EARLY VERSUS DELAYED EXCISION AND GRAFTING OF FULL THICKNESS BURNS IN A PORCINE MODEL - A RANDOMIZED STUDY (009)

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Introduction: The standard of care for full thickness burns is tangential excision followed by autografting, however, the timing of excision and grafting is subject to debate. We compared early (two days) versus delayed (14 days) excision and grafting in a porcine full thickness burn model. We hypothesized that early excision would reduce scarring compared with late or no excision.

Methods: Standardized full thickness 5 cm by 5 cm burns (n=12) were created on each of the backs and flanks of two anesthetized female pigs (25 kg) using a validated model. The burns were created with a heating device that emits heat at a temperature of 400 Celsius for a period of 30 seconds. One third of the burns were randomly assigned to no excision, one third were tangentially excised (down to pinpoint bleeding indicating viability) two days following the injury, and one third were excised 14 days after injury. Immediately after excision the excised wound beds were covered with a split thickness skin autograft (0.2 mm thick) meshed at a 1:2 ratio held in place with staples. All wounds were then treated with a topical antibiotic ointment three times weekly for 28 days. Digital images and full thickness biopsies were taken at 16, 21, and 28 days after injury to determine percentage reepithelialization and scar depth. Tissue sections were stained with H&E and viewed by a dermatopathologist masked to treatment assignment.

Results: A total of 24 burns were created. At day 16 all burns that were excised early were completely reepithelialized while only 8/11 (72.7%) non-excised burns were reepithelialized (P=0.02). By day 21 all burns were completely reepithelialized in all treatment groups. Scar depth was greatest in non-excised burns (7.4 +/- 1.3 mm). Scar depth was more superficial after early excision than after late excision (3.2 +/- 1.7 vs. 5.3 +/- 2.5 mm; ANOVA P

Conclusions: Both early and late excision followed by autografting reduces scarring in a full thickness porcine burn model. However, early excision (two days after injury) reduces scar depth to a greater extent than later (after 14 days) excision.

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