

Results: All patients showed hastened union of fracture with excellent functional outcome at the end of 6th month follow up. **Discussion:** Activated platelets can release more than 300 molecules that are responsible for the coordination of numerous cell-cell and cell-extracellular matrix (ECM) interactions and stimulate cytoskeletal reorganization, chondrocyte and mesenchymal stem cell proliferation and collagen synthesis while diminishing the catabolic effects of inflammatory cytokines.

Conclusion: PRP offers greater advantage in union of fractures by providing micromolecular framework at fracture site. PRP drastically decreases the morbidity of patients by improving the functional quality of life.

Keywords: Delayed union; Platelet rich plasma; Regenerative therapy

Conservative & physical therapy vs Corticosteroid therapy vs Percutaneous needling with autologous platelet rich plasma therapy for de Quervain's stenosing tenosynovitis

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Background: de Quervain's stenosing tenosynovitis (dQSTS) is a tenosynovial disorder which is characterized by impaired gliding of the tendons of the abductor pollicis longus (APL) and extensor pollicis brevis (EPB) muscles over the tendon sheath covering these tendons. The most sensitive clinical test to diagnose dQSTS is Finkelstein manoeuvre. The management of the disease differs based on the severity of the condition.

Objectives: To to prospectively review and compare the efficacy, feasibility and durability of conservative & physical therapy, corticosteroid therapy and platelet rich plasma therapy in the view of (1) symptomatic pain relief, (2) improved the visual analogue scale (VAS) score and functional Mayo's wrist scores, (3) durability of treatment given and (4) alleviation of need of surgery in patients with de Quervain's tenosynovitis.

Materials and Methods: After screening of cases, 217 cases entered into the study and the cases were randomized into three groups according to our study protocol. Group A cases were treated with conservative & physical therapy, Group B cases were treated with corticosteroid therapy and Group C cases were treated with autologous platelet rich plasma injection with due pre and post procedural care. The cases were followed up on day 0, at the end of 1st week, 1st and 6th month for pain and range of movements. The patients are followed up for complications and the data were analysed statistically.

Results: A total of 25 (30.06%) cases in group A, 48 (69.56%) cases in group B and 64 (95.52%) cases in group C

had recovered from disease at the end of 2nd dose of treatment. At the end of 6th month follow up, a total of 39 (60.93%) cases in group A, 21 (30.43%) cases in group B and 3 (4.47%) cases in group C had recurrence. All these patients were followed up for 1 year which showed a statistical difference with p value of <0.001 in VAS score and 0.001 in Mayo's wrist scores among all three groups. No adverse reactions and serious complications are noted in the study participants.

Conclusion: Percutaneous needling with autologous PRP injection is the superior modality for de Quervain's tenosynovitis which minimise the pain and improve the functional quality of life.

Keywords: Platelet rich plasma, De Quervain's tenosynovitis, Corticosteroid, Percutaneous needling

Platelets and Platelet-rich Plasma in Rheumatoid arthritis - A Systematic Review of Literature

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Study Design: Systematic Review

Introduction: The treatment of Rheumatoid Arthritis (RA) has been closely evolving with an understanding of disease pathogenesis with Disease Modifying Anti-Rheumatoid Drugs (DMARDs) and Biologic DMARDs being the main stay. Platelet Rich Plasma (PRP) has been the center of research in many specialties in the past decade. Its ability to stop and reverse inflammation have attracted researchers to try PRP in RA. A systematic review of studies on PRP in RA is lacking.

Objectives: To do a systematic review of literature to summarize the evidences available on the use of PRP in rheumatoid arthritis and also to summarize the role of platelets in the pathology of rheumatoid arthritis.

Materials and Methods: A detailed search of Cochrane, Medline, Embase, and Web of science databases were made to identify the relevant articles till September 2020 following Cochrane and PRISMA guidelines. Number of subjects, Animal model used, cell lines used for the study, method of induction of arthritis, PRP dose, concentration used, frequency of administration and clinical, histologic, and molecular changes from baseline following PRP use were extracted and analysed.

Results: 7 studies were included for the review. Four of these were in-vitro studies. 1 was an exclusive animal study. One study analysed the effects of PRP in RA in both animal models (mice) and Hela cell lines. One study was a report of a series of patients of resistant RA treated with PRP. In the in

vitro studies while platelets increase the migration and invasion of RA-FLS, they suppressed the inflammation on the whole. Available animal studies and the Human study have shown encouraging results. There has been no evidence of exacerbation of inflammation in these studies.

