Negative Pressure Wound Therapy Versus Conventional Wound Therapy in The Management of Diabetic Lower Limb Ulcers

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ABSTRACT

BACKGROUND - The prevalence of diabetes is rapidly increasing worldwide, leading to an upsurge in surgeries for diabetic foot complications. Diabetic lower limb ulcers, which often result in infection, gangrene, and potential limb amputation, are common, complex, and costly sequelae of diabetes. This study aims to compare the rate of wound healing between Negative Pressure Wound Therapy (NPWT) using Vacuum Assisted Closure (VAC) and conventional dressings in the management of diabetic lower limb ulcers. Data was collected over a three-year period from August 2020 to October 2022, involving patients with diabetic lower limb ulcers distributed equally between the VAC dressing and conventional saline-based dressing at a tertiary care institute in Pune, India. The results showed that the VAC group exhibited a significantly lower median ulcer size at week 1 and week 3 compared to the conventional dressing group. Moreover, the VAC group had fewer debridements and limb

amputations than the conventional group. These findings suggest that VAC may be a potential option for dressing in diabetic patients.

OBJECTIVES - This study aims to investigate the efficacy and safety of NPWT using VAC compared to conventional wound therapy for diabetic lower limb ulcers.

METHODS - The study obtained ethical approval and informed consent from participating patients. It was a prospective comparative study conducted at the Department of General Surgery in a medical college and hospital in Pune, India. The study group received NPWT using VAC, while the control group received conventional dressings. Various parameters, including age, blood sugar levels, HbA1c, and gender, were recorded for both groups. Bacterial growth, the number of debridements, ulcer size, and the need for skin grafting were assessed. Statistical analysis was performed using appropriate tests.

RESULTS -The study included 100 patients, with equal distribution between the VAC dressing and conventional dressing groups. The VAC group showed significantly lower bacterial growth compared to the conventional dressing group. Acinetobacter, Klebsiella, MRSA, and Proteus were more prevalent in the conventional dressing group, while Coagulase Negative Staphylococci and Enterococcus were more prevalent in the VAC group. The VAC group had a significantly lower number of debridements and smaller ulcer size at week 1 and week 2 compared to the conventional dressing group. Moreover, a higher proportion of VAC patients underwent skin grafting compared to the conventional dressing group.

CONCLUSIONS: Based on the findings, NPWT using VAC may be considered as a potential dressing option for managing diabetic lower limb ulcers. It led to reduced bacterial growth, lower ulcer size, decreased number of debridements, and an increased likelihood of skin grafting compared to conventional dressings. Further studies with larger sample sizes are

recommended to validate these results and assess the long-term outcomes of NPWT in diabetic foot ulcer management.

INTRODUCTION

Hyperglycemia is the defining feature of diabetes, which refers to a group of metabolic disorders that are caused by abnormalities in insulin production, insulin action, or both. Diabetes affects a disproportionately high number of individuals in nations with low and intermediate incomes, according to the World Health Organization (WHO), which estimates that more than 422 million people worldwide suffer from the disease. The International Diabetes Federation (IDF), which announced in 2019 that 463 millionpeople were diagnosed with diabetes, has forecast even greater numbers. In 2019, the IDF stated that 463 million individuals were diagnosed with diabetes. Diabetes is connected with chronic hyperglycemia, which may cause dysfunction of multiple organ systems such as renal, ophthalmic, cardiovascular on a long term basis.[1]

Patients with diabetes today often live into adulthood, at which point they are more likely to experience diabetes's long term consequences, which may include retinopathy, nephropathy, neuropathy, as well as the peripheral arterial disorders. Life expectancy hasgreatly risen due to the widespread availability of insulin and the greater complexity of contemporary diabetes therapies. This has allowed people with diabetes to live longer.[2] Foot ulceration and the probable need for eventual amputation are two potential outcomes that might be brought on by the development of peripheral artery disease and/or peripheral neuropathy. More than one million people have their limbs amputated every year, with diabetes being a contributing factor in as much as seventy percent of these cases. Not only does the

impact of amputation have a devastating effect on people's lives, but it is also one of the diabetes-related complications that results in the greatest financial burden. This is due to the fact that foot problems are the leading cause of hospitalisation for people who have diabetes.[3]

