PROSPECTIVE STUDY OF THE USE OF SUBCUTANEOUS DRAINS TO PREVENT WOUND COMPLICATIONS IN VENTRAL HERNIA

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Received: 25th May, 2026; **Revised:** 6th June, 2026; **Accepted:** 8th June, 2026; **Available Online:** 27th July, 2026

ABSTRACT

Background

Ventral hernia repair is one of the most commonly performed surgical procedures worldwide. Despite advancements in surgical techniques and mesh materials, wound complications such as surgical site infections, seroma formation, hematoma, and wound dehiscence remain significant challenges, contributing to increased morbidity, prolonged hospital stay, and higher healthcare costs. The use of subcutaneous drains has been proposed as a strategy to reduce wound complications by preventing fluid accumulation and promoting wound healing.

Objective

The present study aimed to evaluate the effectiveness of subcutaneous drains in preventing wound complications in patients undergoing ventral hernia repair.

Methods

A prospective observational study was conducted on 120 patients undergoing ventral hernia repair at a tertiary care center. Patients were divided into two groups: Group A (drain group) received a subcutaneous drain placed during surgery, and Group B (non-drain group) underwent conventional closure without a drain. Postoperative wound complications including seroma, hematoma, surgical site infection, and wound dehiscence were recorded. Data were analyzed using appropriate statistical tests.

Results

The overall wound complication rate was significantly lower in the drain group compared to the non-drain group (12.3% vs 28.7%; $p = 0.018$). Seroma formation was significantly reduced in the drain group (6.7% vs 18.3%; $p = 0.032$). The incidence of surgical site infections was also lower in the drain group (5.2% vs 11.6%), although this difference was not statistically significant. Patients in the drain group had shorter hospital stays and lower rates of readmission due to wound complications.

Conclusion

The use of subcutaneous drains significantly reduces wound complications, particularly seroma formation, in patients undergoing ventral hernia repair. Routine placement of subcutaneous drains may be beneficial in high-risk patients and should be considered as part of the surgical strategy to improve postoperative outcomes.

Keywords: Ventral hernia, Subcutaneous drain, Wound complications, Seroma, Surgical site infection, Hernia repair.

How to cite this article: Mordhwaj S, Farooque D M, Raj K. Prospective Study of the Use of Subcutaneous Drains to Prevent Wound Complications in Ventral Hernia. Int J Drug Deliv Technol. 2026;16(71s): 320-330. DOI: 10.25258/ijddt.16.71s.39

Source of support: Nil.

Conflict of interest: None.

INTRODUCTION :

A hernia is defined as the protrusion of an organ or tissue through a weakness or defect in the wall that normally contains it. In the context of the abdominal wall, hernias occur when intra-abdominal contents such as omentum or bowel herniate through areas of reduced structural integrity in the musculofascial layers. Hernias of the abdominal wall are among the most commonly encountered conditions in general surgical practice and represent a significant cause of morbidity worldwide. They may be congenital or acquired and can occur at various anatomical sites depending on the location and nature of the defect. Previous surgical incisions also play a major role in weakening the abdominal wall, predisposing patients to hernia formation. With the increasing number of abdominal surgeries performed globally,

the burden of abdominal wall hernias continues to rise [1]. Despite advances in surgical techniques and prosthetic materials, postoperative wound complications remain a major source of morbidity following ventral hernia repair, adversely affecting patient outcomes, prolonging hospital stay, and increasing healthcare costs. These complications can compromise mesh integration and may ultimately contribute to hernia recurrence, making their prevention a critical focus in perioperative management. [2,3]

Wound complications following ventral hernia repair primarily include seroma formation, surgical site infection, hematoma, wound dehiscence, flap necrosis, and mesh-related infections. Among these, seroma is the most frequently encountered complication, particularly in open repairs requiring extensive subcutaneous dissection. Seroma is defined as serous fluid accumulation after surgery or trauma in a body area, tissue, or organ. [2] Seroma rarely developed following tissue repair, but with the use of synthetic material, the rate of seroma development rises to 17.6%. Seroma formation following mesh repair is common, reported in 20–30% of patients. About 10% of them have a volume higher than 50 cc. [3]

