

# Comparing negative pressure wound therapy to conventional wound healing in post op fistulectomy patients

Manish Babbu UG, MS, Karthi Samuthiram, MS, Karthikeyan Shanmugam, MBBS, V Shruthi Kamal, MS

Department of General Surgery, Saveetha Medical College and Hospital, SIMATS and Saveetha University

## ABSTRACT

**Introduction:** Fistulectomy, though effective for treating lower anal canal fistulas, is associated with longer operative times, larger incisions, delayed wound healing, and a higher risk of flatus incontinence. Negative Pressure Wound Therapy (NPWT), which applies controlled vacuum pressure to promote wound healing, may offer a solution to these challenges. This study evaluates the effectiveness of NPWT in enhancing postoperative recovery following fistulectomy.

**Materials and Methods:** This prospective study included 20 patients who underwent fistulectomy at Saveetha Medical College and Hospital. NPWT was applied postoperatively, and patient data—including wound characteristics, healing outcomes, and complications—were collected and analysed. The therapy aimed to accelerate granulation tissue formation, reduce tissue oedema, and minimise infection, thereby reducing hospital stay duration.

**Results:** Among the 20 patients, the majority were male (75%) and aged between 31 and 60 years. Intersphincteric fistulas were most common (60%), and *Escherichia coli* was the predominant organism cultured (80%). Laboratory analysis showed normal haemoglobin levels, variable leukocyte and platelet counts, and stable albumin. Thyroid hormone levels varied widely and appeared to influence recovery. The mean postoperative hospital stay was 7.45 days. Patients aged 20–40 years who received NPWT had a shorter hospital stay (6.7 days) compared to those receiving traditional dressings (8.2 days).

**Conclusion:** NPWT appears to enhance wound healing and reduce hospital stay in post-fistulectomy patients. Although still an uncommon approach for anal fistulas, the promising outcomes observed in this study suggest NPWT may be a valuable addition to routine clinical practice and merit further investigation.

## KEYWORDS:

*Anal fistula, Fistulectomy, E.Coli, Surgical site infection, Negative Pressure Wound Therapy (NPWT)*

## INTRODUCTION

Anal fistulas are a common lower gastrointestinal condition often requiring surgical intervention. Among the standard surgical options, fistulotomy is generally preferred for low anal fistulas due to its simplicity and favourable outcomes. In

contrast, fistulectomy, a more aggressive approach involving complete excision of the fistula tract, is associated with longer operative time, larger incisions, extended healing periods, and a higher risk of post-operative complications such as bleeding, incontinence, and delayed recovery. Despite these drawbacks, it continues to be practised in select cases.

Comparative studies have shown that fistulotomy offers advantages such as quicker wound healing, less postoperative pain, reduced bleeding, and shorter duration of wound discharge. It is also associated with a lower risk of anal incontinence and stricture, with no significant difference in recurrence rates when compared to fistulectomy.<sup>1,2</sup> A recent meta-analysis found no statistically significant difference between the two procedures in terms of operative time, healing time, postoperative complications, recurrence, or incontinence.<sup>3</sup>

In recent years, Negative Pressure Wound Therapy (NPWT) has emerged as a valuable tool in enhancing wound healing. Initially established in orthopaedic and trauma settings, NPWT has demonstrated efficacy in managing complex, infected, or chronic wounds, such as diabetic foot ulcers and severe open fractures.<sup>4</sup> Although outcomes vary across different wound types, some studies suggest NPWT may reduce surgical site infections and the need for reoperations, especially in high-risk surgical patients.<sup>5</sup>

Additionally, NPWT has been shown to improve scar quality and reduce wound healing complications in procedures such as bilateral breast reduction mammoplasty.<sup>6</sup> The mechanism of NPWT involves applying vacuum pressure to the wound bed, which helps in wound contraction, enhanced perfusion, and granulation tissue formation. Studies also suggest that NPWT may be more cost-effective than conventional methods like Advanced Moist Wound Therapy (AMWT), showing greater wound size reduction and reduced overall treatment costs.<sup>7</sup>

However, there is a paucity of literature on the role of NPWT in enhancing wound healing in proctologic surgeries like fistulectomy. Given the challenges associated with postoperative wound healing in these patients, this study aims to compare the outcomes of NPWT with conventional wound care in patients undergoing fistulectomy, focusing on wound healing time, postoperative complications, and cost-effectiveness.