When it comes to the treatment of diabetic foot ulcerations (DFUs), there are a few different treatments that are considered to be conventional. These techniques may be performed sequentially or concurrently, depending on the nature of the wound, ability to access, and local recommendations. On this list are the procedures of surgical debridement of the injury bed, off-loading, giving antibiotics in the case of an infection, the optimal control in the serum glucose levels, and endovascular treatment or surgery for peripheral artery disease if it is applicable.[4] However, in certain cases, these traditional techniques are ineffective, and as a consequence, the healing process may be drawn out, ulcerations may develop, and amputations may become necessary. Among the several adjuvant and supporting techniques, those that seem to be especially promising in DFUs include bioengineered skin grafts, growth factor administration,hyperbaric oxygen therapy, dressings that tend to expedite wound healing, and negative- pressure wound therapy (NPWT).[5]

Reported benefits of non-invasive positive pressure wound therapy include the following: provision of a closed moist wound-healing environment; reduction in wound volume brought about by drawing the wound edges together; removal of exudate; reduction in infection rates; reduction in oedema at the wound site, leading to an increase in blood flow; and promotion of granulation through an increase in mitosis.[6] There have been no notable drawbacks discovered in connection with NPWT. However, the treatment is highly invasive, and patients may have to remain linked to the NPWT device for up to two weeks. There are,

however, portable devices that are suitable for treatment in the patient's own home. According to the findings of a recent research, NPWT has a detrimental impact on one's quality of life.[7]

In its most basic form, negative pressure wound therapy (NPWT) is a mechanical unit consisting of a tube that is connected to a suction device. This unit generates a sub- atmospheric pressure between the wound and the outside environment in order to remove exudate and speed up the healing process.[8] Despite the fact that NPWT is universally acknowledged to be successful, there are significant discrepancies in their effects included within the literature. Based on our literature review, there is paucity of studies on the using these and none could be found in our settings. Hence, we conducted the following study.

AIM AND OBJECTIVES

AIM

- The purpose of the study is to compare the rate of wound healing with negative pressure dressing to conventional dressings in the management of diabetic lower limb ulcers.

OBJECTIVES

- To evaluate the clinical efficacy and safety in patients of Negative Pressure Wound Therapy (NPWT) using Vacuum Assisted Closure (VAC) compared with Conventional Wound Therapy to treat Diabetic Lower Limb Ulcers.

METHODS

- The study was approved by the local institutional review board. Participating patients signed an informed consent form for the procedure and subsequent treatment and gave written consent for their data to be used in our analyses.
- **TYPE OF STUDY:** Comparative (Prospective) Study

- **STUDY GROUP (A):** Patients who received negative pressure wound therapy.

- **CONTROL GROUP (B):** Received twice daily dressing where the wound was first cleaned with 10% betadine solution & 0.9% normal saline and then moist saline soaked gauze was placed over the wound and wrapped.

- **PLACE OF STUDY:** The Study was conducted on the patients in the Department of General Surgery at Dr. D. Y. Patil Medical College, Hospital And Research Centre, Pimpri, Pune – 411018.

- **PERIOD OF STUDY:** August 2020 to October 2022.

- **SAMPLE SIZE-** 100 patients.

- **STUDY DESIGN**: Materials Used

    1. Romovac Drain 14, 16 Fr with trochar, Ryles Tube, Suction Tube.
    2. Household Sponge.
    3. Vaccum Set.

4. Gauze pieces.

5. Cotton pads.

6. Gamgee Roll.

7. Betadine 10% Ointment.

8. 0.9% Normal saline.

9. 4 inch / 6 inch roller bandages.

10. Vernier Callipers.

Source of Data – General Surgery OPD and WARD at Dr. D. Y. Patil Medical College, Hospital And Research Centre, Pimpri, Pune – 411018

INCLUSION CRITERIA

1. All males and females with Type I & II Diabetes Mellitus with chronic non healing lower limb ulcers.
2. Wagener's Grade I superficial diabetic ulcer.
3. Wagener's Grade II after surgical debridement and an appropriate antibiotic therapy.

EXCLUSION CRITERIA

1. Immunocompromised Individuals.
2. Individuals with chronic renal failure and on dialysis.
3. History of poor compliance with medical treatment.
4. Wagener's Grade III, IV, V.
5. Septicemia.

