

Ioban Suction Dressing Showed No Untoward Complications When Used on Kocher-Langenbeck Incisions for Acetabulum Fractures

INTRODUCTION

Incisional negative pressure wound therapy (INPWT) has been shown to be effective in reducing the incidence of postoperative wound infection following surgery to address tibial pilon, tibial plateau, and calcaneus fractures. Every significant study to date has utilized the proprietary products from KCI, such as the V.A.C. Ultra or Prevena. Despite being effective in reducing wound complications, the cost of these products to patients and the healthcare system can be large. We have previously administered NPWT using a less expensive dressing made from gauze bandage, Ioban, and wall suction tubing. Despite the presumptive effectiveness and safety of this dressing based on anecdotal evaluation, concerns were raised regarding its safety. To address this lack of understanding, we created a randomized trial to compare the short-term postoperative complication rates and safety profiles among three types of dressings in patients with acetabulum fractures being addressed with a Kocher-Langenbeck incision.

METHODS

Trauma patients admitted to the University of Virginia Medical Center with posterior column, posterior wall, and/or posterior wall acetabulum fractures amenable to fixation through a Kocher-Langenbeck incision were prospectively identified and queried for participation in this study, after IRB approval was granted. Participants were randomly assigned to one of three surgical dressing types using a random number generator. The three dressing types were: NPWT using a KCI V.A.C. Ultra, NPWT using the aforementioned in-house dressing, or a standard adhesive dressing. The selected dressing was applied at the end of the surgery and remained in place for 48 hours, as is standard practice for NPWT. Both NPWT dressings were applied with 75 mmHg which is also an accepted pressure. At the end of the 48 hour period, a clinical photograph was taken of the wound, and a second photograph was taken at the first 2 week post-op appointment. All wounds were closed with staples.

Data categories that were collected included patient demographics, medical comorbidities, injury comorbidities, length of stay, estimated blood loss from surgery, type of VTE chemoprophylaxis utilized, duration of surgery, time from injury to surgery, and acetabulum fracture pattern. The wounds were monitored for postoperative complications, including seroma formation, cellulitis, suture abscess or overt surgical site dehiscence and deep infection. The occurrence of any postoperative wound complication was the primary outcome measure. All patients had follow up to at least the 6 week postoperative mark. Given the low incidence of complications we sought to compare the dressings with regards to wound appearance. The clinical photographs from each postop point were de-identified and placed into a PowerPoint file. A trauma surgeon, operating room nurse, resident and medical student at our institution then compared the wounds and ranked the wounds in order of appearance, from most appealing to least. Observers were provided a validated grading system previously used in hernia surgery and encouraged to reference the grading system when ranking the wounds. The final rank orders were analyzed to look for clustering of the dressing types and for inter-observer agreement.

RESULTS

Over the course of twelve months, there were 26 patients who enrolled in the study and were randomized. The number of patients assigned to the loban, adhesive and KCI groups were 12, 7, and 13, respectively. Twenty of 26 patients (77%) were male. Average age was 40 years. The average EBL was 700 milliliters. Average duration was two hours twenty-four minutes. All patients were treated with enoxaparin for VTE chemoprophylaxis. Average BMI was 28.4. Two patients experienced superficial wound complications treated with a course of oral antibiotic, and both of these patients were in the adhesive gauze treatment group. One of these patients was diabetic and a smoker. The second patient developed post-operative pulmonary embolisms and was treated with therapeutic strength anticoagulation. There were no wound complications in either of the NPWT groups.

DISCUSSION

Overall the rate of wound complication was very low, which is corroborated in other studies evaluating acetabulum fractures. The low number of events makes detecting superiority of any

one dressing over another difficult, however the primary goal of the study was to determine whether or not the loban NPWT dressing was inferior or caused any unforeseen safety problems with regards to wounds. Given that no wound complications were experienced within this group, and that photographs corresponding to the loban group were competitive in the ranking portion of the study, this dressing is a safe option with which to treat high-risk wounds in the future, such as tibial pilon, plateau and calcaneus fractures. We feel that a randomized trial comparing dressings among these patients would be valuable in determining if this dressing type is safe and efficacious in those wounds. If that is the case, then the less-expensive loban dressing may be a more cost-effective dressing to use in the future.