This article was accepted: 04 May 2025

Corresponding Author: Manish Babbu

Email: manishug511@gmail.com

## MATERIALS AND METHODS

This is a retrospective observational study conducted at the Department of General Surgery in Saveetha Medical College and Hospital, a tertiary care teaching hospital. The study included 20 patients who underwent fistulectomy over three months from January 2023 to March 2023. Our study consists of a total of 20 patients chosen randomly with uncomplicated fistulas, comprising both male and female individuals. The patients were divided into two groups: those treated with NPWT (VAC group/ the case group) and those treated with conventional wound care methods (control group). The inclusion criteria of the study comprised adult patients who were 18 years of age or older, those with simple fistulas, fistulas with moderate output, who possess the relevant medical records, are cooperative for Vacuum-Assisted Closure (VAC) dressing, and have given their consent for participation. The study excluded patients under the age of 18, those with complex fistulas, complicated fistula, or concomitant malignancies, patients with severe comorbid diseases, and patients who do not comply with the VAC dressing. The research study included twenty patients who had undergone fistulectomy. Out of these, 10 patients were assigned VAC dressings for around 48 hours, administered two or three times. These individuals are being compared to the patients who had their wounds healed through secondary intention.

The patients in the VAC group received NPWT, which involves controlled negative suction pressure is applied through the wound dressing that has been concealed and attached to a vacuum device. The wound is primarily prepared by removing the sloughed out and devitalised tissue, and then washed with betadine and hydrogen peroxide. The size of the foam patch is cut to fit the wound. A drain tube that has already been cut is placed over the foam, and then additional foam is added on top. A clear, adhering material, transparent adhesive film (OPSITE\*) is used to close the foam and a piece of skin around it. In a controlled way, the distal end is attached to the vacuum unit. When it's on, the foam is sucked dry, causing it to fall over the edges of the wound. The foam picks up the fluid in the cut and moves it to the container. This method speeds up the healing process by promoting tissue granulation, increasing blood flow to the area, and effectively controlling wound exudate. The dressing that is applied stays on for about 48-72 hours, as shown in Fig.1.

As far as the conventional wound healing is considered, daily wound cleaning and dressing would be done with intermittent sitz bath.

The study included a total of 20 patients who underwent fistulectomy. These patients were separated into two groups: one group received NPWT, while the other group received standard conventional wound care. Demographic information such as age, gender, and type of fistula (intersphincteric, transphincteric, or extrasphincteric) was documented. Key laboratory measures, including hemoglobin levels, total leukocyte count, platelet count, albumin levels, and thyroid function tests (TSH, T3, and T4), were obtained. These factors are known to impede the natural wound healing process potentially. Comprehensive

treatment information for the NPWT group was recorded. The observations in the control group focuses on documenting the characteristics of the granulation tissue developed and the morphology of the wound, as a result of typical wound care treatments. The outcome measures primarily assessed the length of hospitalisation, quality of granulation tissue formation, and the rates of complications such as tissue oedema and infections.

The statistical data required for the study was gathered, categorised and entered in the Microsoft Excel. Association between categorical variables using chi-square/Fisher's exact test. Association between continuous variables using independent T test/Mann-Whitney U test, and Correlation between the variables in the study was estimated using Pearson/Spearman correlation.

## RESULTS

The study included a total of 20 participants, predominantly middle-aged individuals. The majority of the participants, accounting for 90% of the sample, fell between the age ranges of 31-60 years. The age distribution indicates that fistulectomy procedures are predominantly carried out in individuals in the middle age spectrum, as shown in Table I. The gender distribution exhibits a significant male bias, with males constituting 75% of the participants. This might reflect either a higher incidence of fistulas in males or a greater likelihood of males undergoing surgical intervention for fistulas.

The most commonly treated type of fistulas was intersphincteric, accounting for 60% of the cases. Extrasphincteric and transphincteric fistulas had a lower occurrence rate of 25% and 15%, respectively, which aligns with their generally lower prevalence. (Table I)

The analysis of bacterial cultures indicated a significant occurrence of *Escherichia coli*, present in 80% of the instances. In addition, *Klebsiella pneumoniae* and *Enterobacter aerogenes* were found in 10% and 5% of cases, respectively, emphasising the fact that these illnesses are caused by several microorganisms. In one instance, there was no evidence of bacterial proliferation, indicating the possibility of either a sterile setting or effective earlier management of the infection. (Table I).