6. Gas forming organism.
7. Patients being treated with corticosteroids, immunosuppressive drugs orchemotherapy.
8. Any other serious pre-existing cardiovascular, pulmonary disease.

- On admission to the ward from either the OPD or Emergency Department, detailed history was taken of the patient and complete general and local examination was done. All routine investigations Complete Blood Count, Blood Group, Blood Sugar Random, Liver Function Tests, Renal Function Tests, Serology, Serum Electrolytes, Coagulation Profile, Urine Routine, HBA1c, Xray of Affected Limb, Doppler of Affected Limb and Normal Limb & Antibiotic Culture Sensitivity of Wound.
- Patient was primarily started on Inj. Ceftriaxone 1g 12 Hourly and was continously changed according to the Culture Sensitivity Report.
- Patients' Blood Sugar was managed by Inj Human Actrapid after proper consultation with the Physician and discharged on Oral Hypoglycaemic Agents.
- Pre anaesthetic fitness and consent was obtained at every interval when patient required Debridement, Primary Closure, Split Thickness Skin Grafting and Amputation.
- The ulcer size was assessed with the help of Vernier Callipers on Day of admission and continuously on Day 7, Day 14, Day 21 corresponding to the removal of the dressing of the Study Group.
- Complete Closure was assessed by the number of patients that underwent Split Thickness Skin Grafting from the Study and Control Group.

- Written and informed consent off all the patients was taken prior to the enrolment in the research publication.

- **Data Collection** - The required data was collected over a period of 3 years from August 2020 to October 2022 patients with Diabetic Lower Limb Ulcers were assessed to compare the rate of ulcer healing with Negative Pressure Wound Therapyto Conventional Wound Therapy in the management.

- **Statistical Analysis -** Data was entered in MS excel. Analysis was conducted in SPSS 26.0. Categorical variables were expressed in frequencies and proportions. Normality of Continuous variables were tested by Kolmogorov Smirnov test and found to be not normally distributed. Mann-Whitney test was applied to test the association between categorical variables and continuous variables. Chi-square test was applied to test the association between categorical variables. A p value of <0.05 is considered statistically significant.

RESULTS

1. Type of Dressing

The patients equally distributed between the VAC dressing (50%) and the Conventional Dressing. (50%)

2. Age, Blood sugar, and HbA1C of the patients

The median age of the patients in VAC and the Conventional Dressing group was 68 years and 57 years, respectively.

The median blood sugar levels of the patients in VAC and the Conventional Dressing group were 233 and 245.5 mg/dl, respectively.

The median HbA1C of the patients in VAC and the Conventional Dressing group was 8.5 and 8.2, respectively.

3. Gender of the patients

Among the VAC group, 36 males were the majority patients (72%). Similarly, among the Conventional Dressing group also, 34 males were the majority (68%).

4. Bacterial Growth in the patients

All patients who had Conventional Dressing showed positive bacterial growth (100%), 88% of the VAC group (44) patients showed bacterial growth and the difference was statistically significant. VAC group patients had less bacterial growth.

Acinetobacter, Klebsiella, MRSA and Proteus were significantly higher among the conventional dressing patients than VAC patients. Coagulase Negative Staphylococcus and Enterococcus were significantly higher among the VAC patients than the conventional dressing patients **(Table 1)**.

Table 1 – Organism Grown in Study & Control Groups.			**TYPE OF DRESSING**		**p value**
			VAC	**Conventional Dressing**	
Organism	Acinetobacter	Frequency	1	10	**0.008**
	Coagulase Negative Staphylococci	Frequency	16	0	**<0.001**
	Enterococcus	Frequency	16	1	**<0.001**
	Escherichia. coli	Frequency	6	8	0.748
	Klebsiella	Frequency	0	8	**0.006**
	Methicillin Resistant Staphylococcus Aureus	Frequency	0	7	**0.010**
	Proteus	Frequency	0	7	**0.010**
	Pseudomonas	Frequency	5	2	0.175
	Streptococcus Pyogenes	Frequency	0	2	0.180
	Vancomycin Resistant Staphylococcus Aureus	Frequency	0	4	0.055
	Mixed Growth	Frequency	0	1	0.346

5. Debridement

VAC group patients had significantly lower number of debridement (median=1) than the conventional dressing group (median=3)

6. Ulcer size

The size of the ulcer in VAC group reduced in size from week 1 (median=15 cm^2) to 13 cm^2 in the week 2. The median ulcer size was significantly lower in VAC group than the Conventional Dressing group at week 1 (15 vs 20 cm^2) and week 2 (13 vs 18 cm^2). While at week 3, there was no significant difference **(Table 2).**

Table 2 – Ulcer size with Type of Dressing.

