

COMPARATIVE STUDY OF VACUUM ASSISTED CLOSURE V/S CONVENTIONAL DRESSINGS IN ULCER¹*Dr. Jagjeevan Ram T. K. and ²Dr. Shivani Tyagi¹Professor and HOD, Dept. of General Surgery, Navodaya Medical College, Raichur, Karnataka.²Postgraduate, Dept. of General Surgery, Navodaya Medical College, Raichur, Karnataka.***Corresponding Author: Dr. Jagjeevan Ram T. K.**

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ABSTRACT

Background: Chronic wounds result in significant functional impairment, reduction in quality of life, and large financial costs for patients and the health care system. This study intends to establish the efficacy of VAC in comparison with conventional dressings in wound healing. **Methods:** The study was conducted at general surgery wards of Navodaya Medical College and Hospital. After debridement of the wound vacuum assisted dressing was applied. Control group was given conventional dressing. **Results:** In the study sample 20% patients were less than 50 years, 76% belonged to 51-70 age group and 4% were more than 71 years of age, 70% male and 30% female. Wounds were located in the foot 64%, leg 32%, sole 2% and forearm 2%. In 5 days 35% of granulation tissue formed in VAC dressing whereas only 10% in case control. Similarly, in 10 days it was 45% for VAC and 25% in case control. Finally, in 15 days it was 68% in case of VAC and 40% in case control. **Conclusions:** VAC results in better healing, with few serious complications, and a promising alternative for the management of various wounds.

KEYWORDS: Wound healing, wound dressing, vacuum assisted closure (VAC), Negative pressure wound therapy.

INTRODUCTION

Wound healing is a complex dynamic process which includes systematic sequence of cell migration leading to repair and closure. This sequence begins with appearance of signs of inflammation in first phase followed by deposition of collagen by fibroblasts, angiogenesis, deposition of granulation tissue, contraction and finally remodeling of the connective tissue matrix, and maturation.^[1] In most of the standard treatment includes debridement of necrotic tissue; dressings with enzymatic debridement compounds, hydrocolloid wound gels, infection control, local ulcer care, mechanical off-loading, management of blood glucose levels, education on foot care, hyperbaric oxygen therapy.^[2] Modern wound-healing concepts include different types of moist dressings and topical agents, although only a few of these treatments have convincingly been shown to give higher wound closure rates compared with traditional wet gauze dressings. During the last two decades a wide variety of innovative dressing have been introduced.^[3] The application of controlled levels of negative pressure has been shown to accelerate debridement and promote healing in many different types of wounds. The optimum level of negative pressure appears to be around 125 mmHg below ambient and there is evidence that this is most effective if applied in a cyclical fashion of five minutes on and two minutes off.^[4] Vacuum-assisted closure, sometimes referred to as Micro Deformational

Wound Therapy (MDWT) or Negative Pressure Wound Therapy (NPWT), has revolutionized wound care over the last 15 years. This technology is based on mechanotransduction principles.^[5] Vacuum assisted closure (VAC) provides a new paradigm for wound dressing and is a wound management technique that exposes wound bed to controlled negative pressure by a way of closed system. It provides an ideal environment which is necessary for wound healing.^[6] Therefore, this study intends to establish the efficacy of VAC in comparison with conventional dressings in wound healing. Revolution shown by VAC dressing provides evidence of modern development.

MATERIALS AND METHODS

The study was conducted at the department of general surgery, Navodaya Medical College Hospital and Research center. A total of 50 cases clinically presenting as ulcer between January 2022 and December 2022 were included in the study.

Study design

Longitudinal descriptive study.

Study Period

January 2022 to December 2022.

Ethical Approval

Institutional ethical committee approval was obtained prior to the initiation of the study.

Inclusion Criteria

Patient more than 12 years of age. Patients presenting with ulcer and willing for regular follow-up for the study duration.

Exclusion Criteria

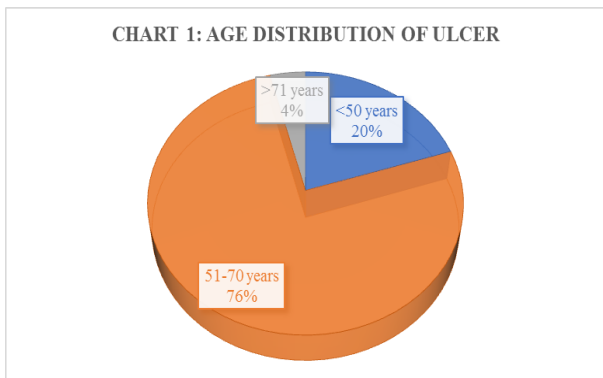
Patients less than 12 years of age. Malignant ulcers, osteomyelitis, ischemic ulcers. Patients with compromised vascular supply to the affected site. Active bleeding/undebrided wound. Abdominal wounds/acute wounds.