The mean haemoglobin (Hb) level was 13.465 g/dL, demonstrating moderate variability and suggesting mostly normal haemoglobin levels with a few exceptions. The total leukocyte count (TLC) exhibited significant variability, ranging from 5,460 to 13,650 cells/ $\mu$ L, with an average of 8690 cells/ $\mu$ L. This variation can be attributed to variations in immunological responses among the participants. The platelet counts varied from 0.98 to 4.10 million cells per microlitre ( $\mu$ L), with an average of 2.7835 million cells per  $\mu$ L, indicating significant variability. The mean albumin concentration was 4.105 g/dL, exhibiting a reasonably limited variation, suggesting a steady nutritional state. The levels of thyroid-stimulating hormone (TSH) showed significant variation, ranging from 1.034 to 38.160 mIU/L, with a high standard deviation. This indicates a wide range

**Table I: Descriptive statistics for the study population**

Variables	Categories	Frequency (N)	Range	Percent (%)	Mean	Standard deviation
Age (years)	20-30	2	26-58	10.0	43.30	10.063
	31-40	6		30.0		
	41-50	6		30.0		
	51-60	6		30.0		
Gender	Male	15	-	75.0	-	-
	female	5	-	25.0	-	-
Types of Fistula	Intersphincteric	12	-	60.0	-	-
	Extrasphincteric	5	-	25.0	-	-
	Transphincteric	3	-	15.0	-	-
C/S	E- coli	16	-	80.0	-	-
	Enterobacter aerogenes	1	-	5.0	-	-
	Klebsiella Pneumonia	2	-	10.0	-	-
	No Growth	1	-	5.0	-	-
Hb	-	-	7.3 – 15.9	-	13.465	2.1424
TLC	-	-	5460 – 13650	-	8690.00	2165.490
Plt	-	-	0.98 – 4.10	-	2.7835	0.73649
Albumin	-	-	3.4 – 4.7	-	4.105	0.3634
TSH	-	-	1.034 – 38.16	-	4.46755	8.391164
FT3	-	-	0.96 – 5.59	-	3.3945	1.08856
FT4	-	-	0.840 – 3.83	-	1.46010	0.671617
Post OP Stay (days)	-	-	5 – 10	-	7.45	1.317

**Table II: Association between variables and intervention**

S.no.	Variables	Categories		VAC Dressing	Traditional dressing	χ2	P-value				
1	Age in years	20-30	Frequency(N)	2	0	12.659	0.002*				
			% within Age category	100.0%	0.0%						
			% within INTERVENTION	20.0%	0.0%						
		31-40	Frequency(N)	6	0						
			% within Age category	100.0%	0.0%						
			% within INTERVENTION	60.0%	0.0%						
		41-50	Frequency(N)	1	5						
			% within Age category	16.7%	83.3%						
			% within INTERVENTION	10.0%	50.0%						
		51-60	Frequency(N)	1	5						
			% within Age category	16.7%	83.3%						
			% within INTERVENTION	10.0%	50.0%						
2	Gender	Male	Frequency(N)	8	7	0.267	1.00				
			% within Sex	53.3%	46.7%						
			% within INTERVENTION	80.0%	70.0%						
		female	Frequency(N)	2	3						
			% within Sex	40.0%	60.0%						
			% within INTERVENTION	20.0%	30.0%						
3	Type of Fistula	Intersphincteric	Frequency(N)	7	5	2.388	0.443				
			% within Type of Fistula	58.3%	41.7%						
			% within INTERVENTION	70.0%	50.0%						
		Extrasphincteric	Frequency(N)	1	4						
			% within Type of Fistula	20.0%	80.0%						
			% within INTERVENTION	10.0%	40.0%						
		Transphincteric	Frequency(N)	2	1						
			% within Type of Fistula	66.7%	33.3%						
			% within INTERVENTION	20.0%	10.0%						
		4	C/S	<i>Escherichia coli (E- coli)</i>	Frequency(N)			9	7	3.739	0.334
					% within C/S			56.3%	43.8%		
					% within INTERVENTION			90.0%	70.0%		
<i>Enterobacter aerogenes</i>	Frequency(N)			0	1						
	% within C/S			0.0%	100.0%						
	% within INTERVENTION			0.0%	10.0%						
<i>Klebsiella Pneumonia</i>	Frequency(N)			0	2						
	% within C/S			0.0%	100.0%						
	% within INTERVENTION			0.0%	20.0%						
No Growth	Frequency(N)			1	0						
	% within C/S			100.0%	0.0%						
	% within INTERVENTION			10.0%	0.0%						

