Incisional Negative Pressure Wound Therapy Following Ventral Hernia Repair Reduces Wound Complications and Hernia Recurrence: A Meta-Analysis

Edward W. Swanson, M.D.[1]
Srinivas M. Susarla, D.M.D., M.D., M.P.H.[1]
Denver M. Lough, M.D., Ph.D.[1]
Hsu-Tang Cheng, M.D.[1,2]
Anand Kumar, M.D.[1]

[1]Department of Plastic and Reconstructive Surgery, The Johns Hopkins University School of Medicine, Baltimore, MD

[2]Division of Plastic and Reconstructive Surgery, Department of Surgery, China Medical University Hospital, China Medical University School of Medicine, Taichung City, Taiwan

ABSTRACT

Background: Ventral hernia repair (VHR) is associated with postoperative wound complications and hernia recurrence, resulting in morbidity and significant healthcare costs. The purpose of this study was to identify whether postoperative wound complications and hernia recurrence are reduced by the application of negative pressure wound therapy to closed incisions (iNPWT) following VHR through systematic review and meta-analysis.

Methods: PubMed/MEDLINE, EMBASE, and SCOPUS databases were searched for studies published through December 2014. Publications that met the following criteria were included: (1) adult patients (>18 years) undergoing VHR; (2) comparison of iNPWT to conventional dressings ; and (3) documentation of wound complications and/or hernia recurrence. Methodological Index for Non-Randomized Studies guidelines were used to assess the methodological quality of included studies. Outcomes analyzed included surgical site infection (SSI), wound dehiscence, seroma, and hernia recurrence. Pooled odds ratios with confidence intervals were obtained through meta-analysis.

Results: Five retrospective cohort studies, totaling 477 patients undergoing VHR were included in the final analysis. The use of iNPWT decreased surgical site infection (Odds Ratio (OR)= 0.33; 95% Confidence Interval (CI), 0.20 - 0.55, p<0.0001; **Figure 1**), wound dehiscence (OR= 0.21; 95% CI, 0.08 - 0.55, p=0.001), and ventral hernia recurrence (OR=

0.24; 95% CI, 0.08 - 0.75, p=0.01; **Figure 2**). There is no statistically significant difference in the incidence of seroma formation (OR=0.59; 95% CI, 0.27 – 1.27, p=0.18).

Conclusion: Current evidence suggests iNPWT decreases the incidence of wound complications and hernia recurrence when compared to conventional dressings.

Figure 1. Forest plot of comparing the rates of SSI in patients receiving iNPWT versus conventional dressings following VHR.

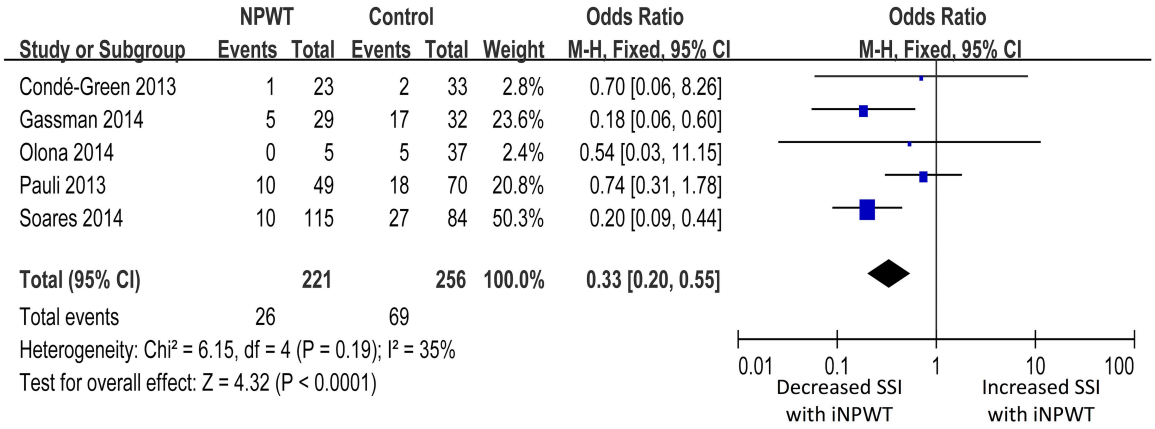

Figure 2. Forest plot of comparing the rates of hernia recurrence in patients receiving iNPWT versus conventional dressings following VHR.