

Effect of Commercially Available Wound Irrigation Solutions on Uninfected Host Tissue in a Murine Model

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INTRODUCTION: Many commercially available irrigation solutions are used by orthopedic surgeons to reduce bacterial contamination and prevent surgical site infections. However, the effect of these solutions on healing capacity of tissue has not been well established. The purpose of this study was to compare the effects of five commercially available irrigation solutions on tissue inflammatory response and wound healing potential using a murine model.

METHODS: Full thickness wounds were created on the backs of 60 BALB-c mice. There were 5 treatment groups based on the irrigation solution: Bacitracin, Clorpactin, Irrisept, Prontosan, and Bactisure. Normal saline solution was included as control. Solution was applied to the 5mm wounds as described in manufacturer’s instructions. Mice were sacrificed at 3 and 10 days. The wounds were excised for histologic analysis. Inflammation and edema were evaluated in the acute phase (3 days) and compared to 10 days. Granulation tissue formation and re-epithelialization were surrogates for wound healing analyzed in the later healing phase (10 days).

RESULTS: The antiseptic irrigation solutions had similar cytotoxic effects on host tissue at 3 days as compared to normal saline (Inflammation, $p=0.86$; Edema, $p=0.21$). Likewise, the samples treated with antiseptic irrigation solutions did not have delayed or compromised wound healing at 10 days when compared to normal saline control (Granulation tissue, $p=0.14$; Re-epithelialization, $p=0.88$). Representative histology in Table 1 and statistics in Figures 1 and 2.

DISCUSSION AND CONCLUSION: Single short duration use of these commercially available antiseptic irrigation solutions appears to be safe in an uninfected wound. Data from this study will provide surgeons with useful information regarding the safety of using antiseptic wound irrigation solutions intraoperatively for prevention of surgical site infections.

