

International conference on

WOUND CARE, TISSUE REPAIR AND REGENERATIVE MEDICINE

October 29-30, 2018 | Amsterdam, Netherlands

Non-cultured epithelial cells in platelet-rich plasma for the resurfacing of massive and chronic full-thickness burns: A case series

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We describe the use of a combination of platelet-rich fibrin and spray-on skin for 15 patients with massive burns and five patients with chronic burn wounds. A fast, complete graft take was noted in all cases. The coverage of massive burns (i.e. more than 40% TBSA) is a challenge. As about 80% of the skin can be used as possible donor sites, the area to be grafted in massive burns often exceeds the available donor skin. A number of strategies are available to deal with this situation. Re-harvesting from a previously used donor sites is possible, but requires a regeneration period of 2-3 weeks. Wide meshing (to a ratio of 1: 4 or more) and the MEEK technique have been proposed to make better use of available skin, but also require time for re-epithelialization of the interstices between the grafted areas, during which time these areas need to be protected from dehydration and microbial colonization. Cultured epithelial grafts also take about 3 weeks to be cultured, and although recently an affordable technique has been developed, long-term results remain poor. In our environment, cadaver skin is rarely offered, and the high

rates of HIV/AIDS preclude the use of amniotic membrane as a temporizing dressing. Spray-on skin cells (suspended epithelial cells) are an alternative for these patients. Two techniques are in the manner in which the skin cells are separated, i.e. either enzymatically (using trypsin, ReCell®) or mechanically (Rigenera®). Problem with the use of spray-on cells has been that when the cells are suspended in a low-viscosity solution such as normal saline, they tend to be spread unevenly over the surface to be grafted, while there may be a significant graft loss, as cells float off the wound with the medium and end up on the towels. We recently developed a technique in which spray-on cells are combined with platelet-rich fibrin, in order to increase the yield of grafted cells in patients in which this technique is used with the Vivostat® system (Vivostat A/S, Lillerød, Denmark). We feel that the results of PRF/Spray-on skin are sufficiently promising to warrant setting up a randomized trial and setting one up.

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