NEGATIVE PRESSURE WOUND THERAPY OVER CONVENTIONAL DRESSINGS - A RETROSPECTIVE ANALYSIS

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INTRODUCTION

An ulcer is defined as a breach in the epithelial continuity over a bodily surface. Ulcers are common presentations in the General Surgery OPD and a major cause of morbidity and, sometimes, mortality for patients. Increased cost of hospital stay, prolonged use of antibiotics causing antibiotic resistance and a general embarrassment and despair associated with ulcer management, makes it essential to determine optimal treatment. Traditional management of ulcers has included Normal Saline dressings, Silver Colloidal dressings, dressings with special collagen sheets and much else. Vacuum Dressing techniques, such as Negative Pressure Wound Therapy(NPWT) have recently been making a breakthrough in the management of ulcers, especially chronic wounds. They seem to work by preventing biofilm formation, contracting wound bed, improving granulation etc. Multiple studies have been published regarding the effects of negative pressure wound therapy in ulcers. Four main mechanisms of action for NPWT have been identified by current research: macrodeformation, microdeformation, fluid clearance, and environmental control of the wound.[1] When it comes to the percentage of open wounds that heal after six weeks, there is somewhat convincing evidence that there is no discernible difference between NPWT and normal care.[2] Diabetic Foot ulcers are another leading cause of hospitalisation. It has been demonstrated by Riaz et al that VAC therapy is superior to standard gauze dressings soaked in saline for the healing of superficial diabetic foot ulcers.[3] Our study aims to compare the difference in outcome amongst patients of chronic ulcers following NPWT and standard Normal Saline Dressings (NSD).

METHODOLOGY

Study Setting- The study will be conducted in the General Surgery Department of Silchar Medical College and Hospital, recording data from a period of October, 2023 to October 2024.

Study Design- A retrospective analysis will be performed using data of patients recorded in the General Surgery wards of Silchar Medical College during the period of October 2023 to October 2024.

Inclusion Criteria-

- Patients who underwent NPWT or NSD for chronic ulcers during the period of study.

Exclusion Criteria -

- Patients suffering from Surgical Site Infections, Malignancy, Osteomyelitic wounds, Gangrene
- Wounds requiring extensive debridement at regular intervals and wound excision and abscess drainage.
- Patients with Peripheral Vascular Disease(PVD) requiring amputation.

All patients who had presented with chronic ulcers and were recorded as such in the dept of General Surgery during the period of study will be included for analysis. This will be done for all patients presenting to the OPD and Casualty of Surgery department.

The Negative Pressure Wound therapy device available was used at negative 125 mmHg of pressure maintained at 1 hour ON and 1 hour OFF cycle i.e 12 hour cycle out of 24 hours , using a portable suction machine. Dressings were changed on every 5th day.

For NSD modality , Normal saline moist gauze application along with regular debridement and anti septic technique was used. Dressings were changed every 24 hrs. Patient progress

was recorded. And quantification was done using percentage cover of wound bed with granulation tissue as a metric that was noted in daily notes.

The sample size was calculated using an online statistical calculator for descriptive studies[4]. It was found to be 46.

RESULTS

Of the 46 patients whose data was recorded, 31(67.4%) were males and 15(32.6%) were females. Coming to site of ulcer the distribution included foot(23%), leg(13%), thigh(9%), hand(6.5%) forearm(4.3%), Arm(4.3%), Sacrum(11%), Back(6.5%), Neck(2%), Scalp(4.3%), Others(16.1%). Of the 46 members of the study,19 had undergone Negative Pressure Wound Therapy(41.3%), and the remaining 27 had undergone NSD(58.7%). When it came to etiology, 15 pts had Diabetic ulcers, 7 had Bed sores, 3 had Traumatic ulcers, 20 had ulcers due to Peripheral Vascular Disease and 1 had due to other causes. On recording the average of all hospital stays in each category as Mean Hospital Stay(in days), we found NPWT had MHS of (15±5), NSD had a MHS of (28±6.6). When it came to measuring outcome using granulation cover as a metric, NPWT group showed 40% mean cover on Day 5 and 88% mean cover on Day 11. NSD showed 22% mean cover on Day 5 and 42% mean cover on Day 11.

