

CHRONIC WOUNDS

The platelet gel is largely used to treat non-healing (chronic) wounds. Frequently the outcome is quite impressive; wounds that have been unresponsive for a long to the conventional treatment (also using the so called advanced medications) respond quickly to the application of platelet gel. This treatment was pioneered by Dr. Knighton, who proposed the administration of platelet-derived compounds since the early eighties (Annals of Surgery, 1982; 196;379-388 and 1986; 204:322-330). Looking at the reports published in the medical journals, one can see that the majority of the chronic wounds treated with the platelet gel reach the successful wound closure or ameliorate considerably. The **successful rate is about 85-94%**; more than 50% of the lesions heales completely and more than 35% significantly reduces in size.

The use of autologous platelet gel is particularly indicated for treatment of recalcitrant wounds where there is lack of improvement despite conventional local care and treatment of underlying causes. Some long standing lesion recover quickly (figure 1) while some other more recalcitrant lesion may take longer to heal (figure 2).

All kind of chronic wounds are subjected to amelioration following treatment with the platelet gel: **pressure sores; diabetic ulcers** (figure 1,2); **diabetic foot; post-traumatic lesions** (figure 3, 4, 5); **vascular ulcers** (figure 6); **spider bite lesions**.

It must be emphasized that chronic non-healing lesions are the result of multiple causes (ischemia, metabolic disorders, bacterial contamination, dietary defects, etc). For the lesion to get better each one of these concauses of chronicity must be appropriately treated. In order to achieve optimal results, the platelet gel should be added to the entire repertory of the good chronic lesion care.

Figure 1

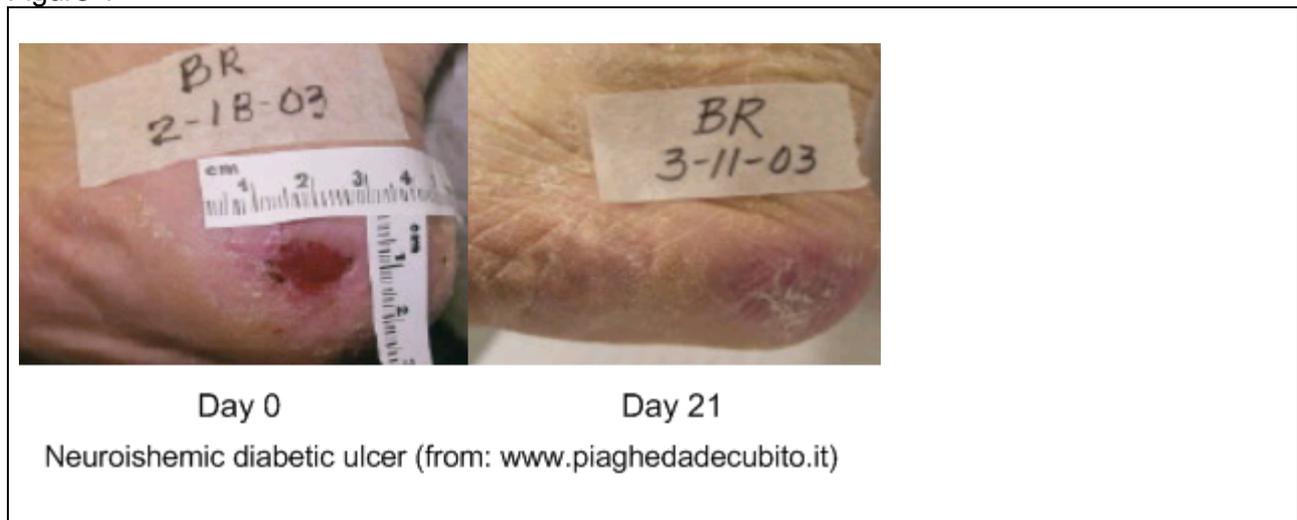
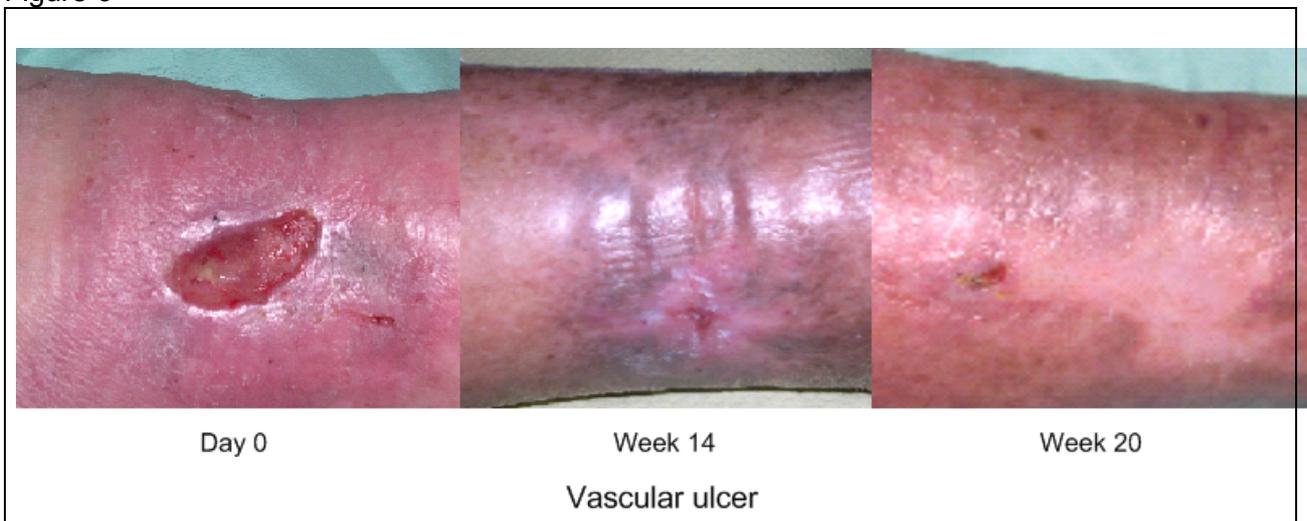


