55	50	34	9	2
1	25	30	25	45	50
0	0	0	1	6	28

Graph 2: Distribution of Patients as per FAS



Discussion:

The primary aim of the current study was to determine whether PRP injection would improve clinical parameters i.e., pain (VAS) and function (FAS). PRP may be used as a new therapeutic option for chronic tendinopathies. Its ease of preparation, relatively low cost, and minimal invasiveness are arguments in its favour. Furthermore, PRP is not associated with any side effects. Females shown significant relief in pain compared to males, this study results in similar with study by Del Buono A and Vetrano M⁹⁻¹⁰, The findings of this study show that platelet rich plasma injection at the tendon is effective mode of treatment for patients with chronic tendinopathies. This study shows that 19% of patients were having improvement in pain(good) at 3 weeks of injection,32% patients having improvement in pain(good) and 88% patients shown good and excellent pain relief and functionally good and excellent result in similar with study by Ferrero G.¹¹ Plantar fasciitis and tennis elbow are more common than other tendinopathies. In this study 32% patients were having plantar fasciitis and 34% patients having tennis elbow which were in similar with study by SeoWY,¹² Rha DW¹³,and Khan KM,¹⁴ Only 05 patients each shown fair and poor scale in VAS after 06months follow up results were in similar with study by Ahmad Z,¹⁵

Conclusion:

PRP may be used as a new therapeutic option for chronic tendinopathies. Its ease of preparation, relatively low cost and minimal invasiveness are arguments in its favour. It was shown that PRP treatment of tendon cells in vitro could induce the release of HGF, which is a major anti-inflammatory growth factor, Results from a recent study were also consistent with these findings and reported that PRP treatment increased VEGF and HGF expression in tendinopathic tendons. PRP has the therapeutic potential to modulate inflammation, stimulate angiogenesis, promote cell proliferation, and increase extracellular matrix synthesis

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