Conclusion: Available literature is encouraging towards the use of PRP in RA. However, the quantity and quality of literature is limited. Larger trials and molecular studies to understand the exact role of platelets in disease pathogenesis and treatment mechanisms is needed to decide the future course of PRP in RA.

Keywords: Platelet Rich Plasma, Rheumatoid Arthritis, Regenerative Medicine, PRP, Systematic Review, DMARDS

Autologous bone marrow derived mesenchymal stem cell therapy for osteonecrosis of femoral head: A systematic overview of overlapping meta-analyses

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Study design: Systematic Review. **Objectives:** We performed this systematic overview on the overlapping meta-analyses that analysed autologous bone marrow-derived mesenchymal stem cell (BM-MSC) therapy along with core decompression (CD) for the management of osteonecrosis of the femoral head (ONFH) and identify which study provides the current best evidence on the topic and generate recommendations for the same. **Materials and methods:** We conducted independent and duplicate electronic database searches in PubMed, Web of Science, Embase, Cochrane Database of Systematic Reviews, and the Database of Abstracts of Reviews of Effects till September 2020 for meta-analyses that analyzed the efficacy of BM-MSC therapy along with CD for ONFH. **Methodological quality assessment** was made using Oxford Levels of Evidence, AMSTAR scoring, and AMSTAR 2 grades. We then utilized the Jadad decision algorithm to identify the study with the highest quality to represent the current best evidence to generate the recommendation. **Results:** 6 meta-analyses fulfilling the eligibility criteria were included. The AMSTAR scores of the included studies varied from 4 to 9 (mean:7) and all the included studies had critically low reliability in their summary of results due to their methodological flaws according to AMSTAR 2 grades. The current best evidence showed that utilization of BM-MSC therapy along with CD for ONFH resulted in significant improvement in Harris hip scores at 12 and 24 months along with a significant reduction in the necrotic area of the femoral head and the rate of conversion to total hip arthroplasty (THA) without a significant rise in adverse events due to the procedure. **Conclusion:** Based on this systematic overview, we give a Level II recommendation that BM-MSC therapy is more efficacious along with CD in the management of ONFH

compared to CD alone. BM-MSC therapy provides better pain relief with significant functional improvement and delaying the collapse of the femoral head thereby preventing further treatment such as THA.

Keywords: Osteonecrosis, Core Decompression, Mesenchymal Stem Cell

A biological therapeutic option for retrocalcaneal bursitis and its associations.

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Background: Retrocalcaneal bursitis is the inflammation of the bursa between the anterior aspect of the Achilles and posterior aspect of the calcaneum which is associated with achilles tendinitis, plantar fasciitis, calcaneal spurs, fibromyalgia and rheumatoid arthritis.

Objectives: This study is conducted to review a series of patients prospectively with symptomatic retrocalcaneal bursitis and its associations to determine if PRP injections (1) provide symptomatic relief, (2) improved VAS and AOFAS scores and (3) alleviation of need of surgery.

Materials and Methods: After screening of cases, 128 cases entered into the study and have been treated with an autologous platelet rich plasma injection with due pre and post procedural care. The cases are followed up on day 0, at the end of 1st week, 1st and 6th month for pain and range of movements. The patients are followed up for complications and the data were analysed statistically.

Results: Out of 128 cases, 76 patients (59.37%) improved with 1st dose and further 38 patients (29.68%) with 2nd dose of autologous PRP injection with an interval of 3 weeks from the first dose. A total of 89.05% of patients, who got treated with autologous PRP injection, had a good clinical and functional outcome even at the end of 1 year of injections and presented with statistically significant results with p value < 0.001. No adverse reactions and serious complications are noted in the study participants.

Conclusion: The autologous PRP injection is considered superior in treatment of retrocalcaneal bursitis which minimise the pain and improve the functional quality of life.

Keywords: Platelet rich plasma, Plantar fasciitis, Retrocalcaneal bursitis, Achilles tendinitis.

Mesenchymal Stem Cell-Derived Exosomes: A Potential Therapeutic Avenue in Knee Osteoarthritis

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