The use of negative pressure and AMD™ gauze to manage a large post-operative abdominal wound

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Introduction

The use of gauze as a therapeutic medium for topical negative pressure (TNP) has been known about for some time. It has developed in the commercial arena in the last year with introduction of a number of companies' TNP products. PHMB impregnated gauze has been the standard medium with inclusion with the silicone drain in what is known as the Chariker – Jeter technique of TNP dressings. Almost inevitably, the use of gauze in such a way has provoked a number of reactions, particularly amongst those whose experience in wound care extends back to the time of wet–to-dry dressings. It is hoped that this case study will address some of those anxieties.

Assessment of the Patient and the Wound

- 64-year old lady in Intensive Care Unit
- Non-insulin dependent diabetic
- Presented on admission with abdominal pain, nausea and vomiting
- Surgical procedure: Laparotomy needed to explore problems and perform intestinal resection.
- Post-operative wound dehisced after breakdown in stitching of intestinal wall
- Leakage into wound bed caused necrosis
- Following surgery all wounds were dressed at least once, sometimes twice a day to manage exudate and drainage.

Post operatively the Tissue Viability Nurse was asked to review the wound as the wound bed was contaminated with necrotic and sloughy tissue. Chronic inflammatory process was present as a result of leakage of abdominal contents into the wound.

The decision was made to commence treatment with Topical Negative Pressure (TNP) from Talley Group to manage the wound.

The wound was photographed prior to commencing treatment (Fig.1). It is evident from the photograph that a large bore catheter was insitu from the abdominal cavity to facilitate drainage. The wound measurements at this time were 60mm deep x 200mm shortest edge x 300mm largest edge.

Fig. 1

Method

Fig. 2

The interface through which negative pressure is applied when using TNP is moistened AMD™ (antimicrobial dressing) gauze and a silicone drain (Day 1, Fig. 2).

In this case, a layer of saline moistened AMD™ gauze was placed on the dehisced wound bed. The flat drain was cut to size, 1 cm from the wound edge to allow for contraction. The drain was then placed on top of the gauze lining the wound bed and the remaining saline moistened gauze was used to fill the wound and fluffed up to skin level.

The wound was then covered with a transparent film. This ensured an air tight seal and a moist wound healing environment were maintained (Chariker, Jeter et al, 1989). The drainage tube was connected to the TNP system and pressure of 60mmHg was set. Exudate was removed through the drain into the sealed drainage canister.

The pressures recommended for topical negative pressure systems using AMD™ gauze are between 60-80mmHg. The use of lower vacuum levels is supported in literature. Usupov and Yepifanov (1987) report that, to avoid tissue damage, pressure should not exceed 80mmHg. In addition, Wackenfors et al (2004) suggests that low negative pressure may minimise possible ischaemic effects, especially in soft tissue and lower pressures reduce the effects of hypoxia and improve reperfusion.

Results

Fig. 3 (DAY 3)

Day 3: The first dressing change took place after 3 days (Fig. 3). The patient had produced 500ml of exudate over the first 2 days of negative pressure therapy. Pressure was raised to 80mmHg to manage high level of

exudate. The use of the wound drain to apply negative pressure allowed for application of pressure away from catheter. The catheter was surrounded with hydrocolloid to manage contamination of wound with fluid from abdominal cavity.

Day 11: The wound dressing was changed every 48 hours for the first fortnight as wound exudate levels were still high (>200 ml per day). After discussion with the surgical team, removal of the catheter was negotiated. The patient had contracted acute cholecystitis, causing leakage of bilious fluid into the wound bed which needed management as part of wound dressing.

Day 28: The fistula into the abdominal cavity had been managed by covering with Mesitran sheet to collect corrosive exudate and encourage healing of fistula. The wound bed showed significant reduction of inflammation as a result of good management of drainage from bowel (Fig. 4). Hence, there was also significant reduction in exudate production (<100ml) between dressing changes, which still took place three times a week at this point.

Fig. 4 (DAY 28)

Day 42: The patient was now producing >50 ml exudate between dressing changes. The wound size was 20-40 mm deep x 150 mm shortest edge x 280 mm longest edge (Fig. 5). Dressing changes were reduced to twice weekly (Monday/ Friday or Monday/Thursday). No adherence was experienced as a result of using AMD™ gauze in the wound over a longer period.

Fig. 5 (DAY 42)

Day 112: TNP therapy was discontinued as the rehabilitation of the patient was now the clinical priority. The wound was clean and granulating well with good epithelialisation starting at edges. Wound size: 5mm deep x 100mm shortest edge x 200mm longest edge (Fig. 6).

Fig. 6 (DAY 112)

Discussion

The use of AMD™ gauze and silicone drain with negative pressure of 60-80mmHg was clinically effective in bringing a large post-operative abdominal wound close to healing. Despite the reduction in dressing changes to twice weekly, no adherence issues were experienced with the use of the AMD™ gauze against the wound bed. At no time was a silicone or lipocolloid contact layer needed on the wound bed to avoid granulation into the AMD™ gauze. The patient did not experience any pain during dressing changes related to the use of the AMD™ gauze. The use of AMD™ gauze represented a much simpler dressing technique, which was quicker, easier to teach and learn, and cost-effective in comparison with conventional dressings.

Conclusion

The management of the open abdomen has evolved over the years and TNP systems using AMD™ gauze have shown themselves to be simple, viable, and easy to use alternatives to foam-based TNP products. The perceptions and concerns about the use of gauze in modern day wound management have been overcome. One of the main advantages of utilising this system was the ability to manipulate the moistened gauze to the exact shape of the wound. Therefore when contemplating the use of topical negative pressure, the application of a moistened AMD™ gauze and a silicone drain as the interface warrants consideration.

References

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