p<0.05- Statistically significant; Test used – Chi-square/Fisher's exact test

**Table III: Association between variables and intervention**

	INTERVENTION	Mean	Std. Deviation	T value	df	P value
Age	VAC Dressing	36.40	8.181	4.199	18	.001*
	Traditional Dressing	50.20	6.408			
Hb	VAC Dressing	13.870	1.7745	0.839	18	.413
	Traditional Dressing	13.060	2.4852			
TLC	VAC Dressing	8969.00	1979.475	0.566	18	.579
	Traditional Dressing	8411.00	2410.069			
Plt	VAC Dressing	2.8310	.51847	0.281	18	.782
	Traditional Dressing	2.7360	.93342			
Albumin	VAC Dressing	4.100	.4243	0.060	18	.953
	Traditional Dressing	4.110	.3143			
T3	VAC Dressing	3.4690	1.09149	0.299	18	.769
	Traditional Dressing	3.3200	1.13927			
T4	VAC Dressing	1.43700	.896735	70.00#	18	0.101
	Traditional Dressing	1.48320	.383325			
TSH	VAC Dressing	5.60920	11.443195	46.00#	18	0.762
	Traditional Dressing	3.32590	3.847559			
Post OP Stay (days)	VAC Dressing	6.70	1.418	3.055	18	.007*
	Traditional Dressing	8.20	.632			

\*p-value< 0.05 statistically significant; Test used: Independent t test  
#Mann Whitney test was used for association

**Table IV: Correlation between the study variables**

INTERVENTION			Age	Hb	TLC	Plt	Albumin	TSH	Post OP Stay (days)
VAC Dressing	Age	Correlation Coefficient	1	-0.182	-0.185	0.112	-0.320	0.703*	0.385
		Sig. (2-tailed)		0.615	0.608	0.759	0.367	0.023	0.272
	Hb	Correlation Coefficient	-0.182	1	0.433	0.520	0.415	0.027	0.049
		Sig. (2-tailed)	0.615		0.212	0.124	0.233	0.941	0.893
	TLC	Correlation Coefficient	-0.185	0.433	1	0.238	0.048	-0.411	-0.265
		Sig. (2-tailed)	0.608	0.212		0.507	0.895	0.239	0.460
	Plt	Correlation Coefficient	0.112	0.520	0.238	1	0.426	0.231	0.408
		Sig. (2-tailed)	0.759	0.124	0.507		0.219	0.521	0.241
	Albumin	Correlation Coefficient	-0.320	0.415	0.048	0.426	1	-0.163	-0.074
		Sig. (2-tailed)	0.367	0.233	0.895	0.219		0.652	0.839
TSH#	Correlation Coefficient	-0.030	0.042	-0.479	0.382	-0.080	1.000	0.629	
	Sig. (2-tailed)	0.933	0.907	0.162	0.276	0.827	.	.0495*	
Post OP Stay (days)	Correlation Coefficient	0.385	0.049	-0.265	0.408	-0.074	0.823**	1	
	Sig. (2-tailed)	.272	.893	.460	.241	.839	.003		
Traditional Dressing	Age	Correlation Coefficient	1	-0.182	0.057	-0.085	-0.095	-0.140	-0.011
		Sig. (2-tailed)		0.616	0.875	0.816	0.794	0.699	0.976
	Hb	Correlation Coefficient	-0.182	1	0.220	0.068	0.517	-0.722*	0.105
		Sig. (2-tailed)	0.616		0.541	0.851	0.126	0.018	0.774
	TLC	Correlation Coefficient	0.057	0.220	1	0.823**	0.019	-0.328	-0.125
		Sig. (2-tailed)	0.875	0.541		0.003	0.959	0.355	.731
	Plt	Correlation Coefficient	-0.085	0.068	0.823**	1	-0.257	-0.070	-0.010
		Sig. (2-tailed)	0.816	0.851	0.003		0.473	0.847	0.979
	Albumin	Correlation Coefficient	-0.095	0.517	0.019	-0.0257	1	-0.198	0.324
		Sig. (2-tailed)	0.794	0.126	0.959	0.473		0.584	0.361
TSH#	Correlation Coefficient	-0.030	0.042	-0.479	0.382	-0.080	1.000	0.629	
	Sig. (2-tailed)	0.933	0.907	0.162	0.276	0.827	0.	0.051	
Post OP Stay (days)	Correlation Coefficient	-0.011	0.105	-0.125	-0.010	0.324	-0.213	1	
	Sig. (2-tailed)	0.976	0.774	0.731	0.979	0.361	0.556		