Sample Size

All patients who reported to department of general surgery with ulcer and who fulfilled the inclusion criteria during the study period. A total of 50 subjects were taken for this study.

RESULTS

In chart 1 the age wise distribution of patients with ulcers is shown. 20% patients were less than 50 years, 76% belonged to 51-70 age group and 4% were more than 71 years of age.



In chart 2, the gender wise distribution of the study was 70% male and 30% female.

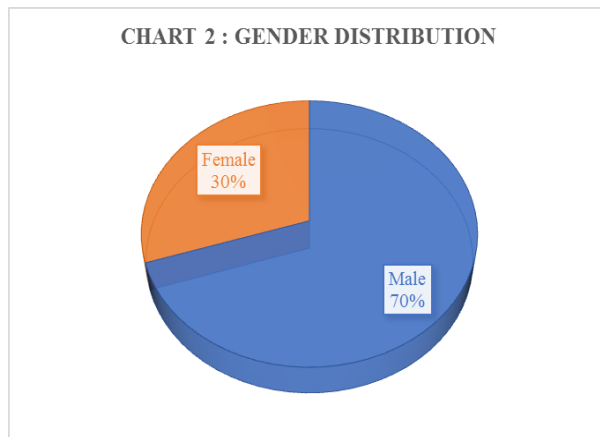


Chart 3 shows the distribution of location of wounds. Wounds were most commonly located in the foot 32 (64%), leg 16 (32%), sole 1 (2%) and forearm 1 (2%).



In chart 4 shows the percentage of granulation formation in wound bed at 5, 10, and 15 days are shown. In 5 days 35% of granulation tissue formed in VAC dressing whereas only 10% in case control. Similarly in 10 days it was 45% for VAC and 25% in case control. Finally in 15 days it was 68% in case of VAC and 40% in case control.

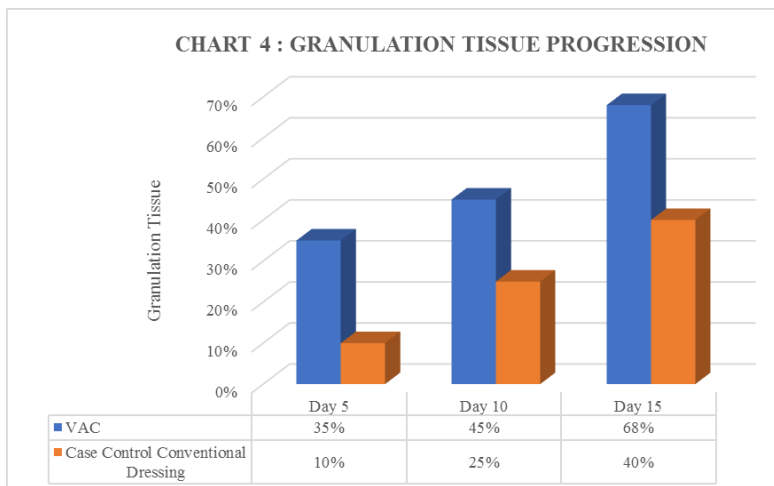




Figure 1: VAC dressing.



Figure 2: Progression of ulcer after VAC dressing.



Figure 3: Healing of ulcer after VAC dressing.

DISCUSSION

In this study it is demonstrated that the use of vacuum therapy in wounds results in improved wound healing compared to conventional moist gauze therapy.^[6] One of the important advantages of vacuum therapy is the fact that healthier wound conditions were achieved without intermediate debridement.^[7]

Wound management is a complex task and differs according to size of wound, type of structure involved, general health and nutritional status of patient. Negative pressure wound therapy (NPWT) or vacuum assisted closure (VAC) therapy is one of them. VAC works on the principles of mechanotransduction.⁵ Several studies reflect evidence that VAC therapy brings faster healing

and hence improved clinical outcome when compared to moisturized saline gauze.^[8-9]

The present study involved 50 cases of wounds that fulfilled the inclusion criteria. Patients affected were most commonly in the age group of 51-70 years. There was a male preponderance with male: female ratio of 7:3. VAC dressing was done in wounds occurring in a variety of locations like foot, leg, sole and forearm. The vacuum assisted dressing in the patient has been depicted in Figure 1 and the ulcer progression is shown in Figure 2. Significant wound healing after vacuum assisted dressing has been shown in Figure 3.

VAC Therapy provides sterile and controlled environment to large educating wound surfaces by controlled application of sub-atmospheric pressure.^[10] It prepares wounds for closure via split thickness skin grafting or secondary closure in lesser time leading to less overall morbidity with decreased hospital stay.^[11-12]

CONCLUSION

We found that VAC dressing was superior to conventional dressing. VAC dressings facilitated early wound healing and decreased the morbidity in our patients. The application of VAC is simple but requires training to ensure appropriate and competent usage.

Conflict of interest: None.

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