Ulcer size	VAC		Conventional dressing		p value
	Median	IQR	Median	IQR	
Week 1	15	11,16.25	20	17,22	**<0.001**
Week 2	13	14.63,8.88	18	16,21	**<0.001**
Week 3	13	11,19.25	17	15,20	0.364

7. Skin Grafting among the patients

Significantly higher proportion of the **(Figure 1)** VAC (38) patients had skin grafting (76%) than the **(Figure 2)** Conventional (17) Dressing patients (34%) **(Table 3)**.

Table 3 – Patients undergoing skin grafting with Type of Dressing.			TYPE OF DRESSING		p value
			VAC	Conventional dressing	
Skin Grafting	Yes	Frequency	38	17	**<0.001**
		Percentage	76.0%	34.0%	
	No	Frequency	12	33	
		Percentage	24.0%	66.0%	
Total		Frequency	50	50	
		Percentage	100.0%	100.0%	

8. Amputation among the patients

Significantly lower proportion of the VAC (1) patients had amputation (2%) than the Conventional (11) Dressing patients (22%) **(Table 4)**.

Table 4 – Patients undergoing amputation with Type of Dressing.			**TYPE OF DRESSING**		**p value**
			VAC	**Conventional dressing**	
Amputation	Yes	Frequency	1	11	**0.002**
		Percentage	2.0%	22.0%	
	No	Frequency	49	39	
		Percentage	98.0%	78.0%	
Total		Frequency	50	50	
		Percentage	100.0%	100.0%	

9. Hospital duration

VAC group patients had significantly shorter duration of hospital stay (median=15 days) than the conventional dressing group (median=28 days) **(Table 5)**.

Table 5 – Duration of Stay with Type of Dressing.	**VAC**		**Conventional dressing**		**p value**
	Median	**IQR**	**Median**	**IQR**	
Hospital stay (in Days)	15	14,17	28	25,32.5	**<0.001**

DISCUSSION

The treatment of diabetic foot ulcers involves a number of different approaches, including both local and systemic therapy. The treatment of wound is an essential component of this therapy.[94] Considering the importance, newer modalities of ulcer management are evolving over the period. One such therapeutic strategy is NPWT, which has shown to eliminate the

tissues that had undergone necrosis, along with secretions from the ulcer, decreasing the infections as well as promoting the granulation tissue.[95] The current study was conducted among 100 patients with Wagner 1 and 2 grade diabetic ulcer in the lower limb, equally distributed between the VAC dressing (50%) and the conventional saline based dressing (50%), at the surgery department of a tertiary care institute in Pune, India.

In a similar study from Pudhucherry, India, **James et al** compared the safety as well as the efficacy of the VAC with the conventional dressing among the diabetic foot ulcer patients.[83] In another study from India conducted at Punjab, NPWT for DFUs was compared with twice daily saline dressing by **Nain et al**.[89] **Vaidhya et al** assessed clinical as well as the cost effectiveness of the NPWT among the DFU therapy in Ahmedabad, India.[87] **Seidel et al** conducted a RCT in Germany wherein they compared the effect of the NPWT and standard moist wound care (SMWC) modality for the diabetic foot ulcers from Surgical and medical departments.[86] **Sukur et al** assessed the outcomes between the diabetic wound ulcers in the foot between the VAC and moist dressing modalities.[85] Similar studies on the efficacy of NPWT/VAC were conducted among the DFUs from New Delhi, India (**Maranna et al**),[84] Kashmir India (**Lone et al**),[88] Iran (**Ravari et al**),[96] and USA (**Fife et al, McCallon et al**).[90,91]

- **Demography**

The median age of the patients in our study in the VAC and the conventional dressing group was 68 years and 57 years, respectively. **James et al** included relatively younger patients in their study among VAC (mean=55.85 years) as well as conventional dressing group (52.89 years).[83] **Nain et al** also reported slightly younger aged patients than ours in NPWT (mean=61.33 years) and saline dressing group (mean=55.4 years).[89] **Sukur et al** included patients with mean age of 60.6 years in VAC group (younger than our study), while patients in the moist dressing group was of similar age to ours (mean=58.3 years).[85] **Lone et al**

included younger patients in VAC (mean=53.79 years) and conventional dressing group (mean=54.57 years), than our patients.[88] Mean age of patients in **Vaidhya et al** study was 56.5 years.[87]