\*. Correlation is significant at the 0.05 level (2-tailed); \*\*. Correlation is significant at the 0.01 level (2-tailed); Test used -Pearson Correlation; #Spearman correlation was used



Fig. 1: Post operative Fistulectomy Wound subjecting for VAC dressing and results after in chronological order

of thyroid function among the subjects. The levels of free triiodothyronine (FT3) and free thyroxine (FT4) also exhibited fluctuation, with average values of 3.3945 ng/mL and 1.4601 µg/dL, respectively. The mean duration of hospitalisation after surgery was 7.45 days, with the majority of patients staying between 5 and 10 days, suggesting that the healing process was efficient. The statistics presented here offer a thorough and fundamental overview of the research group, emphasising the range of clinical factors and the efficacy of care after surgery (Table I).

Table II illustrates noteworthy relationships and correlations between several patient features and the type of intervention administered, either Vacuum-Assisted Closure (VAC) dressing or traditional dressing. Age was found to have a significant association with the type of intervention ( $\chi^2 = 12.659$ ,  $p=0.002$ ). Younger patients, aged 20-40 years, were more inclined to receive VAC treatment, whereas older patients, aged 41-60 years, were more commonly treated with standard dressings. The analysis revealed that gender was not significantly associated with the sort of intervention ( $p=1.00$ ), suggesting that both males and females had an equal likelihood of receiving either treatment. Regarding the type of fistula, there was no statistically significant difference observed between the procedures ( $p=0.443$ ). Nevertheless, *E. coli* was the predominant bacterium found in both groups, but this observation did not achieve statistical significance ( $p=0.334$ ).

Further analysis, adopting independent t-tests and Mann-Whitney tests, demonstrated significant differences in age and post-operative duration between the VAC and traditional dressing populations (Table III; Table IV). The mean age of patients in the VAC group was 36.4 years, which was substantially younger compared to the mean age of 50.2 years in the traditional dressing group ( $p=0.001$ ). In addition, the VAC group had a considerably lower duration of hospitalisation after surgery, with a mean of 6.7 days, compared to the standard dressing group, which had a mean of 8.2 days ( $p=0.007$ ). Correlation analysis revealed a significant positive correlation ( $r=0.823$ ,  $p=0.003$ ) between TSH levels and post-operative stay within the VAC group. The correlation in the traditional dressing group was statistically significant at the 0.05 level. The results indicate that the use

of VAC dressing is more common among younger patients and those with shorter hospital stays. Additionally, the duration of recovery may be contingent upon thyroid function in both groups. In summary, the data highlight the potential advantages of VAC dressing in decreasing hospitalisation duration and enhancing recuperation in younger individuals.

## DISCUSSION

The retrospective observational study of 20 patients who underwent fistulectomy with or without the application of Vacuum-Assisted Closure (VAC) presented intriguing insights. The baseline characteristics indicated a middle-aged, predominantly male patient population with a relatively uniform duration of hospital stay. This might reflect either a higher incidence of fistulas in males or a greater likelihood of males undergoing surgical intervention for fistulas. The minor variability in age and the hospitalisation period suggests that the study outcomes can be moderately generalised for similar populations. Fistula-type distribution, as in Table I, revealed a predominance of intersphincteric fistulas. This observation is clinically significant as it indicates the most common fistula type presenting in a tertiary care setting, which could influence pre-operative planning and resource allocation.

Laboratory parameters (Table I) were within normal ranges, indicating that patients were likely in stable condition before surgery. The standard deviations, particularly in haemoglobin levels and total leukocyte count, suggest there was some heterogeneity in the patient's health status, but not significantly so. Normal albumin levels and thyroid function further suggest that patients were not systemically compromised.

