

Evaluation of clinical outcome and cost in a cohort of patients using gauze based negative pressure wound therapy

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Aim

To evaluate the clinical effectiveness and cost of gauze based wound filler used to deliver Negative Pressure Wound Therapy (NPWT) set at -80mmHg in a cohort of patients with varied wound aetiologies.

Method

Data (including patient demographics, wound dimensions, duration of therapy and cost of consumables) was captured prospectively from patients undergoing NPWT in the PCT in a 3 month period see table 1. Analysis was carried out in order to consolidate the data.

Results

In total 12 patients received NPWT during the three month period, 5 of the patients were still using NPWT at the end of the 3 month period, leaving 7 completed cases. Mean duration of NPWT in the completed patients = 29 days. The mean reduction in wound volume was 83% an average of 20% per week see table 2. Dressings were changed twice and the canister changed once a week at a mean cost of £9.10 per patient per treatment day for consumables. When compared to the costs incurred by the Trust for conventional dressings and nursing time prior to the commencement of NPWT this represents significant savings at the point of switch. The Trust owns devices therefore the rental costs of devices have not been calculated. NPWT was discontinued when the wound had progressed sufficiently to be managed with conventional dressings.

Conclusion

Recent publications have suggested NPWT can be successfully delivered irrespective of wound filler and that little is known about the ideal negative pressure setting. In this prospective audit of 12 patients treated with gauze based NPWT set at -80mmHg, all wounds decreased significantly in volume, area and depth over the duration of therapy compared to baseline measurements. A Mean wound volume reduction of 83% was observed in the 7 completed patients. We conclude that gauze is effective wound filler with which to deliver NPWT at -80mmHg in the management of complex open wounds managed in a community setting.

One Case from the series

This case study describes the care of a 49 year old admitted with colitis who underwent a total colectomy and formation of an ileostomy. Whilst in hospital he developed an infection resulting in a partial dehiscence of his abdominal wound. He was discharged 14 days post operation with Negative pressure wound therapy *in-situ*. Following discharge home he was followed up by the Tissue Viability Team and was found to have a large granulating wound which whilst healing posed a clinical challenge due to the high volumes of exudate. NPWT provides a practical solution with associated patient benefits in terms of containment of fluid lost.

NPWT using a VISTA pump and a medium flat drain kit on was commenced on 24th October 2008 and changed every third day. NPWT was used for a total of 5 weeks due to the depth, extent of the wound and to facilitate exudate management. Within the first week there was a noticeable decrease in the size of the wound, though exudates levels were still high. The patient remained free from infection through out the use of NPWT. Staff were able to teach the patient how to change his canister which in turn allowed for less frequent District Nursing visits. For the trust this had a positive impact from a case load management perspective. Had conventional dressings been used the level of exudate would have necessitated daily or twice daily visits which can be difficult to sustain and places a strain on nursing resources. The use of NPWT in this case saved the Trust at the point of switch £220.28 on consumables and £105.00 in nursing costs a total of £325.28 per week as can be seen in table 3. It is essential to consider the patient when making treatment choices. In this case NPWT was offered the advantages to this gentleman.

It allowed him to remain at home, there was less interference with his wound with NPWT reducing the risk of further infection and he remained infection free. The wound decreased in size over the five week period.

At week 5 following assessment it exudate levels had also decreased sufficiently to allow the introduction of conventional dressings that his wife was taught to change on alternate days with weekly review in the Tissue viability clinic and continues to make progress.

Table 1

| Patient Number | Wound site/aetiology | Commencement NPWT | | | | Discontinuation NPWT | | | | Reduction % | Number of days | Dressings per week | Canisters per week |
|----------------|------------------------------------|-------------------|----------|----------|------------------------|----------------------|----------|----------|------------------------|-------------|----------------|--------------------|--------------------|
| | | Length cm | Width cm | Depth cm | Volume cm ³ | Length cm | Width cm | Depth cm | Volume cm ³ | | | | |
| 1 | Dehiscence Caesarean section | 5 | 4 | 3 | 60 | 1 | 4 | 0.5 | 2 | 96.67% | 15 | 2 | 1 |
| 2 | Anal wound following hemicolectomy | 5 | 2 | 3 | 30 | 3 | 4 | 0.5 | 6 | 80% | 12 | 2 | 1 |
| 3 | Dehiscence Abdomen | 13 | 6.5 | 2 | 156 | 6 | 3 | 0 | 18 | 88.46% | 36 | 2 | 1 |
| 4 | Dehiscence Abdomen | 10.5 | 2.5 | 2 | 52.5 | 6 | 2 | 0.5 | 6 | 88.57% | 20 | 2 | 1 |
| 5 | Dehiscence Abdomen | 12 | 10 | 0.5 | 60 | 9 | 9 | 0.5 | 40.5 | 32.50% | 61 | 2 | 1 |
| 6 | Dehiscence Abdomen | 27 | 5 | 5.5 | 742.5 | 5 | 0.5 | 0 | 2.5 | 99.66% | 35 | 2 | 1 |
| 7 | Grade 4 pressure ulcer | 5 | 3 | 2 | 30 | 3 | 1 | 0.5 | 1.5 | 95% | 28 | 2 | 1 |

Table 2

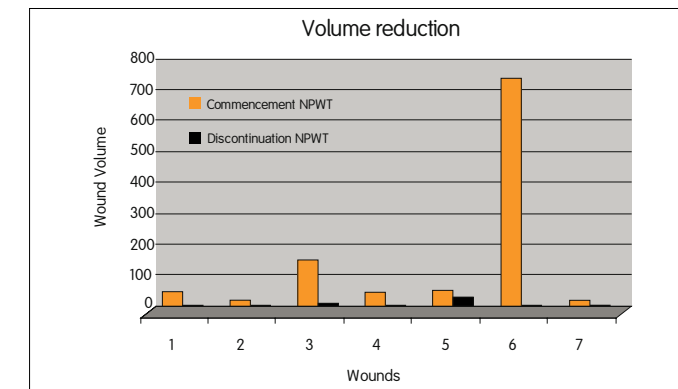


Table 3

| Wound characteristics | | | |
|-----------------------|--------|---------------------------|------|
| Length (cm) | 29 cm | Area (cm ²) | 145 |
| Width (cm) | 5 cm | Volume (cm ³) | 798 |
| Depth (cm) | 5.5 cm | Exudate level | High |

| NPWT | | | Advanced Wound Care | | | |
|----------------------------|--------|--------------------------|----------------------------|-----------------|--------------------------|---------------|
| Dressing changes / week: 2 | | | Dressing changes / week: 7 | | | |
| Canister changes / week: 1 | | | | | | |
| Item | Size | Number of Items per week | Cost per week | Item | Number of items per week | Cost per week |
| Dressing kit | Medium | 2 | £41.40 | Packing | 42 | £217.14 |
| Canister | Large | 1 | £20.70 | Covering | 21 | £52.50 |
| Pump | | | £0.00 | Saline | 14 | £9.94 |
| Total materials | | | £62.10 | Swabs | 28 | £2.80 |
| Nurse time | | | £42.00 | Total materials | | £282.38 |
| Total | | | £104.10 | Nurse time | | £147.00 |
| | | | | Total | | £429.38 |

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