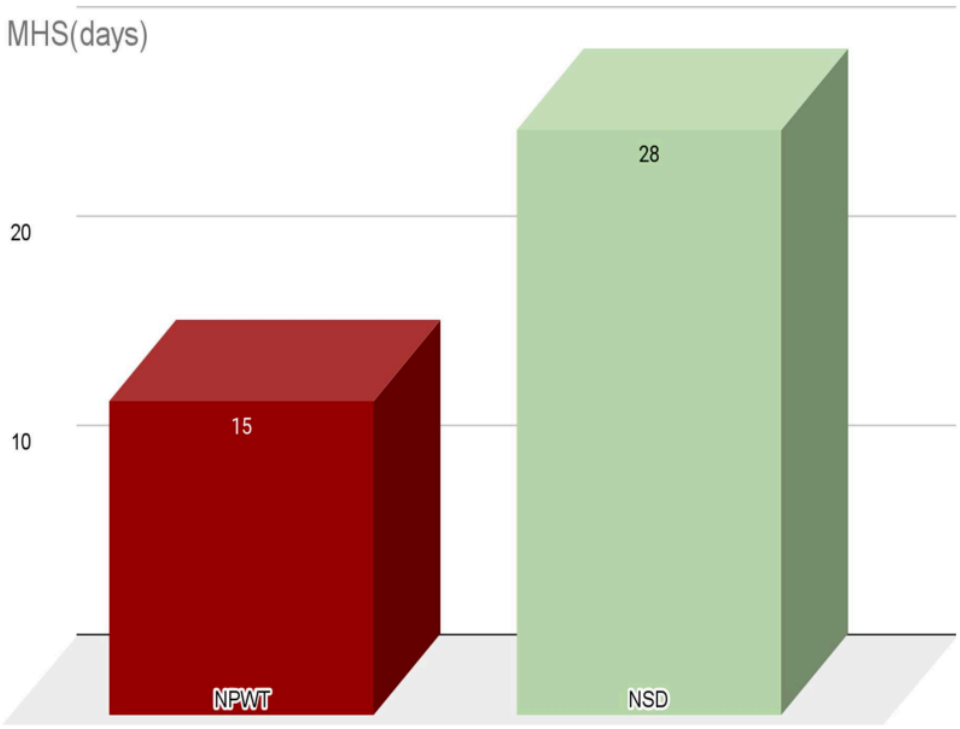

Fig: Bar diagram visualising the Mean Hospital Stay in NPWT group versus NSD group.

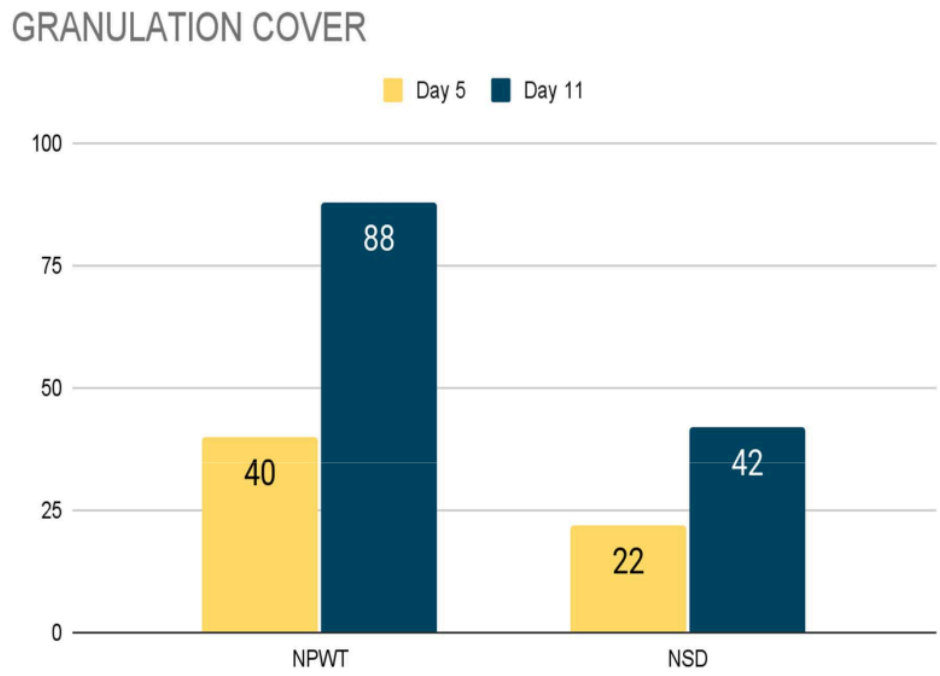

Fig : Granulation cover in NPWT versus NSD groups

Fig: Day 0 and Day 19 of NSD diabetic foot wound

Fig: NPWT over the sacrum and Day 0, Day 5 and Day 11 after NPWT

CONCLUSION

Our study showed that Negative Pressure Wound therapy, in comparison to normal saline dressing, was associated with a much shorter hospital stay, as well as much faster granulation cover over wounds in ulcer patients in the surgical ward. Some prohibitive factors that came up during our study included the cost of the equipment, presence of uneven surfaces, bony prominences etc. Measuring these variables was outside the purview of this study as all the members of our study were covered by the AYUSHMAN scheme , and this may provide a better understanding of the limitations of NPWT in a future study.

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