

First clinical results using Platelet-Rich-Plasma (GLO-PRP) in split-skin-graft of chronic wounds on lower leg

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Introduction:

Chronic wound healing disorders of lower leg are challenging topics in patients, especially when suffering from Peripheral Arterial Disease (PAD). What does the definition of chronic wound have to say:

No healing tendency after 2 month, or absence of wound healing under adequate wound therapy after 1 year.



Chronic wound

The chance of wound healing increases when ankle pressure is over 80 mm of Mercury. In our patients we do routinely Ankle-Brachial-Index measurements. If ABI is lower than 0.6 there is only a poor chance of spontaneous wound healing. Therefore it is very important to improve arterial outflow of patients with on one hand endovascular procedures like PTA, and on the other hand with surgical bypass operations.

Non-invasive evaluation and estimate of probability of healing

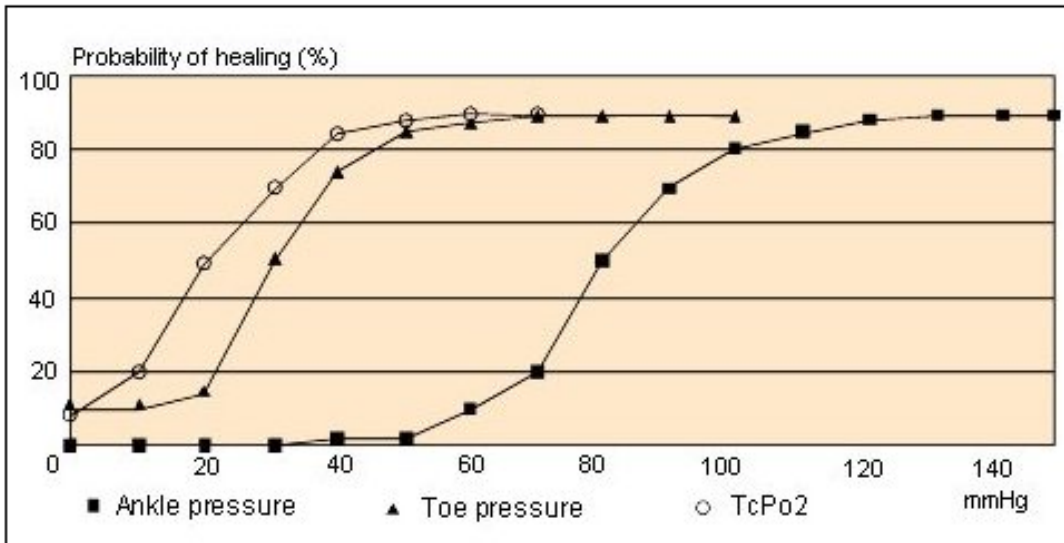
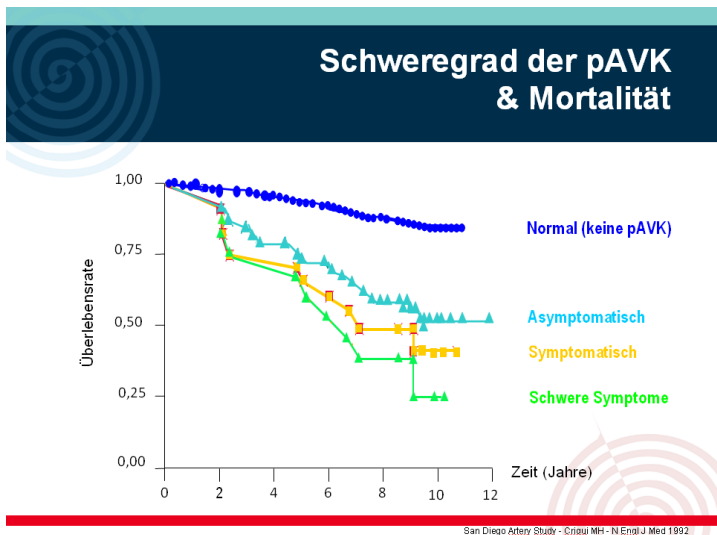


Figure 1: A schematic estimate of the probability of healing of foot ulcers and minor amputations in relation to ankle blood pressure, toe blood pressure and transcutaneous oxygen pressure (TcPo2) based on selected reports

We started a study including 16 patients, 14 of them suffering from chronic disorder of wound healing with PAD and 2 Patients with chronic venous ulcer without PAD. In our department we try to minimize the length of stay in our hospital. That means, we are looking for options for quicker wound healing procedures, because we have to take care of lots of patients in our hospital. A chronic wound takes usually very long time for healing as is generally known.

