**Geometric Determinants of Full Thickness Wound Healing in Adult Male Yucatan Miniature Swine**

**ABSTRACT**

Our objective was to obtain quantitative data regarding the relationships between wound healing rates vs. initial size and shape of full thickness wounds. Each of 3 adult male Yucatan miniature swine had 9 full-thickness paraspinal wounds created. The wounds for each animal were comprised of all combinations of 3 sizes (10, 20 and 30 cm²) with 3 shapes (square, circle and equilateral triangle – apex pointing to spine). Dressing changes were performed 3 times per week for 7 weeks, and then weekly until termination. During dressing changes, all wounds were photographed and planimetric measurements of perimeters, total wound areas and areas of epithelialization were obtained.

**RATIONALE AND SCOPE**

Our objective was to obtain quantitative data regarding the relationships between wound healing rates and initial size and shape of full thickness wounds in adult Yucatan miniature swine. The primary outcomes of interest (objectives) were:

1. Time to complete healing (defined as full epithelialization)
2. Healing rate

**EXPERIMENTAL METHODS**

Under general anesthesia, each of three adult male (4-4.5 yr) Yucatan miniature swine had 9 full-thickness surgical wounds (Table 1) created along the paraspinal dorsal area, between the base of the scapula and iliac crest. Three wound sizes (10, 20 and 30 cm²) and 3 wound shapes (square, circle and equilateral triangle – apex pointing to spine) were entered into an electronic database. Results for the outcome of time to complete healing were calculated using planimetric data. There was a strong correlation between healing rate and initial wound area. Mean healing rates were 2.1, 2.6 and 3.3 cm² per week for 10, 20 and 30 cm² wounds, respectively. These differences did not appear to be affected by wound shape.

**RESULTS (CONTINUED)**

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