



ORIGINAL RESEARCH PAPER

Orthopaedics

COMPARISON OF FUNCTIONAL OUTCOME IN EARLY OSTEOARTHRITIS AFTER INTRA ARTICULAR PRP AND STEROID INJECTION - A RETROSPECTIVE STUDY

KEY WORDS:

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ABSTRACT

The aim of the study is to find out the best modality of treatment for osteoarthritis. Platelet Rich Plasma (PRP) and intra articular steroids are the two types of treatment compared. The ideal treatment is decided based on the functional outcome of the treatment modality. Methodology of the study is a retrospective study in which 100 patients with osteoarthritis (Grade 1 & 2 Kellgren & Lawrence grading) are grouped into 2 groups with one group receiving PRP and the other group receiving steroids with each group containing 50 patients each. Knee injury and Osteoarthritis Outcome Score (KOOS) is used to calculate the functional outcome.

INTRODUCTION:

Osteoarthritis (OA) is a gradually reformist, ongoing degenerative malady which is described with changing degrees of joint ligament misfortune with nearby irritation and periarticular bone reconstruct. The movement of ligament injuries shows with torment, inflexibility, growing, decline in the scope of movement of the joints accordingly fundamentally influencing the personal satisfaction. Treatment is intended to diminish the side effects and to slow the movement of the ailment. It incorporates exercise based recuperation modalities, orthoses, pharmacological treatment, and careful medications. Patients impervious to effective and oral pharmacological treatments can be profited by intra-articular injections.

Corticosteroid injection is the most generally utilized operators for intra articular treatment. Intra articular steroid injections in knee OA is additionally among the proposals of "American College of Rheumatology (ACR) 2012" rules. The weakness of corticosteroid injections is its brief span of benefit. The capacity of the harmed ligament to mend is deficient due its detachment of foundational course. Treatment modalities are engaged to give ordinary tissue homeostasis, reestablish and hinder the subsequent auxiliary harm and to postpone the requirement for obtrusive medical procedure however much as could be expected. The part of complex guideline of development factors is essential to ensure ordinary tissue structure and fix the tissue harm. In most recent couple of years, development factor applications to harmed tissues have become a mainstream treatment alternative. Platelet rich plasma (PRP) contains four-five times more platelet focus than typical blood and has more extreme measures of development factor. It is a straightforward, ease and negligibly intrusive strategy for getting autologous development factors. There are many case arrangement in the writing that show positive outcomes with respect to intraarticular PRP injections. In any case, generally scarcely any randomized controlled preliminaries are accessible. Frequently, these preliminaries have been led to contrast momentary clinical results and steroid. Taking everything into account, PRP has been accounted for as an all around endured, fitting treatment alternative in beginning phase knee OA.

There are studies in the literature that include PRP-PRP, PRP-placebo, and PRP-hyaluronic acid comparisons; however, studies comparing corticosteroid-PRP injections in knee OA are significantly fewer.

Therefore, in this study, we aimed to assess whether PRP or steroid treatment for knee OA is better, and compare the functional outcome of PRP with corticosteroid treatment in terms of pain management, activity of daily living and knee related quality of life.

American College of Rheumatology criteria for osteoarthritis is given in the table below

CLINICAL		
KNEE	1. Knee pain for most days of prior month	1,2,3,4
	2. Crepitus on active joint motion	Or
	3. Morning stiffness ≤ 30 min	1,2,5
	4. Age ≥ 38 years old	Or
	5. Bony enlargement of the knee on examination	1,4,5
CLINICAL AND RADIOGRAPHIC		
	1. Knee pain for days of prior month	1,2
	2. Osteophytes at joint margins	Or
	3. Synovial fluid typical of OA	1,3,5,6
	4. Age ≥ 40 years old	Or
	5. Morning stiffness ≤ 30 min	1,4,5,6
	6. Crepitus on active joint motion	

Kellgren and Lawrence classification of osteoarthritis

Grade of osteoarthritis	Description
Grade 0	No radiographic findings of osteoarthritis
Grade I	Joint space narrowing < 3 mm
Grade II	Joint space obliterated or almost obliterated
Grade III	Minor bone attrition (< 5 mm)
Grade IV	Moderate bone attrition (5-15 mm)
Grade V	Severe bone attrition (> 15 mm)

METHODOLOGY:

Patients included in this study were examined during the year 2020 in orthopaedics department of Saveetha medical college, Chennai. This study includes a set of 100 patients who were suffering from Osteoarthritis. In this 50 patients were treated by PRP and the remaining 50 were treated with corticosteroids.

Demographic details including Name, age, sex and occupation were collected and the mode of treatment was also obtained. The functional output of the treatment and quality of living were measured using Knee injury and Osteoarthritis Outcome score.

Around 100 ml of venous blood is drawn under aseptic precautionary measures from the antecubital vein atraumatically with an end goal to maintain a strategic distance from disturbance and injury to the platelets. The blood was gathered in a 100 ml pack with citrate phosphate dextrose and adenine 1 as an anticoagulant. The methodology

is totally performed inside the biosafety bureau. The last PRP is evaluated for platelet tally and provided for infusion. PRP was readied newly and regulated at two purposes of time (gauge furthermore, twelfth week), and no PRP is wasted.

