The prevention of wound infection in high risk abdominal wound closures by Negative Pressure Wound Therapy (NPWT)

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Introduction

The main purposes of a surgical dressing is control any postoperative bleeding, absorb exudate if anticipated, and provide protection for newly formed tissue.

An higher number of patients are at high risk for infections due to comorbidities or surgical procedure. In these patients wound infections continue to be an issue in abdominal surgery and negative pressure application may have promise in decreasing wound complication. The purpose of this study is to evaluate the effect of NPWT on closed surgical incisions in high risk patients vs. closed conventional treatment.

Material and methods

A retrospective review of prospectively collected data in patients with high-risk abdominal wounds was undertaken. Comorbidities, infectious risk factors, wound classification and outcomes were evaluated. The primary outcome was wound infection rate. Secondary outcomes included device safety and overall surgical-site complication rate.

A total of 40 pts participated to the study. NPWT was applied to surgical incision using a commercial kit (15pts) (Prevena® – KCI) or a home made (10pts) dressing system using conventional foam kit of KCI. The two groups were compared to a comparable historical control wound complication rate was 20%, and $\chi^2$ analysis showed a statistically significant decrease in the infection rate with negative-pressure wound therapy ($P < .05$).

Results

25 pts at high risk for infection rate underwent to one stage reconstruction of the abdominal wall by biological prosthesis. They were divided in 2 groups – conventional dressing (15pts) and home made NPWT (10pts). In NPWT group infection rate was 1/10 pts (10%) and in conventional dressing infection rate was 6/15 pts (40%). Prevena group included 15 pts: infection rate was 1/15 (7%). The comparable historical control wound complication rate was 20%, and $\chi^2$ analysis showed a statistically significant decrease in the infection rate with negative-pressure wound therapy ($P < .05$).

Conclusion

NPWT is highly effective to reduce infection rate in high risk abdominal wound closures despite the system used.