In the present study, males were the majority in both VAC (72%) as well as the conventional saline dressing group (68%). This is in line with majority of the previous studies who also reported males as majority patients with diabetic lower limb ulcer. **Seidel et al** had 77.8% and 77% males in the NPWT and the SMWC group of patients.[86] Males were 59.26% and 55.56% in the VAC and conventional dressing group in the **James et al** study.[83] **Sukur et al** included 80.6% and 79.4% males in VAC and moist dressing groups.[85] **Nain et al** study had 80% males in NPWT and 86.67% males in the saline dressing group.[89] **Ravari et al** also had male preponderance in their study.[96] However, **Lone et al** reported a majority of patients as females (64.28%).[88]

- **Glucose control**

In the present study, the median blood sugar levels of the patients in VAC and the conventional dressing group were 233 and 245.5 mg/dl, respectively. Median HbA1C of the patients in VAC and the conventional dressing group was 8.5 and 8.2, respectively, indicating a poor sugar control. This blood sugar control status was poor and similar to the patients included in **James et al,** in VAC (mean=8.74) as well as conventional dressing group (mean=8.54).[83] In contrast, **Ravari et al** reported a high proportion of patients good sugar control (VAC-100% & conventional dressinh-81.8%).[96]

- **Bacterial Growth in the patients**

Wound infection has been reported a potential factor adversely impacting the closure of diabetic ulcer in the previous study.[86] In our study, all patients who had conventional dressing showed positive bacterial growth (100%), 88% of the VAC group patients showed bacterial

growth and the difference was statistically significant. VAC group patients had less bacterial growth. **Nain et al** reported that NPWT significantly reduced the bacterial growth in the DFUs than the saline dressing.[89] **Lone et al** reported no such difference in culture positivity, however, they undertook a blood culture.[88]

In our study, Coagulase Negative Staphyloccoci (36.4%) and enterococcus (36.4%) were the most common organism in VAC group. Acinetobacter was the most common organism in conventional dressing patients (20%). In contrast, **Lone et al** reported pseudomonas as most common among VAC patients (39.3%) as well as conventional dressing group (46.4%).[88] We found Acinetobacter, Klebsiella, MRSA and Proteus were significantly higher among the conventional dressing patients than VAC patients. Coagulase Negative Staphyloccoci and Enterococcus were significantly higher among the VAC patients than the conventional dressing patients. In contrast, **James et al** reported E coli to be significantly higher among the conventional dressing than VAC group.[83] Gram negative organisms as well as polymicrobial growth was also higher among the conventional group.

- **Debridement**

In the present study, VAC was found to have significantly reduced the number of debridement required than the conventional group patients. But **James et al** reported that VAC and conventional groups did not show significant difference in terms of the requirement of debridement.[83] Previous studies reported NPWT having significantly lower number of dressings than the conventional dressing group.[87]

- **Ulcer size & Skin Grafting**

The median ulcer size was significantly lower in VAC group than the conventional dressing group at week 1 (15 vs 20 cm^2) and week 3 (13 vs 18 cm^2). The size of the ulcer in VAC group reduced in size from week 1 (median=15 cm^2) to 13 cm^2 in the week 2. However, the

difference in reduction of ulcer size over the period of time was similar for VAC and the saline dressing group. While the saline group also showed reduction in ulcer size, it was not significant enough to ensure skin grafting. **Ravari et al** reported significantly smaller ulcer in VAC group than conventional dressing, similar to our findings.[96] **James et al** included much larger DFUs in their study, with mean ulcer size of 70.97 cm^2 in VAC group and 80.44 cm^2 in the conventional group.[83] They also reported that VAC group showed significantly greater reduction in the wound size than the conventional group, indicating the positive impact of VAC on DFUs. Mean decrease in the size of the ulcer was significantly better in the NPWT than the saline dressing group.[89] **Maranna et al** also reported significant reduction of ulcer size in the VAC group.[84]