Figure 5



Figure 6



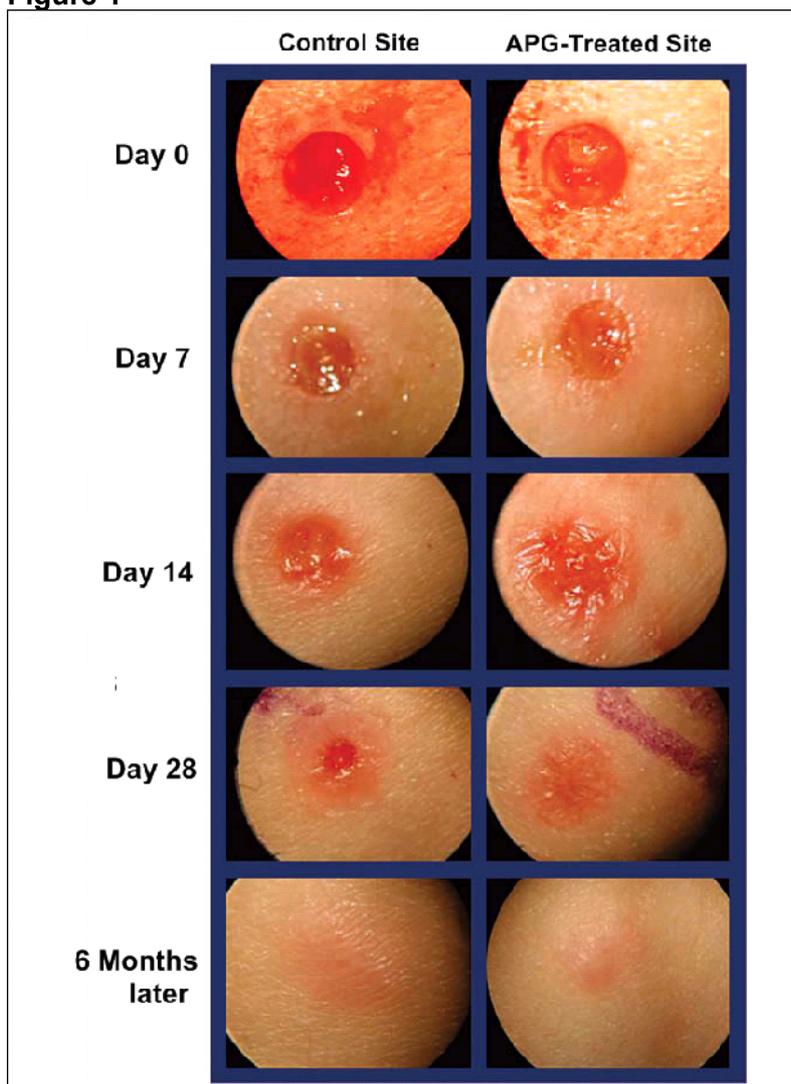
ACUTE WOUNDS

In the presence of co-morbidity factors, acute lesion can develop chronicity. In the absence of co-morbidity factors, acute wounds have a typical healing process characterized by inflammations, cell proliferation, repair and remodeling. The natural progress of this process is known and the healing rate is predictable. One can ask if it is useful or legitimate to treat acute wounds aiming to achieve a shortening of the healing rate.

In the case of elderly people or in the presence of co-morbidity factors the prophylactic treatment with the platelet gel of acute lesions is indisputable. A question to be answered is if also the young subjects may benefit from the platelet gel treatment definitely. In other words it must be demonstrated that in young healthy subjects full-thickness skin lesions treated with platelet gel heal significantly faster and/or with less local complication than similar untreated lesions. This study was recently carried-out (Hom DB et al. Arch Facial Plast Surg. 2007;9:174-183). It was clearly demonstrated **that the platelet gel wound closure velocities were significantly faster than those of the controls** (see figure 1).

Young healthy people with full-thickness skin lesions treated with platelet gel recovered very quickly (figure 2, 3) and without complications.

Figure 1



From Hom DB et al. The Healing Effects of Autologous Platelet Gel on Acute Human Skin Wounds. Arch Facial Plast Surg. 2007;9(3):174-183.

Figure 2



Figure 3



Albeit specific trials have not been carried-out as yet, several observations suggest that platelet gel treatment of wounds **seems to reduce the prevalence of keloid formation**. Hypertrophic scars leading to keloids are characterized by accumulation of exuberant amounts of collagen: excess of collagen is produced by dermal fibroblasts in response to local inflammation mediators. A heritable predisposition is highly probable. One could hypothesize a scenario where supraphysiologic concentration of platelet-derived factors remodulate the inflammation phase of the wound healing process, hence reducing excess of collagen synthesis. The possibility – still to be experimentally proved – that the platelet gel can reduce the prevalence of keloid formation is of great interest and opens new preventive attitudes in aesthetic medicine, plastic surgery, and prophylactic care of normal surgical wounds.

BURNS, SPIDER BITES, SNAKE BITES

The process leading to the recovery from burns, insect bites or snake bites are similar to those involved in the recovery from acute or chronic wounds. Burns and bites are usually complicated by infection or by the coexistence of local toxic elements. For these characteristics the natural evolution of the recovery from burns and bites is similar to that of chronic wounds. Since the platelet gel is beneficial in chronic wounds it might be considered useful in the treatment of burns and bites. Infections and tissue toxicity must be treated accordingly; cleansing and debridement must be carried out as well.

Superficial burns can be treated without problems. On the contrary, it has been reported that the platelet gel on early full-thickness burns may induce excess of inflammation, hence delaying the formation of new epithelium. However in these case highly vascularized bed occurs which should increase the success of skin grafting in patients who need it. In conclusion, the decision to use the platelet gel in severe burns compete to highly skilled and experienced professionals.

The recovery from lesions secondary to spider bites, insect bites, and snake bites is strongly dependent on the venom toxicity. In many cases, but not in every case, the treatment with platelet gel can prevent local necrosis.