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Prospective Randomized Study Comparing Gauze Suction Negative Pressure Wound Therapy with Standard Vacuum Assisted Closure Device

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PURPOSE: Comparison of two methods of negative pressure wound therapy: active wound drainage with negative pressure from wall suction applied to a sealed gauze dressing (G-SUC) versus standard Vacuum Assisted Closure Device (VAC) therapy in the acute care setting. The aim was to compare the effectiveness and costs of G-SUC to VAC for the treatment of wounds in the acute care, in-patient setting.

METHODS: A prospective randomized study was completed from October 2006 to May 2008 on University of Chicago Medical Center in-patients with acute wounds resulting from trauma, dehiscence or a surgical complication randomized to receive either G-SUC or VAC therapy. Data was compared for demographics; quantitative wound culture assays; changes in wound volume and surface area; pain scores and hemodynamics (before, during and after dressing changes); pain medications required (during and post dressing change); time spent and cost per dressing change.

RESULTS: Eighty seven patients were randomized to receive either G-SUC (n=45) or VAC (n=42) therapy. Demographics were comparable between groups. There were no significant differences in the number of patients with infected wounds between the groups (G-SUC = 18 vs. VAC = 13 patients p=0.38). The G-SUC group had greater decreases in wound surface area and volume than the VAC group after the fourth dressing change; however, these did not reach statistical significance (median surface area percent change: -10.1 vs. -6.7 cm², p=0.32 and median volume percent change: -27.6 vs. -15.1 cm³, p=0.15). Median cost per dressing change and median time spent per dressing change were significantly less in the G-SUC group than VAC group (.68 vs. .20, p<0.01 and 16 vs. 30 minutes, p<0.01). Although hemodynamic parameters were no different between groups before, during or after dressing changes, median pain scores during and after dressing changes (2.7 during and 1.9 after vs. 4 during and 3 after in the VAC group; p<0.01 for both comparisons), and median pain medications required during and after dressing changes (1.2 during and 1.3 after vs. 2.2 during and 2.1 after in the VAC group; p<0.01 and p=0.03, respectively) were significantly improved in the G-SUC group.

CONCLUSION: G-SUC provides an alternative negative pressure wound therapy that is at least as effective as VAC with respect to changes in wound volume and surface area, while decreasing pain per dressing change and pain medications required, in an acute care in-patient setting. Additionally, G-SUC saves time spent on each dressing application by the wound therapist, as well as providing significant cost savings to the hospital.