The study here shows that the common organism that was isolated from the culture and sensitivity was *Escherichia coli* in 80% of the situations in the study population and was distributed similarly between both dressing types, along with other organisms such as *Klebsiella pneumoniae* and *Enterobacter sp.* This is consistent with the existing literature which shows *Escherichia coli*, *Bacteroides*, *Bacillus*, and *Klebsiella species* were significantly more prevalent in patients

with fistula as Acute anorectal sepsis due to colonisation of "gut-derived" microorganisms.<sup>8</sup> This provides insight into initiating appropriate antibiotic management for the patient. This indicates that the specific type of bacterial contamination does not affect the selection of dressing, and both Vacuum-Assisted Closure (VAC) and standard dressings are equally efficient in controlling bacterial contamination in post-operative wounds. 5% of the study population showed no growth in their culture and sensitivity; this may be due to the successful management with antibiotics or a sterile environment or even improper collection technique that may have occurred.

The NPWT dressing has a significant number of complications associated with it, that includes failure of the VAC system (loss of seal, power failure, and blockage of the drainage system), wound infection, pain, bleeding, allergies to the adhesive drape, excoriation of the skin, restricted mobility, adherence of the tissues to the foam, lack of patient compliance and skin necrosis.<sup>9</sup> The study reveals that the NPWT dressing was integrated in the line of management with a substantially younger population. This could be because the younger population was more compliant to this method of wound dressing as it requires patients for more extended immobilisation and would possibly hinder daily activities.

The study also points out that the patients who received treatment with VAC dressing had a significantly reduced average duration of hospitalisation (6.7 days) in comparison to those who were treated with traditional dressings (8.2 days). Reducing the length of hospital stays not only lowers the expenses directly linked to extended hospitalisation but also reduces the chances of nosocomial infections in the hospital and improves the rate at which patients are discharged. The use of NPWT creates an improved healing environment, which is characterised by greater production of granulation tissue. This is correlated with the less pain during mobilisation, improved granulation tissue formation, and faster healing rate. This indicates that Vacuum Assisted Closure (VAC) dressing creates a more conducive setting for wound repair, suggesting that VAC could be a beneficial treatment modality in fistulectomy recovery. However, the incidence of treatment compliance issues in the VAC group flags the necessity for careful patient selection and education on VAC maintenance.

The research we conducted is unique in that there were a few research articles that discussed the use of NPWT for postoperative fistulectomy wounds. The VAC dressing is renowned for its effectiveness in treating diabetic wounds. However, extensive research has also demonstrated its efficacy in other applications, making it a versatile and effective commodity. Comparison between NPWT and Conventional Wound Care after Extensive Surgical Debridement in Patients with Fournier's Gangrene illustrates the outcomes of NPWT with traditional wound care methods following surgical debridement. The study demonstrated that NPWT significantly reduced healing times and improved overall outcomes, suggesting its effectiveness in managing severe infectious conditions.<sup>10</sup> Similarly, a study explored the

impact of traditional herbal treatments on the healing of anal fistulas post-fistulectomy. The findings indicated that herbal decoctions could enhance healing and reduce recovery time, offering a complementary approach to conventional surgical methods.<sup>11</sup> According to Enterocutaneous fistula treatment: case report and review of the literature, various treatment approaches for enterocutaneous fistulas were analysed, including the use of NPWT. The findings supported the efficacy of NPWT in managing complex fistulas, especially when traditional treatments failed to yield suboptimal results.<sup>12</sup> Furthermore, the benefits of combining less invasive surgical techniques with NPWT for the treatment of pilonidal sinus are explored for wound healing properties. The results indicated that it enhanced wound healing and reduced morbidity, offering an effective treatment modality for this challenging condition.<sup>13</sup>

This study is limited by its small sample size (n=20) and single-centre design, reducing generalizability. The lack of randomisation introduces selection bias, and the short follow-up prevents long-term outcome assessment. Variability in patient characteristics and uncontrolled factors like nutritional status may have influenced healing. Larger, randomised studies with extended follow-up are needed to confirm findings and assess NPWT's broader clinical and economic impact. Collectively, these results indicate that VAC is a valuable adjunct to fistulectomy recovery, underscored by improved healing rates and reduced pain. The study further validates the significance of tailoring postoperative care to patient-specific needs, especially in the management of postoperative pain. Future studies could benefit from a larger sample size to validate these findings and possibly elucidate the long-term benefits of VAC therapy post-fistulectomy.

