SKIN GRAFT MINCING AND 100-FOLD EXPANSION IN THE OR - AN ALTERNATIVE TO IN VITRO CULTURES IN THE TREATMENT OF LARGE BURNS (192)

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Introduction: Split-thickness skin graft (STSG) is the gold standard for treatment of major skin loss from major trauma or burn injuries. However, this technique is limited by the donor site availability in large burn injuries. Several techniques have been developed in the past to overcome this limitation but have been unable to achieve clinical relevance. With skin mincing technique, we have already successfully demonstrated an expansion ratio of 1:100 and wound healing comparable to STSG [1].

Methods: In this study, we explore the feasibility of the next-generation technique, pixelgrafting, which minces donor skin to small pieces measuring 0.3 x 0.3 mm. Wound healing was studied in a full-thickness wound porcine model. After wound creation and pixelgraft transplantation a polyurethane device was placed to cover the wound. This device serves as a temporary skin replacement and creates an ideal environment for regeneration. Multiple wound healing parameters were used to study pixelgrafting technique.

Results: The pixelgraft transplanted wounds demonstrated faster re-epithelialization rate, decreased wound contraction, superior skin integrity and increased mechanical stability when compared to control wounds (Fig).

Conclusions: Pixelgrafting technique provides a promising advancement in the field of wound healing. This technique would help in addressing the most commonly encountered limitations of the STSG with the possibility of large expansion ratio with improved quality of healing.

References:

Figure 1

Day 6 postop

Re-epithelialization %

- Pixelgraft
- Wet CTRL
- Dry CTRL

Day 6 postop

Wound contraction %

- Pixelgraft
- Wet CTRL
- Dry CTRL