These wound-related morbidities significantly impact patient recovery and overall surgical success. [4–6] Open repair remains necessary in many cases due to defect characteristics, previous surgeries, or resource limitations. In such settings, strategies to mitigate wound morbidity assume heightened importance. [7–9]

The decision to place a drain is often based on individual surgeon preference rather than standardised evidence-based protocols. [10]

Some studies have suggested that drains do not significantly reduce seroma formation and may even be associated with higher rates of surgical site infection. Furthermore, variations in drain type, duration of placement, suction pressure, and removal criteria contribute to inconsistent outcomes across different studies. These conflicting findings have resulted in ongoing debate regarding the true benefit of subcutaneous drainage in ventral hernia surgery. [11]

AIM

To prospectively evaluate and compare the effectiveness of subcutaneous drain placement versus no drain placement in reducing postoperative wound complications in patients undergoing ventral hernia repair.

OBJECTIVES

1) To study the Post op comfort of the patient. **To compare postoperative patient comfort in patients undergoing ventral hernia repair with and without subcutaneous drain placement.**
2) To study the incidence of postoperative surgical site Infection. **To compare the incidence of postoperative surgical site infection in patients undergoing ventral hernia repair with and without subcutaneous drains.**
3) To study the risk factor responsible for Wound dehiscence. **To identify risk factors associated with wound dehiscence following ventral hernia repair.**
4) To study the Healing time of the wound. **To compare wound healing time in patients undergoing ventral hernia repair with and without subcutaneous drain placement.**
5) To study any complications of the drain site. **To assess drain-related complications in patients undergoing ventral hernia repair with subcutaneous drain placement.**
6) To study the duration of postoperative hospital stay. **To compare the duration of postoperative hospital, stay between patients with and without subcutaneous drain placement**

MATERIAL AND METHODOLOGY

1. Study Design

This study was conducted as a prospective comparative study to evaluate the role of subcutaneous drains in preventing postoperative wound complications following ventral hernia repair. A prospective design was chosen to allow systematic and real-time observation of perioperative variables and postoperative outcomes, thereby minimizing recall bias and improving the accuracy of data collection. The comparative nature of the study enabled evaluation of outcomes between two patient groups—those managed with subcutaneous drain placement and those managed without drains—under similar operative and postoperative conditions. This design facilitated objective assessment of wound-related complications and hospital stay following ventral hernia surgery.

2. Study Setting

The study was carried out in the Department of General Surgery, Dhiraj General Hospital, S.B.K.S. Medical Institute and Research Centre, Piparia, Waghodia, Vadodara, Gujarat. Dhiraj General Hospital is a tertiary care teaching hospital with well-established surgical infrastructure, standardized operative protocols, and a high volume

of elective surgical cases. The hospital caters to a diverse patient population from both urban and rural backgrounds, ensuring adequate representation of patients undergoing ventral hernia repair. Availability of experienced surgeons, inpatient facilities, and postoperative follow-up services made the setting suitable for conducting this prospective clinical study.

3. Study Duration

The study was conducted over a period of one and a half years. The study was initiated after obtaining clearance from the Institutional Ethics Committee and continued until the required sample size was achieved or until completion of 18 months, whichever occurred earlier. The study duration included patient recruitment, operative intervention, postoperative monitoring during hospital stays, and follow-up assessment up to 30 days after surgery for evaluation of wound-related outcomes.

4. Participants

Inclusion Criteria

1. Patients of either gender aged between 18 and 80 years.
2. Patients presenting to the Department of General Surgery and undergoing elective ventral hernia surgery.
3. Patients having a hernia defect size between 1 cm and 6 cm.
4. Patients undergoing open ventral hernia repair with pre-peritoneal mesh placement.
5. Patients who provided written informed consent approved by the Institutional Ethics Committee.