We also know there is a correlation between the severity of PAD and expectancy of life. Population without PAD has a significant higher propability of survival then patients with severe PAD. You can see in next figure that 3 of 4 patients have died after 10 years (green curve). When you compare with patients without PAD 9 of 10 patients are still alive after 10 years (blue curve).



Correlation between severity of PAD and expectancy of life

Material and Methods:

The aim of treatment is split skin graft after two applications of PRP. After successful skin spit graft we are able to release our patients to get them home again.



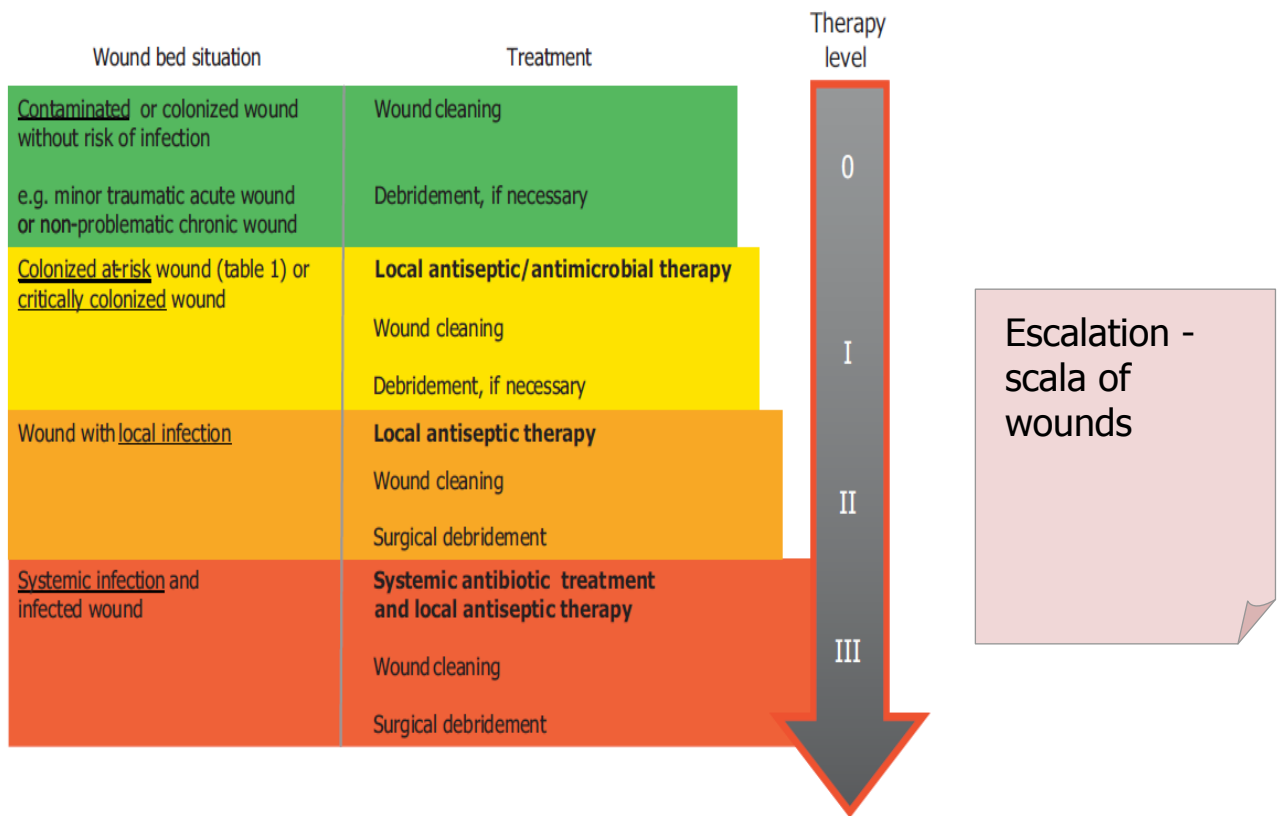
Successful
split-skin-graft

Before using PRP first time patients are undergoing surgical and mechanical debridement. If possible we lead patients in endovascular or surgical therapy after diagnose with Digital Subtraction Angiographie (DSA). Antibiotic therapy is started in patients with critical contaminated wounds according to their swabs. Change of dressing is performed according to modern wound management therapy, like alginats, hydrofiber and foams.

The best tool for mechanical debridement of biofilms currently is Debrisoft. It is a 10 to 10 cm microfilament pad recommended by the European Wound Management Association (EWMA) and the UK Wound Association. Debrisoft is an excellent washrub for wounds. There is no risk to damage intakt skin.



DEBRISOFT



In every therapy level of escalation scale of wounds you can see debridement as an important procedure of treatment.

In 8 of 14 Patients we can improve the outflow with surgical revascularisation like femoro-popliteal and femoro-crural bypasses in 5 cases and with endovascular procedures in 3 cases.



