

## Functional evaluation after injection on professional athlete with tendinopathy between october-december 2018 at Sports Clinic Dr Soetomo General Hospital

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### Abstract

**Introduction:** Tendinopathy is a common musculoskeletal problem. It is estimated that 30-50% of all sports injury is caused by tendinopathy. Even with the high prevalence, treatment option for tendinopathy is still limited. *Platelet Rich Plasma* (PRP) is said to be able to repair ligaments, regenerate muscles, and repair cartilage. This paper aims to describe the impact of PRP injection on the function of the extremity.

**Methods:** Patients with tendinopathy who were injected with PRP at Sports Clinic Soetomo General Hospital between October-December 2018 were included as samples. The VAS, SF36, DASH, and KOOS scores from each patient before and after injection were recorded.

**Results:** Data from four patients with tendinopathy were collected. The samples were aged  $23.5 \pm 5.6$  years old, 75% (n=3) were women, and all have had tendinopathy for more than six months. All patient has had chief complaint of pain at the location of tendinopathy. Average VAS before and after injection were, respectively,  $7 \pm 1.2$  and  $2 \pm 0.82$ . Time to functional improvement for 75% of patient are between 5-10 days and 25% within 10-15 days.

**Conclusion:** PRP injection is found to reduce pain and improve functional outcome of patients with tendinopathy. This result can be used as a basis for further research.

**Keywords:** Platelet Rich Plasma; Tendinopathy; Athlete; VAS score; DASH Score

### 1. Introduction

Tendinopathies are a common clinical problem. It is estimated that 30-50% of all sports injury is caused by tendinopathy but its treatment option is limited. *Platelet Rich Plasma* (PRP) is one of the latest forms of treatment, which is found to repair ligaments, regenerate muscles, and repair cartilage [1]. PRP injection has a high satisfaction rate with minimal complication and rejection [2,3]. Despite its potential benefit, some physicians argue that PRP injection still needs more evaluation and is expensive. Therefore, the authors are interested in evaluating the impact of PRP injection on tendinopathy. In this paper is presented some cases of tendinopathies from our center, injected with PRP and its result.

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## 2. Presentation of case

### 2.1. Case 1

Thirty years old ski athlete female patient came with a chief complaint of intermittent pain in the left shoulder during water ski exercise since one year before examination. The pain has worsened over the last one month. The patient has difficulty lifting his left arm due to pain. The patient had a history of falls on the left arm at Jakarta and was diagnosed with non-displaced fractures on the humerus. It was treated using a cast. Physical examination showed no abnormality. Upon local examination of the left shoulder, pain on palpation and ROM was limited. Neer sign, Jobe's test, Infraspinatus test, dan Belly Press Test (+).

The patient was diagnosed with *Partial-thickness anterior labrum Shoulder sinistra*. The patient was treated with *Rest, Ice, Compression, Elevation (RICE)*, *Biofeedback*, *Range of Movement (ROM) exercise*, muscle strengthening, eccentric and concentric using *tera bond*, and PRP Injection. After injection, VAS was reduced from eight to one and SF36 was improved from 67 to 95.

### 2.2. Case 2

Wrestling athlete male 26 years old patient came with a chief complaint of constant pain in the right shoulder since four weeks before examination. The pain was exacerbated when lying down, sleeping on the right side, or during exercise. The patient also had trouble moving his right arm due to pain. The pain started after a shoulder dislocation, which occurred when the patient fell on his right shoulder after being slammed to the floor by his opponent. This was the patient's second shoulder dislocation. On local examination, limited ROM on adduction was found. *Posterior apprehension test* and *open can test* (+).

The patient was diagnosed with *Anterior Labral Tear, Adhesive Capsulitis and Partial tear Long Head Biceps tendon*. The patient was treated with *biofeedback*, physiotherapy rehabilitation with *Isotonic Strengthening external dan internal rotator cuff*, and PRP injection. After PRP injection, VAS was reduced from nine to two, and S.F. 36 increased from 62 to 95.

### 2.3. Case 3

A swimming athlete female patient aged 17 years had a chief complaint of knee pain since two weeks before examination. There was no history of trauma. The pain was felt especially at night and is followed by stiffness in the morning, especially during initial knee movement. General physical examination showed no abnormalities. Local examination showed atrophy on the left quadriceps and normal ROM.

The patient was diagnosed with *Patellofemoral Joint degeneration* and was planned for biofeedback therapy, exercise modification: endurance exercise, physiotherapy of right quadriceps extensor strengthening with internal rotation movement (focus on vastus medial muscle). Left quadriceps and hamstring strengthening, and PRP injection. After PRP injection, VAS was reduced from six to two, and the SF36 score was improved from 72 to 98.

### 2.4. Case 4

Gymnast athlete female patient aged 21 years had a chief complaint of right knee pain since one month before examination. Pain is felt especially when moving the knee and the knee feels imbalanced. The pain started one month ago after a sudden rotational movement when the patient was standing on one foot. The knee was massaged and temporary improvement was felt. A week later, the pain recurred. The patient did not consume any analgesics. Similar complaints were felt one year ago but did not disrupt daily activities. Local physical examination found pain on palpation on the left knee. *Anterior dan posterior drawer test, Varus dan valgus test, Lachman test*, dan McMurray test are negative.

The patient was diagnosed with *Partial Tear Anterior Cruciate Ligament (ACL) dextra* and was planned for the therapy of biofeedback, muscle-strengthening exercise, USG dan laser area tender point modality, home exercise program, as well as PRP injection. After injection, VAS was reduced from five to three, and SF36 was improved from 60 to 97

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## 3. Discussions

PRP is believed to promote muscle and soft tissue regeneration and reduces healing time. On previously conducted research, it can be concluded that an increase in fibroblast proliferation is correlated with the increase in collagen synthesis induced by PRP injection[4].

Cumulatively, the initial VAS was  $7 \pm 1.8$  and was reduced to  $2 \pm 0.8$  after injection. SF36 increased after PRP injection from  $65.2 \pm 5.4$  to  $96.5 \pm 1.3$ . Another study conducted by Zhou & Wang showed significant improvement in function, pain and quality of life after injection [1]. DASH score was also improved from 54.2 to 45.1. Meanwhile using KOOS, the improvement was from 43.5 to 14.3. Research conducted by O'Connell *et al* found that the use of PRP improved knee function based on KOOS Score [2]. Reduced pain can result the improvement of functional outcome.

Adverse events after PRP injection were not found. Complication after PRP injection rarely occurs. This is because PRP is a minimally invasive procedure derived from autologous cells. Evaluation after injection procedure repeated at an interval of six to eight days found partial benefit and there is not enough evidence that supports repeated injection. The limitation of this study was not all ROM data of all joint is available. Also, the difference in injury severity and field of sports was not considered.

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#### 4. Conclusion

Overall, reduction in pain as measured by VAS score and improvement in functional outcome based on SF36, KOOS, dan DASH score is evident but other factors that determines the outcome of this injection is also need to be researched.

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#### Compliance with ethical standards

##### *Disclosure of conflict of interest*

The author(s) have no conflicts of interest relevant to this article.

##### *Statement of ethical approval*

Ethical Clearance was granted by the Research Ethical Board of Dr. Soetomo General Academic Hospital. The Ethical clearance number is 0740/LOE/301.4.2/1/2022.

##### *Statement of informed consent*

Informed consent was obtained from all patients included in the study. All the patient data are classified.

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