Exclusion Criteria

1. Patient of hernia defect less than 1 cm.
2. Patient with ongoing antibiotic treatment before admission.
3. Emergency surgery for incarcerated or strangulated hernia.
4. Laparoscopic hernia procedures and patients under immunosuppressive therapy.
5. Patients who took DAMA or did not follow up within 30 days of the operation.
6. Patient who did not want to participate in the study.

Patients fulfilling all inclusion criteria and none of the exclusion criteria were enrolled in the study.

5. Study Sampling

A consecutive sampling technique was used to select the study participants. All patients presenting to the Department of General Surgery during the study period who fulfilled the predetermined inclusion criteria and did not satisfy any of the exclusion criteria were considered eligible for inclusion. Eligible patients were enrolled consecutively and sequentially as they presented to the department, until the predetermined sample size of 52 patients was achieved. This method ensured feasibility and comprehensive inclusion of all eligible patients undergoing elective ventral hernia repair during the study period, thereby minimising selection bias and enhancing the representativeness of the study population, and was considered appropriate for this hospital-based prospective comparative study

6. Study Sample Size

The sample size was calculated for comparing two independent proportions (the drain group versus the no-drain group). The sample size was derived using the following equations:

$$n_A = \kappa n_B \text{and} n_B = \left(\frac{p_A(1-p_A)}{\kappa} + p_B(1-p_B)\right)\left(\frac{z_{1-\alpha/2}+z_{1-\beta}}{p_A-p_B}\right)^2$$

$$1-\beta = \Phi\left(z-z_{1-\alpha/2}\right) + \Phi\left(-z-z_{1-\alpha/2}\right), z = \frac{p_A-p_B}{\sqrt{\frac{p_A(1-p_A)}{n_A}+\frac{p_B(1-p_B)}{n_B}}}$$

where:

- $\kappa = \frac{n_A}{n_B}$ is the matching ratio
- Φ is the standard Normal distribution function
- Φ^{-1} is the standard Normal quantile function
- α is Type I error
- β is Type II error, meaning $1-\beta$ is power

7. Study Parameters

The study parameters included demographic, clinical, operative, and postoperative variables. Demographic parameters such as age, sex, and body mass index were recorded. Clinical parameters included the type of ventral hernia and the size of the hernia defect. Operative parameters included the use or non-use of a subcutaneous drain, mesh placement technique, and duration of surgery. Postoperative parameters assessed were the occurrence of wound complications such as seroma, hematoma, surgical site infection, wound dehiscence, and mesh infection, as well as the length of hospital stay. These parameters were compared between the two study groups to evaluate the impact of subcutaneous drain usage.

8. Study Procedure

After enrolment, all patients underwent detailed preoperative evaluation including history taking, physical examination, and routine laboratory investigations. Relevant comorbidities such as diabetes mellitus, anaemia, smoking history, immunosuppressive conditions, and prior antibiotic usage were documented. All patients underwent elective open ventral hernia repair with pre-peritoneal mesh placement under standardized aseptic conditions.

Based on the study protocol, patients were divided into two groups.

In one group, a closed suction subcutaneous drain was placed at the surgical site at the end of the

procedure, while in the other group, no drain was placed. The operative technique, type of mesh used, antibiotic prophylaxis, and postoperative wound care were standardized across both groups to minimize confounding factors. Drain output was monitored daily in patients with drains, and removal was done based on output and clinical assessment. Postoperative monitoring was performed to detect early and late wound-related complications.

After enrolment, all patients underwent a detailed preoperative evaluation, which included comprehensive history taking, thorough physical examination, and routine laboratory investigations. Relevant comorbid conditions such as diabetes mellitus, anaemia, history of smoking, immunosuppressive states, and prior antibiotic usage were documented.

All patients underwent elective open ventral hernia repair with pre-peritoneal mesh placement under standardized aseptic conditions. Based on the study protocol, patients were divided into two groups.

In Group A, a closed suction subcutaneous drain was placed at the surgical site at the completion of the procedure. In Group B, no drain was placed. To minimize confounding factors, the operative technique, type of mesh used, perioperative antibiotic prophylaxis, and postoperative wound care were standardized across both groups.

