Abstract

Meniscus and Rotator Cuff tears are two of the most common orthopaedic injuries, and although conservative treatment is favored, these tears typically necessitate the utilization of arthroscopic surgery.

Recovery times from these surgical procedures are lengthy and complications such as re-tears often arise. Platelet-rich plasma (PRP) injections in conjunction with arthroscopic surgery is a new approach to improve post-surgical functional outcomes [1]. In this review, we will explore literature over the past 5 years and summarize the conclusions regarding the efficacy of PRP injections measured as functional outcomes following meniscus and rotator cuff arthroscopic surgeries.

Seven meniscal and rotator cuff clinical studies were included, with significant differences found between control groups and PRP groups in the reported outcomes in one study. While the utilization of PRP injections is increasing, further investigation must be conducted to fully uncover their therapeutic potential in conjunction with arthroscopic surgery.

Introduction

Platelet Rich Plasma is obtained by centrifuging a patient’s own blood to first platelet-rich plasma from the platelet-poor plasma [2]. The platelets are then injected back into the patient as a thick gel at the site where PRP is needed. Once reintroduced, the degranulated platelets release growth factors from their alpha granules to augment the natural healing process [3]. The newly injected PRP will contain a concentration of platelets up to 1,000,000/uL, compared to the normal human platelet count of 150,000 to 350,000/uL.

The use of PRP injections in orthopaedic injuries relies heavily on the use of platelets and their secretory products, which are paramount to tissue healing and repair. Some of these growth factors and adhesion molecules include TGF-β1, VEGF, EGF, IFG-1 and fibronectin [4]. Thus, it is hypothesized that an abundance of platelets and an influx of growth factors can facilitate the body’s own tissue repair and even accelerate this process [5].

After injection of PRP into the joint following arthroscopic repair, functionality can then be measured during and after the recovery process. The evaluation of post-surgical functional knee outcomes is measured via questionnaires that clinicians utilize during follow-up appointments. The International Knee Documentation Committee (IKDC) score, Lysholm Knee Scoring Scale, and the Tegner Activity Level Scale are commonly used to compare knee functionality pre- and post-surgery.

Frequently used scales that evaluate shoulder function before and after surgery consist of the Constant-Murley Score (CMS), American Shoulder and Elbow Surgeons (ASES) Standardized Shoulder Form, Disabilities of the Arm, Shoulder and Hand (DASH), and the Western Ontario Rotator Cuff (WORC) score.

Methods and Materials

A PubMed search on the current literature involving PRP injections and meniscal repairs was performed utilizing the key words PRP, arthroscopic, and meniscus. This search included 8 papers from 2015-2020, and of those papers, the work of Kemmochi, Griffin, Dai, and Kaminski were included in our review.

Results and Discussion

All authors compared functional outcomes in a cohort of patients that underwent arthroscopic repair for meniscus or rotator cuff injuries to a group that received arthroscopic repair with concomitant PRP injections.

Regarding meniscus tears, none of the papers included displayed any significant different in functional outcomes when cohorts were compared to each other. The papers involving Rotator Cuff tears yielded similar results. However, Holtby’s experiment revealed that patients that received PRP injections displayed a superior ROM at a 6 week evaluation vs the Non PRP group [12].

Conclusions

While the utilization and popularity of PRP injections is increasing in the orthopaedic world, further investigation must be conducted to fully uncover their true potential in conjunction with arthroscopic surgery. No significant difference was found between control groups and experimental groups in clinical studies evaluating their utilization in meniscal or rotator cuff tear treatment. However, some promise was seen in the initial phases of ROM recovery post-surgery.

Contact

Neil Gambhir OMS-III  
New York Institute of Technology  
College of Osteopathic Medicine  
NGambhir@NYIT.edu

References