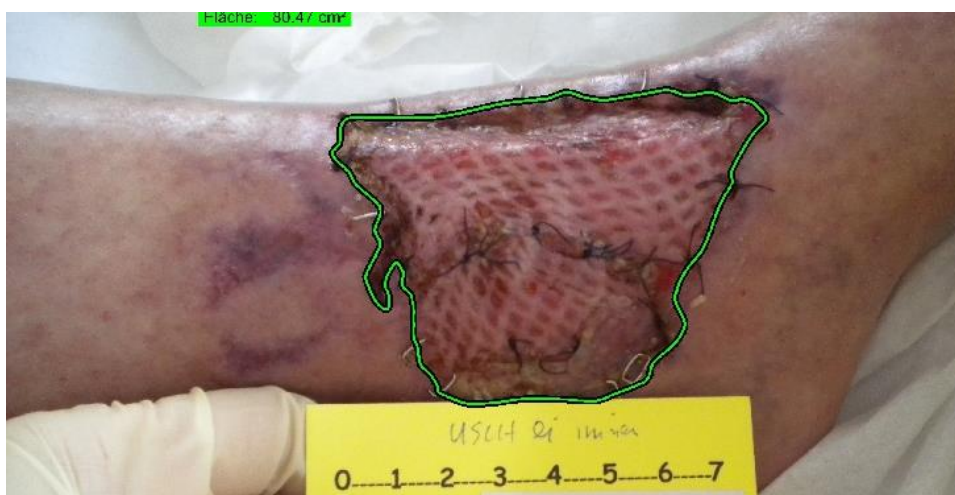
Successful endovascular revascularisation of retromalleolar artery

We are monitoring fully different wound character after the first application of PRP. The wound ground now is clean and in good granulation. We do altogether two applications of PRP within one week. We use alginat as woundfiller and foam for secondary dressing.



Wound after first application of PRP

All our Patients are undergoing split skin graft 4 days after second PRP therapy. We take split skin graft from the upper leg of patient. Thickness is 0,5 mm. Negative pressure therapy (NPT) is used routinely for fixation of meshgraft to the wound ground. The donor sites are covered with alginats for satisfying haemostasis and provided with transparency films.



After split-skin-graft



After split-skin-graft

Results:

Successful split skin graft in all our Patients with previous revascularisation. Half of Meshgraft failed in PAD group without revascularisation. The reason for this fact is possible poor blood supply of wound and a hypoxic wound ground. One of the patients in the venous ulcer group failed too, I think because of very high amounts of wound exudate. In summary we do 75% of successful split-skin-graft.



Successful healing of split-skin-graft

Summary:

We observe very good results in patients with chronic wound healing disorder suffering from PAD when undergoing revascularisation before using PRP therapy. Anyway their are further and powerful studies necessary in this field to point out the role of PRP in wound healing therapy. PRP is a cost effective wound treatment. PRP is an effective tool in therapy of chronic wounds.