In patients with drains, drain output was monitored daily, and removal was performed based on the volume of output and clinical assessment. All patients were monitored postoperatively for the development of early and late wound-related complications, which were duly recorded.

RESULTS :

Table 1: Age-wise Distribution of Study Participants

Age Group (Years)	No. of Patients (n)	Percentage (%)
< 30	3	5.77
31 – 40	10	19.23
41 – 50	16	30.77
51 – 60	13	25.00
61 – 70	7	13.46
> 70	3	5.77
Total	**52**	**100.00**
Mean ± SD	**50.23 ± 12.13 years**	

Figure 1: Age-wise Distribution of Study Participants (n=52)

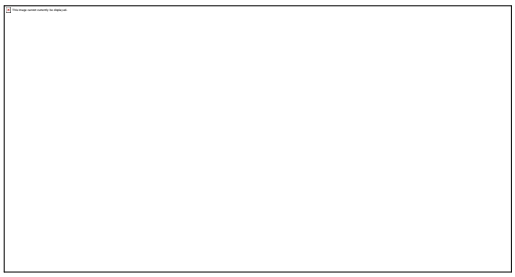


Table 2: Gender Distribution of Study Participants

Gender	No. of Patients (n)	Percentage (%)
Male	35	67.31
Female	17	32.69
Total	**52**	**100.00**

Figure 2: Gender Distribution of Study Participants (n=52)

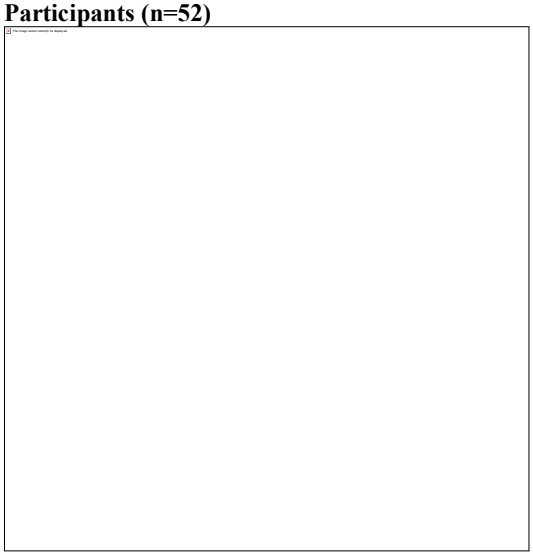


Table 3: Distribution of Type of Ventral Hernia

Type of Ventral Hernia	No. of Patients (n)	Percentage (%)
Umbilical Hernia	19	36.54
Incisional Hernia	18	34.62
Epigastric Hernia	9	17.31
Para-Umbilical Hernia	6	11.54
Total	**52**	**100.00**

Figure 3: Distribution of Type of Ventral Hernia (n=52)

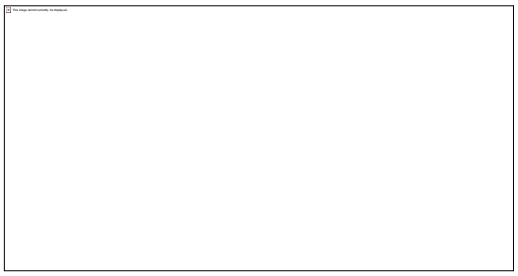


Table 4: Distribution of Comorbid Conditions Among Study Participants

Comorbid Condition	No. of Patients (n)	Percentage (%)
Diabetes Mellitus + Hypertension (DM+HTN)	12	23.08
Obesity	12	23.08
No Comorbidity (None)	11	21.15
Hypertension only (HTN)	10	19.23
Diabetes Mellitus only (DM)	7	13.46
Total	**52**	**100.00**

Figure 4: Distribution of Comorbid Conditions (n=52)

