High Risk Incision Management: Single Use Negative Pressure Wound Therapy (NPWT) in the treatment of bilateral mastectomy incisions

Introduction

All surgical procedures carry an associated risk of post-operative complications such as infection. The level of risk associated with surgical intervention is not fixed, and it varies according to the type of procedure. Additional factors that confer an increased risk of post-operative complications include patient-specific factors such as body mass index, whether the patient is a smoker, and patient age will contribute to the post-operative risk of surgical complications. A further contribution to post-operative wound complications arises from procedural factors such as the procedure status (emergency vs. elective), type of procedure, duration, anatomical location, closure method and case of dressings.

Although post-operative wound complications will negatively affect any individual, the scope of these risks may vary depending upon the type and extent of the complications that arise. In some instances the nature of the surgical procedures such as the level of tissue trauma to progress to post-op closure is higher. Under these conditions it is highly likely to carry profound physical and emotional consequences. In the authors' experience one class of post-operative incisions which would fall into this category are those after mastectomy surgery.

Background

Breast cancer remains the most common form of female cancer in the UK accounting for 25% of all cancer in women. The natural locoregional treatment of breast cancer and in many cases is the first means of therapeutic intervention. The most frequently cited complications are those occurring in the post-operative phase which however in the absence of any postoperative complications the psychological and physical impacts of a mastectomy procedure are considerable and far-reaching. The development of post-operative complications can both amplify and prolong these effects. In addition, developing post-operative complications may present a delay to the return to surgery or to the start of further adjuvant therapy. The evidence suggests that, in addition to a delay to the commencement of further oncological treatment, breast surgery, adding to the existing psychological burden imposed by the procedure.

Although the risks of complications such as infection vary considerably, the potential consequences can range as high as 30%. The incidence of complications also results in the need for additional medical and surgical interventions which necessarily and laboratory/hospitalized and outpatient follow-up. Such measures consume substantial healthcare resources and are associated with considerable financial burden.

Although an increase in the risk of complications can be linked to various factors a recent study demonstrates that complications are associated with a statistically significant elevated wound complication rate compared with single mastectomy. The authors concluded that the risk of complications from this study suggests that breast cancer mastectomy has considerable implications for the substantial increase in the proportion of breast cancer patients undergoing bilateral mastectomy. Therefore, the number of women undergoing a bilateral mastectomy increased by 87% between 2002 and 2011.

Incisional NPWT

In recent years various publications have described the use of negative pressure wound therapy and its potential benefits in the management of breast cancer post-operative incisions. The rationale for routine use of NPWT for this indication was based on a number of trials that have demonstrated a significant reduction in wound breakdown. NPWT can be used after any surgical incision with a closed tissue surface. It has been shown to reduce the number of patients who develop surgical site infections. In addition, the use of NPWT reduces the length of hospital stay, reduces financial costs, and improves patient satisfaction. NPWT is a proven strategy for reducing the infection rate, which is a major concern in the management of breast cancer.

NPWT can help to manage post-operative bleeding, seromas, and fluid collection. It also helps to promote re-epithelialization and wound healing. The use of NPWT can reduce the risk of surgical site infections and improve patient outcomes. NPWT can be applied with or without a wound dressing and can be used in a wide range of surgical procedures.

Case presentation

Mrs. D is one of the patients who was treated with NPWT on post-mastectomy incisions. However, it would seem reasonable to assume that the patient's experience of using the PICO dressings may vary depending upon the type and extent of the complications that arise. In some instances the nature of the surgical procedures such as the level of tissue trauma to progress to post-op closure is higher. In addition, the presence of surgical drains, potentially for a prolonged period, provides additional support that helps to reduce the risk of seroma formation and maintains a moist environment.

Surgical intervention

The current clinical management guidelines recommend the use of NPWT for all incisions following breast cancer surgery. The authors' experience has been that the use of NPWT on post-mastectomy incisions is associated with a high level of acceptability by the patient.

The application of Single Use incisional NPWT

In this case, we decided to use the PICO single-use NPWT system due to its ease of use and small size. This system is available in various sizes and can be used in a wide range of surgical procedures.

Outcomes - Initial Assessment: Day 6

An initial wound assessment was performed in the outpatient wound clinic six days after the procedure. The PICO dressings had remained intact and in place since the operation and minimal exudate strike-through was evident on the outer surface of the dressings (see Figure 1 and Figure 2). The edges of the scar were lined up and the adhesions strips were still in place (see Figure 3). New PICO dressings were applied to continue incisional NPWT until the next review, scheduled for a further assessment.

Discussion