Techniques in Orthopaedics:
March 2007 - Volume 22 - Issue 1 - pp 26-33
doi: 10.1097/01.bto.0000261868.03232.dd
Articles

Platelet Rich Plasma in Rotator Cuff Repair

Gamradt, Seth C. M.D.; Rodeo, Scott A. M.D.; Warren, Russell F. M.D.

Abstract

Despite clinical success rates over 85%, persistent anatomic defects after rotator cuff repair are common and depend on the size of the tear repaired. The etiology of delayed or failed tendon to bone healing is multifactorial and biologic augmentation of a rotator cuff repair would be clinically desirable. Autogenous platelets contain many growth factors and are critical in the physiology of bone, soft tissue, and wound healing. Growth factors present in platelets include TGF-B, FGF, PDGF, EGF, and VEGF. Centrifugation techniques have been developed to create platelet rich plasma (PRP). These PRP preparations are designed to concentrate platelets and the growth factors they provide. PRP has been used to augment healing in various animal models as well as clinical situations in humans. This review examines the potential of using PRP to augment rotator cuff repair.

SPORTS MEDICINE
ORTHOPEDICS TODAY March 1, 2009

The role of platelet-rich plasma in connective tissue repair

Platelet-rich plasma (PRP) is generically defined as an increase (above baseline) in the concentration of platelets and their associated growth factors. While the clinical benefits of PRP in enhancing the healing of musculoskeletal tissues are only beginning to be explored, the substantial amount of basic science data supporting the role of growth factors in enhancing cell migration, cell proliferation, and matrix synthesis has provided a compelling rationale for use of PRP in the treatment and repair of various connective tissue structures.

I have asked a group of leading orthopedic surgeons who have utilized PRP in their respective practices to share their insight and experience regarding the potential role of PRP in enhancing connective tissue repair.

Steven P. Arnoczky, DVM

Platelet Rich Plasma on Rotator Cuff Repair (PRP)

This study is currently recruiting participants.
Verified by University of Sao Paulo, September 2009
First Received: December 9, 2009 No Changes Posted

Sponsor:	University of Sao Paulo
Collaborator:	Criogenesis
Information provided by:	University of Sao Paulo

ClinicalTrials.gov Identifier:	NCT01029574

Purpose

Repair of the rotator cuff has high rates of re-rupture (20-54%), despite good clinical results. Several ways to improve the healing tendon-bone are currently studied, among them the most used is the use of growth factors. The platelet-rich plasma is a source of several growth factors, and is already used in various orthopedic procedures. The aim of this study is to evaluate the effectiveness of platelet-rich plasma in improve tendon-bone healing in arthroscopic rotator cuff repairs.

Condition	Intervention	Phase
Rotator Cuff Lesions	Other: Platelet rich plasma	Phase III

Study Type: Interventional

Study Design: Allocation: Randomized
Control: Active Control
Endpoint Classification: Efficacy Study
Intervention Model: Parallel Assignment
Masking: Double Blind (Subject, Outcomes Assessor)
Primary Purpose: Treatment

Official Title: Platelet Rich Plasma on Arthroscopic Repair of the Complete Rotator Cuff Lesions: a Prospective and Randomized Study

Disabil Rehabil. 2008;30(20-22):1584-9.

Autologous platelet rich plasma for arthroscopic rotator cuff repair. A pilot study.

Randelli PS, Arrigoni P, Cabitza P, Volpi P, Maffulli N.

Dipartimento di Scienze Medico-Chirurgiche, Policlinico San Donato, Universita degli Studi di Milano, Milano, Italy.

Abstract

BACKGROUND AND PURPOSE: Arthroscopic repair of rotator cuff tears can produce excellent results. The application of platelet rich plasma during arthroscopic rotator cuff repair is safe, and produces results which do not deteriorate over time. METHODS: A total of 14 patients undergoing arthroscopic repair of a rotator cuff tear received an intra-operative application of autologous platelet rich plasma in combination with an autologous thrombin component after tear repair. Following the procedure, patients were given a standardized

rehabilitation protocol, and followed for 24 months. Outcome measures included a pain score (VAS) as well as functional scoring (UCLA and Constant scores). **RESULTS: Of the original 14 patients, 13 were seen at a final follow-up appointment 24 months after the index operation. Patients demonstrated a significant decrease in VAS scores and significant increases in the UCLA and Constant scores at 6, 12 and 24-month follow-ups compared to a pre-operative score. CONCLUSION: No adverse events related to this application were noted during the procedure. The application of platelet rich plasma during arthroscopic rotator cuff repair is safe and effective, and produces results which seem to be stable with time. A prospective randomized investigation will be necessary to ascertain the efficacy of platelet rich plasma application to improve or expedite the surgical outcome following arthroscopic rotator cuff repair.**

PMID: 18608363 [PubMed - indexed for MEDLINE]

Soft and hard-tissue augmentation with platelet-rich plasma: Tissue culture dynamics, regeneration and molecular biology perspective

Don F du Toit[1], Wayne G Kleintjes[2], Morkel J Otto[3], Erick J Mazyala[4], Benedict J Page[5]
[1] Division of Anatomy and Histology, Academic Department of Biomedical Sciences, Faculty of Health Sciences, University of Stellenbosch ; Diabetes Mellitus Research Platform, Medical Research Council, Parow, South Africa
[2] Plastic and Reconstructive Surgeon, Suite 1008, Louis Leipoldt Hospital, Bellville, South Africa
[3] Cosmedicate, 122 Harley Street, London, United Kingdom
[4] Division of Anatomy and Histology, Department of Biomedical Sciences, Faculty of Health Sciences, University of Stellenbosch, South Africa
[5] Division Head, Anatomy and Histology, Biomedical Sciences, Faculty of Health Sciences, University of Stellenbosch, South Africa

Correspondence Address:
Don F du Toit
Division of Anatomy and Histology, Biomedical Sciences, P.O Box 19063, Faculty of Health Sciences, University of Stellenbosch, Parow 7500
South Africa

Platelet Rich Plasma for Rotator Cuff Repair

Repair techniques for rotator cuff tears have improved significantly over the past decade, with advanced arthroscopic techniques, strong anchors and suture materials and rehabilitation programmes. However, the poor tendon biology of the degenerative rotator cuff tissue does lead to a retear/failure rate of 10-30%. PRP offers an exciting, safe and simple option to improving the tendon repair quality and rate of healing. Early studies appear optimistic (Randelli, Disab Rehab 2006 ; Du Toit, IJSS 2007 , Mishra et al. Clin J Sports Med, 2009).