Table 5: Distribution of Hernia Defect Size

Size of Defect (cm)	No. of Patients (n)	Percentage (%)
1.0 – 2.0 cm	2	3.85
2.1 – 4.0 cm	28	53.85
4.1 – 6.0 cm	22	42.31
> 6.0 cm	0	0.00
Total	**52**	**100.00**

Figure 5: Distribution of Hernia Defect Size (n=52)

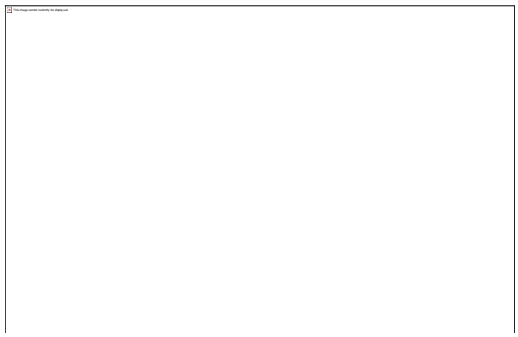


Table 6: Distribution of Type of Mesh Repair Performed

Type of Repair	No. of Patients (n)	Percentage (%)
Sublay Mesh Repair	27	51.92
Onlay Mesh Repair	25	48.08
Total	**52**	**100.00**

Figure 6: Distribution of Type of Mesh Repair (n=52)

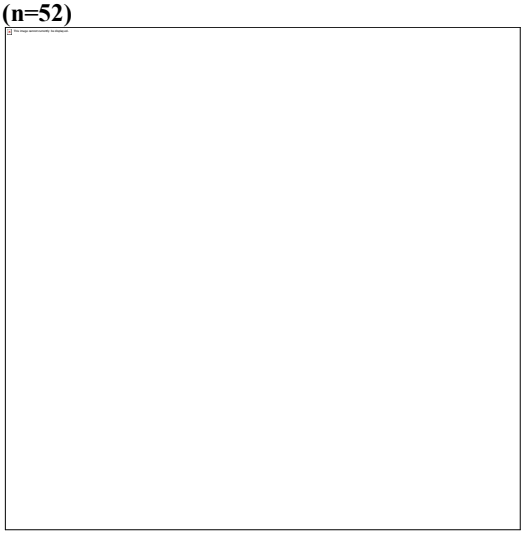


Table 7: Distribution of Patients into Drain and No-Drain Groups

Study Group	No. of Patients (n)	Percentage (%)
Group A – Subcutaneous Drain Placed (Yes)	30	57.69
Group B – No Drain Placed (No)	22	42.31
Total	**52**	**100.00**

Figure 7: Distribution into Drain and No-Drain Groups (n=52)

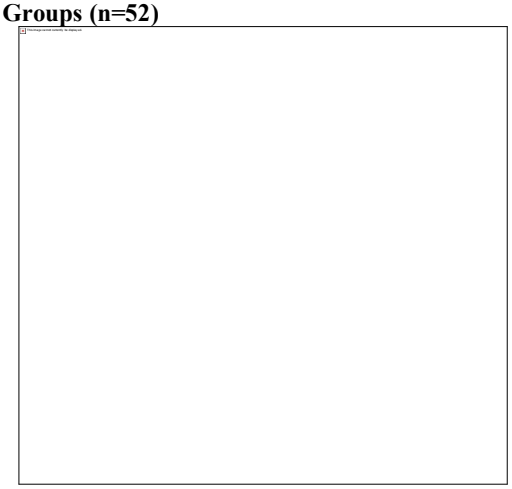


Table 8: Comparison of Post-Operative Pain on Day 1 (VAS Score) Between Groups

Parameter	Group A – Drain (n=30)	Group B – No Drain (n=22)
VAS Day 1 Mean ± SD	6.03 ± 1.38	6.18 ± 1.50
Test: Welch's Independent t-test	**t = −0.365 (df=43.05)**	**p = 0.7169**