Seidel et al reported complete wound closure among 14.6% of NPWT and 12.1% of the SMWC patients, with statistical difference in the rate.[86] Decrease in wound size was higher among the VAC group (78.6%) than the conventional dressing group of **Lone et al** study (53.6%).[88] **McCallon et al** reported earlier satisfactory healing among the VAC patients than the saline dressing patients.[90]

The enhanced granulation cover that results from faster healing in NPWT can be attributed to macro-deformation, wound environment stabilisation, and a reduction in edoema; micro-deformation, which leads to raise in proliferation of the cells and vascular tissue formations; and a reduced bacteria count. All of these factors contribute to faster healing.[83] Through the removal of purulent discharge and the stimulation of granulation tissue growth, NPWD treatment makes it possible to salvage diseased exposed mesh.[89]

Significantly higher proportion of the VAC patients had skin grafting (76%) than the conventional dressing patients (34%), which might be due to the greater reduction in the ulcer size over the period of time in the VAC. This paved the way for the higher and earlier skin

grafting procedure carried out in the VAC patients, indicating better healing rates. Similar to our findings, **Seidel et al** also reported significantly shorter time for preparation of the NPWT patients for the subsequent therapy (with at-least 95% granulation tissue), than the SMWC patients.[86] Similarly, **Sukur et al** also reported that VAC patients had significantly lower time to achieve the 90% granulation tissues than the moist dressing group.[85] The rate of granulation tissue formulation, which facilitates grafting, was found to be significantly higher among the VAC patients than the conventional dressing, for wounds of size <10 cm, in **James et al** study.[83]

Nain et al also demonstrated that NPWT patients showed earlier appearance of granulation tissues than the saline dressing group patient.[89] But the total time for wound closure was comparable between the two groups. **Vaidhya et al** reported a significantly higher success rate among the NPWT treated patients (90%) than the conventional dressing group (76.66%).[87] Significantly higher proportion of the VAC patients achieved granulation tissue growth at week 4 than the conventional dressing patients in the **Lone et al** study.[88]

- **Amputation**

In our study, we found a significantly lower proportion of the VAC patients had amputation (2%) than the conventional dressing patients (22%). In contrast, **Seidel et al** reported similar proportion of amputations in the NPWT (20.5%) and the SMWC group of patients (20.7%).[86] Similar to Seidel et al, **Sukur et al** reported no significant variation in the reamputation rates between VAC and moist dressing patients.[85] **James et al and Lone et al** also reported similar rate of amputation between the VAC and conventional dressing in their study.[83,88] Overall, in **Nain et al** study, NPWT group showed better outcomes than the saline dressing group.[89] **Ravari et al** study reported while none in VAC group had amputation, while 38.5% and 7.69% of the conventional dressing patients had to undergo major and minor amputations,

respectively.[96] **Fife et al** reported no significant difference in terms of adverse events between the VAC and control groups.[91] Thus there is a mixed reports in the impact of the NPWT on the amputations.[91]

- **Hospital duration**

VAC group patients had significantly shorter duration of hospital stay (median=15 days) than the conventional dressing group (median=28 days), in the present study. **Maranna et al** also reported a significantly reduced hospital stay among the VAC patients (mean=14.82 days) than the conventional dressing group (mean=44.57 days).[84] Thus, VAC dressing reduces the duration of hospital stay, which in turn will reduce hospital acquired infections as well as the cost of the health care systems and the patients.

Limitations

- Single centric study, hence our findings cannot be generalized to other settings andstates.
- Selection bias is present in our study since we did not randomize the patients between VAC and the conventional dressing group.

CONCLUSION

Diabetes is rapidly increasing worldwide and surgery in patients with diabetic foot is becoming more common. Foot complications such as ulceration, infection and gangrene and possible subsequent amputation & limb amputation are the most common, complex and costly sequelae of diabetes mellitus & are a major cause of admissions in hospitals.

Overall, VAC dressing for diabetic lower limb ulcers reduced the infection rate, reduced the ulcer size facilitating for further therapy, reduced the frequency of debridement and rate of amputations, increased the rate of skin grafting than the conventional saline dressings. VAC

also reduced the duration of hospital stay of Diabetic Lower Limb Wounds in the present settings. VAC may be used as potential option for dressing in the diabetic lower limb patients. NPWT has definitive role in promotion of Granulation tissue & reduction in wound size by clearing the bacterial load. It is suggested that NPWT is cost effective, easy to use, patient friendly method of treating Diabetic Lower Limb Ulcers.