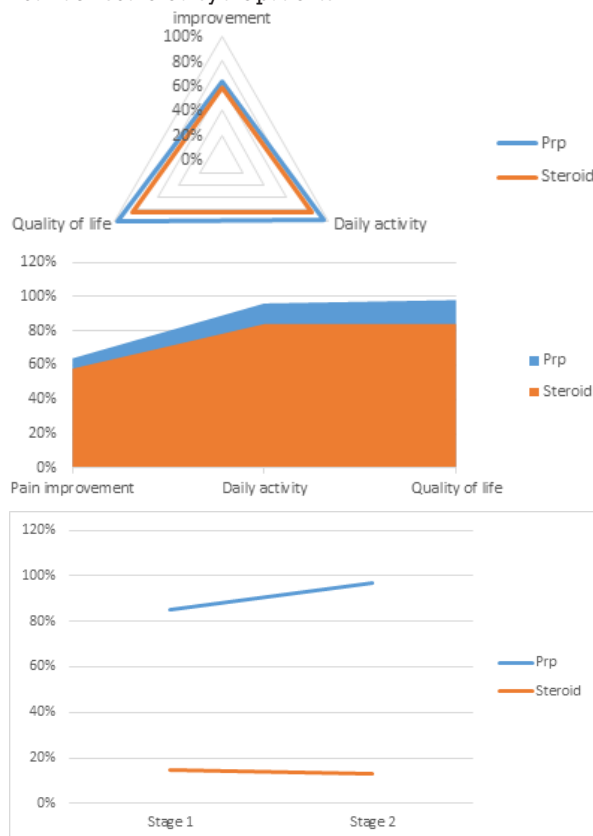
The corticosteroid treatment group was treated once with a 1 mL suspension containing 6.43 mg of betamethasone dipropionate (equivalent to 5.0 mg of betamethasone) and 2.63 mg of betamethasone sodium phosphate (equivalent to 2.0 mg betamethasone).

DATA ANALYSIS :

The standard of living and functional outcome of the treatment methods namely the PRP and steroids are obtained with Knee injury and Osteoarthritis Outcome Score and is visualised using bar graph. The pain management, activity of daily living and knee related quality of life are obtained from the patients. Scoring at pre procedure and follow up scores at 6 weeks and 12 weeks are recorded.

RESULT:

A total of 50 patients who received PRP and 50 patients who received steroids were selected. The graph comparing the functional outcomes of the treatments is shown below. The graph indicates that the outcome benefit of PRP ranges from 80 - 90 % whereas in Steroids it is less than 20 % due to the systemic side effects and immunocompromisation . But many other studies suggests that Steroids is better for the 3 rd and 4 th grades of Osteoarthritis. Hence PRP is the ideal modality of treatment in the early stages of the disease. The pain , daily living and knee related quality of life of the patients after 3 months is demonstrated. This signifies the betterment of the PRP injection. Though there is not much improvement in pain as compared to quality of life and daily living standard , it is not much bothered by the patients.



DISCUSSION :

The efficacy of the platelet rich plasma and steroids are studied by various investigators around the world. But the result of these studies are not stable. Some people developed good functional out come after using steroids and some

people does not respond well to PRP. But our study demonstrates that platelet rich plasma increases the functional outcome more significantly than that of the steroids in early stages and the adverse effects of PRP is also very less compared to that of the steroids. Results of this examination upheld the brief time frame the benefits of platelet rich plasma infusion over an intra articular steroid for lighten torment, firmness and improving elements of knee in starting knee osteoarthritis. It is also seen that intra-articular infusion of platelet rich plasma is protected and viable procedure for treatment of knee osteoarthritis. Most extreme advancement was found in younger age group patients and those with a brief length of the disease. Our investigation introduced that knee infusion of intra articular of platelet rich plasma can decrease solidness and joint agony just as improving life nature of patients in brief period than intra articular steroid infusion. As such, platelet rich plasma (PRP) mixture may be a substitute treatment in explicit patients impenetrable to current nonsurgical drugs.

It is not yet clear if platelet-rich plasma (PRP) acts via local paracrine factors to reduce pain, through production of new hyaline or fibrocartilage formation, or a combination of the two, or any another mechanism together. However, it is known that PRP consists of elevated levels of cytokines and growth factors, like platelet-derived growth factor (PDGF), insulin like growth factors (IGFs) 1 and 2, interleukin (IL-8), epidermal growth factor (EGF), fibroblast growth factor (FGF), and transforming growth factor (TGF).

REFERENCE :

1. AUTOLOGOUS INTRA ARTICULAR PLATELET RICH PLASMA INJECTION IN EARLY OSTEOARTHRITIS-CARTILAGRAM STUDY
2. Comparison of Efficiency Between Corticosteroid and Platelet Rich Plasma Injection Therapies in Patients With Knee Osteoarthritis.-Ece USLU GÜVEND ,Ayhan A KIN, Güven GÜVEND , and Hikmet KOÇY T Ayhan E, Kesmezacar H, Akgun I. Intraarticular injections (corticosteroid, hyaluronic acid, platelet rich plasma) for the knee osteoarthritis. World J Orthop. 2014;5:351-361.[PMC free article] [PubMed] [Google Scholar]
3. Meheux CJ, McCulloch PC, Lintner DM, Varner KE, Harris JD. Efficacy of Intra-articular Platelet- Rich Plasma Injections in Knee Osteoarthritis: A Systematic Review. Arthroscopy. 2016;32:498-505. [PubMed] [Google Scholar]
4. Inter. and Intraobserver Reliabilities of Four Different Radiographic Grading Scales of Osteoarthritis of the Knee Joint Ö. Köse, B. Acar
5. Comparison of Intra Articular Autologous Platelet Rich Plasma with Steroids in Osteoarthritis Knee - MN Arjun, Vivek Vasudev , Kunal Kishore et al.
6. Comparison of Intra Articular Steroids Versus Platelet Rich Plasma Injection in Patients with Osteoarthritic Knee Joints - Shahid Hussain Phuil, Muhammad Mobushir, Imran Sikandar Khan , Rizwan Hameed Malik, Ghias Jan.