**Protocol**

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**Analysis of Patient Outcomes following Platelet Rich Plasma Treatment for Joint Osteoarthritis**

**Background**

Platelet Rich Plasma (PRP) is a preparation of autologous plasma enriched with a platelet concentration above that normally contained in whole blood.1,2 the widespread uptake of an efficacious, low risk Osteoarthritis (OA) treatment has the potential to positively affect the quality of life of the 2.1 million Australians currently living with OA. PRP can be used to treat orthopaedic conditions including osteoarthritis, bursitis, muscle strain, tendinitis, and tendinosis.

The increased number of platelets in PRP delivers an increased number of growth factors to the pathological tissue. The seven known growth factors in PRP are: platelet derived growth factor as (PDGFaa), PDGFbb, PDGFab, transforming growth factor beta-, (TGF-b,), TGF-b2. Vascular endothelial growth factor (VEGF), and epithelial growth factor (EGF).1
The net results of PRP therapy are varied and can include angiogenesis, the production of local conditions that favour anabolism in the articular cartilage, or the recruitment of repair cells.3 Because PRP is derived from autologous blood, it is inherently safe and free from transmissible diseases such as HIV and hepatitis.1

To date, most of the published literature has assessed the effects of PRP on pain levels in patients with knee osteoarthritis. Our study will assess whether PRP treatment also reduces pain in other osteoarthritic joints such as shoulders, hips, and elbows. Furthermore, our analysis will explore whether certain age groups are more responsive to the treatment. This will be done by dividing patients into age groups and the type of joint being treated, and comparing treatment effectiveness based on pain scores.

**Method**

The aim of the present study is to investigate whether PRP treatment is effective in reducing pain originating from various joints (shoulders, hips, elbows etc.) and whether this pain reduction is as efficient as in knee osteoarthritis. Additionally, the study aims to assess whether pain reduction is influenced by the patient’s age.

All patients independently undertook to have the treatment at either the ReCreation Medical Centre or the Malvern Health and Fitness, where the PRP was administered by their doctor. Patients had a small amount of blood taken and spun in a centrifuge to separate the platelets, white blood cells, and plasma from the red blood cells (red blood cells are not responsible for healing). After separation, the PRP is activated with light for 10 minutes and injected into the injured area.

Patients voluntarily participated in a post-treatment telephone survey, conducted by clinic staff, regarding the outcomes of the treatment. The primary measure included a pain assessment which was scored on a scale between 0 to 10, with 10 representing worst pain experienced. Pain was assessed with a telephone survey at multiple time points following the final PRP administration. The time points were: 1 week, 3 months and 6 months after the PRP treatment. Treatment satisfaction was also recorded.

Sample size: 18,169 patients who were administered PRP treatment at the ReCreation Medical Centre or the Malvern Health and Fitness. Any age/gender ranges & numbers reflect the patients seen at these clinics.

Analysis:

All data has been previously collected during the course of normal medical consultations conducted at the ReCreation Medical Centre and the Malvern Health and Fitness Centre. During their consultation, patients were given the option of making their deidentified data available for research purposes. The data of consenting patients was entered into a data base (MS Excel spreadsheet).

An exploratory analysis will subgroup data into specific joints being treated and different patient age groups. The number of PRP treatments will be noted alongside any medications and supplements that patients were taking during data collection. A repeated measures analysis of covariance will be conducted to compare pain levels on the same patient between baseline and following PRP treatment. An analysis of covariance will be conducted to compare differences in pain levels between different age groups and different joints on which the PRP is administered.

References

1. Marx RE. Platelet-rich plasma (PRP): what is PRP and what is not PRP? Implant dentistry 2001;10:225-8.
2. Peter I, Wu K, Diaz R, Borg-Stein J. Platelet-rich plasma. Physical Medicine and Rehabilitation Clinics 2016;27:825-53.
3. Andia I, Maffulli N. Platelet-rich plasma for managing pain and inflammation in osteoarthritis. Nature Reviews Rheumatology 2013;9:721.