## CONCLUSION

The study concludes that middle-aged adults, with a significant male predominance, a more common intersphincteric type of fistula, suggesting that fistulas and their surgical interventions are more common in this demographic. The significant occurrence of *E. coli* in wound cultures emphasises the necessity for focused antibiotic treatment and efficient infection control methods, both of which are essential elements of optimal post-operative care. NPWT has shown distinct advantages compared to traditional wound treatment approaches in post-operative fistulectomy patients. Patients who had NPWT had a notably reduced duration of hospitalisation, with an average of 6 days, compared to 8 days for the control group. The decrease in hospital stay not only signifies accelerated recovery but also suggests a potential reduction in healthcare expenses and utilization of resources. Also, the group receiving NPWT reported experiencing reduced pain and discomfort while moving, which is crucial for patient adherence and overall satisfaction with the treatment. This group also showed improved production of granulation tissue and faster wound healing, facilitated by a more favourable environment for wound healing.

## REFERENCES

1. Ramachandra ML, Garg M. A comparative study in the management of fistula in ANO using various modalities. *Int Surg J* 2018 ;5(6): 2223-7.
2. Xu Y, Liang S, Tang W. Meta-analysis of randomized clinical trials comparing fistulectomy versus fistulotomy for low anal fistula. *SpringerPlus* 2016; 5(1): 1722.
3. Blumetti J, Abcarian A, Quinteros F, Chaudhry V, Prasad L, Abcarian H. Evolution of Treatment of Fistula in Ano. *World J Surg* 2012; 36(5): 1162-7.
4. Guffanti A. Negative-pressure wound therapy and diabetic foot in the treatment of diabetic foot syndrome. *Leczenie Ran* 2014; 11(1): 5-9.
5. Jaiswal A, Doucette ED. How does negative pressure wound therapy (NPWT) compare with other treatments for acute surgical wounds? *Evidence-Based Practice* 2016; 19(9): 10.
6. Tanaydin V, Beugels J, Andriessen A, Sawor JH, van der Hulst RRWJ. Randomized Controlled Study Comparing Disposable Negative-Pressure Wound Therapy with Standard Care in Bilateral Breast Reduction Mammoplasty Evaluating Surgical Site Complications and Scar Quality. *Aesth Plast Surg* 2018; 42(4): 927-35.
7. Driver VR, Blume PA. Evaluation of Wound Care and Health-Care Use Costs in Patients with Diabetic Foot Ulcers Treated with Negative Pressure Wound Therapy versus Advanced Moist Wound Therapy. *J Am Podiatr Med Assoc* 2014; 104(2): 147-53.
8. Toyonaga T, Matsushima M, Tanaka Y, Shimojima Y, Matsumura N, Kannyama H, et al. Microbiological analysis and endoanal ultrasonography for diagnosis of anal fistula in acute anorectal sepsis. *Int J Colorectal Dis* 2006; 22(2): 209-13.
9. Agarwal P, Kukrele R, Sharma D. Vacuum assisted closure (VAC)/negative pressure wound therapy (NPWT) for difficult wounds: A review. *Journal of Clinical Orthopaedics and Trauma* 2019; 10(5): 845-8.
10. Trejo-Ávila ME, Rodríguez-Parra A, Díaz-Flores A, Arce-Lievano E, Blas-Franco M, Romero-Loera S, et al. Comparison between Negative Pressure Wound Therapy and Conventional Wound Care after Extensive Surgical Debridement in Patients with Fournier's Gangrene. *Clin Surg* 2017; 2(1): 1335.
11. Deng H, Zhang J, Yuan X. The Effects of Phellodendron Decoction on Wound Healing of Anal Fistula after Anal Fistulotomy. *Evid Based Complement Alternat Med* 2022; 2022: 7363006.
12. Assenza M, Rossi D, De Gruttola I, Ballanti C. Enterocutaneous fistula treatment: case report and review of the literature. *G Chir* 2018; 39(3): 143-51.
13. Nakamichi M, Ogino A, Onishi K. Less invasive treatment for the pilonidal sinus combined use of negative-pressure wound therapy. *Eur J Plast Surg* 2020; 43(1): 75-8.