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ABBREVIATIONS

WHO - World Health Organisation

IDF – International Diabetes Federation

DFU – Diabetic Foot Ulcers

NPWT – Negative Pressure Wound Therapy

VAC – Vacuum Assisted Closure

OPD – Out Patient Department

HBA1c – Glycosylated Hemoglobin

MRSA – Methicillin Resistant Staphylococcus Aureus

SMWC – Standard Moist Wound Care

Figure 1 – Patient Treated with NPWT.

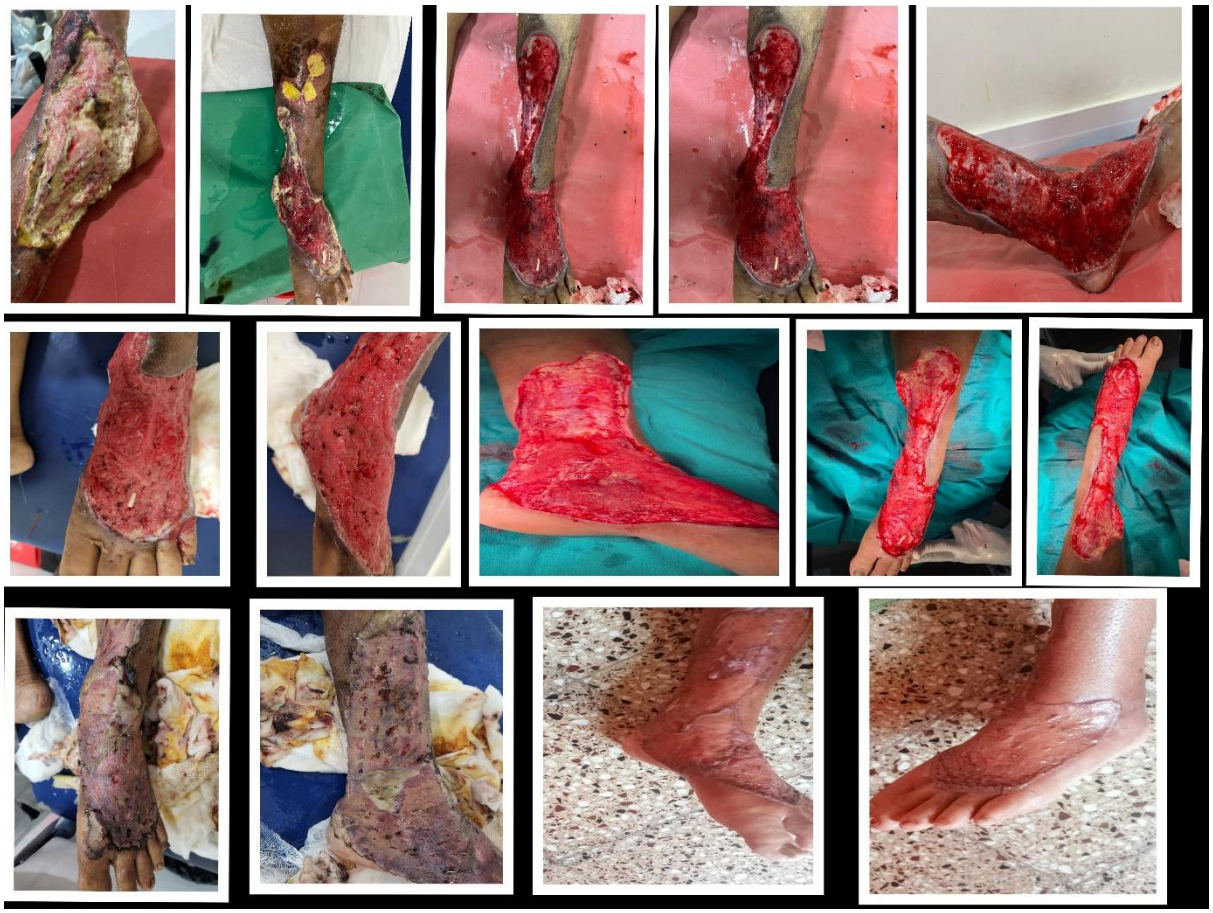

Figure 2 – Patient Treated With Conventional Wound Therapy.