Feasibility of autologus platelet rich plasma gel with lipido-colloid dressing in chronic wound treatment

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Introduction

Although Platelet-Rich Plasma, an endogenous therapeutic technology has been known to enhance, stimulate and accelerate tissue healing with various growth factors for over 30 years, it was mainly applied to plastic surgery, dentistry, and orthopedics. As chronic wounds and ulcerations are in overall increase and typical in surgeons practice, conventional dressings and or even special healing therapies have often little to no effect on certain patients.

Aim

To look at skin regenerative properties of PRP Gel combined with fibroblast proliferation optimizing dressings in different patients cases.

Materials and methods

Only patients with long (>6 months) conventional treatment time and relatively small wound area were included. Patients with difficult to heal wounds of different causes and previous healing history (e.g conventional dressings, antibiotics therapy, skin transplant, vacuum dressing, hyperbaric chamber) that had little to no therapeutic success were assigned to a six week period Before-After Trial study with an intent to prolong this period after evaluation. Every seven days patients' wounds were cleaned and a PRP Gell dressing was applied with the same technique. A volume of 9ml of patients venous blood was collected to a citrate-coted vial and centrifuged at 1500 RPM for 8 minutes to obtain blood plasma, followed by the second spin with a speed of 3200RPM for 9 minutes to increase platelet count. A top portion of Platelet Poor Plasma was discarded. Resulting 2-3 ml of PRP was activated using 0,2ml of 10% calcium chloride and 100IU of human thrombin per ml PRP which triggered gel formation. Obtained autologous PRP gel was put on a wound and covered with open mesh wound contact layer and polyester mesh impregnated with hydrocolloid and petroleum jelly particles lipido-colloid dressing. Finished dressings were covered with sterile bandage. All patients were instructed how to take care of the wound in a similar way. The area of wounds was measured using Fiji image analyzer programme from photos taken on day 1 and then every week to establish therapeutic effectivity. Also, patients graded their satisfaction and decrease in chronic pain in post-study form.

Results

Six patients aged 20-72 (average 53,33) with 7 chronic (10-70 months, average 28,66) wounds, an area of 1-19cm^2, (average 5,60cm^2), were treated with autologous Platelet Rich Plasma Gel with lipido-colloid dressing. After six weeks period, 2 patient were excluded from the study due to bacterial infection of the wound and no healing effect of the therapy. Two wounds healed completely, the rest of the patients extended their therapy with promising results - the wounds decreased in size by 31,81-74,20%, average 55,57% with an overall decrease in wound depth and signs of inflammation. After 20 weeks of therapy, there was in average 91,24% of wound area decrease. In addition, patients experiencing chronic pain ceased to take oral pain medications and reported high therapy satisfaction in comparison to previous methods of treatment.

Conclusions

PRP Gel combined with fibroblast proliferation optimizing dressings may be a feasible alternative for conventional dressings or a "last-resort" therapy for patients with chronic wounds. More studies are needed to optimize the method for infection prevention and establishing the time of therapy needed for full skin regeneration