Figure 8: Post-Op Day 1 VAS Score – Drain vs. No-Drain

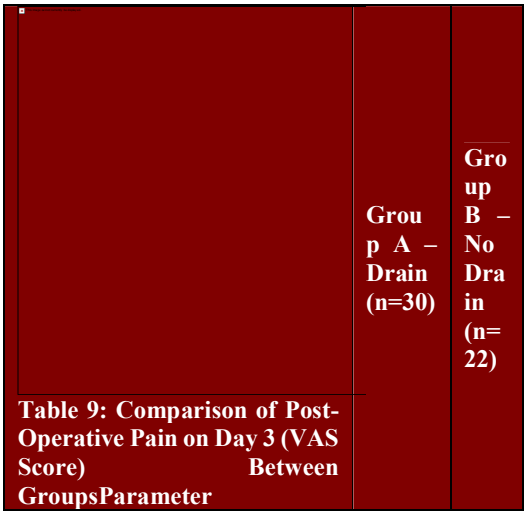


Table 9: Comparison of Post-Operative Pain on Day 3 (VAS Score) Between GroupsParameter

	Group A – Drain (n=30)	Group B – No Drain (n=22)
VAS Day 3 Mean ± SD	4.07 ± 1.44	3.91 ± 1.51
Test: Welch's Independent t-test	**t = 0.380 (df=44.09)**	**p = 0.7061**

Figure 9: Post-Op Day 3 VAS Score – Drain vs. No-Drain

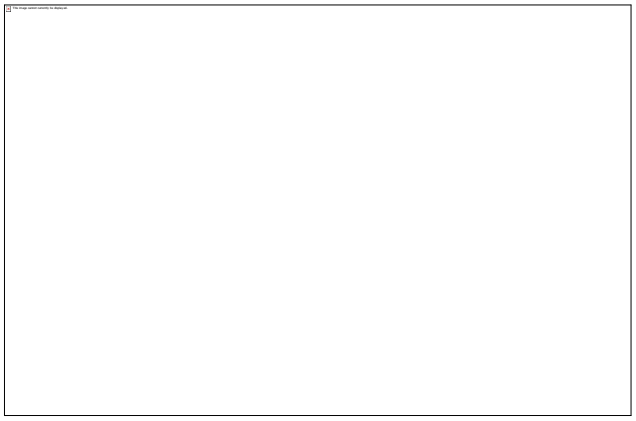


Table 10: Comparison of Post-Operative Pain on Day 7 (VAS Score) Between Groups

Parameter	Group A – Drain (n=30)	Group B – No Drain (n=22)
VAS Day 7 Mean ± SD	1.77 ± 1.50	2.23 ± 1.41
Test: Welch's Independent t-test	**t = −1.131 (df=46.91)**	**p = 0.2636**

Figure 10: Post-Op Day 7 VAS Score – Drain vs. No-Drain

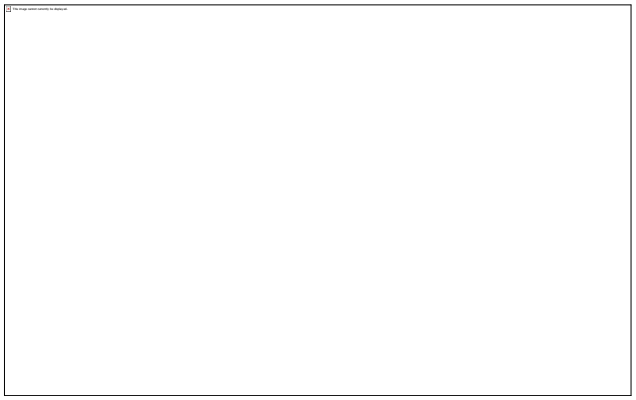


Table 11: Longitudinal Trend of Post-Operative VAS Pain Scores Across Days 1, 3, and 7

Post-Operative Day	Group A – Drain Mean (±SD)	Group B – No Drain Mean (±SD)
Day 1	6.03 (±1.38)	6.18 (±1.50)
Day 3	4.07 (±1.44)	3.91 (±1.51)
Day 7	1.77 (±1.50)	2.23 (±1.41)

Figure 11: Trend of VAS Pain Scores – Post-Op Days 1, 3 and 7

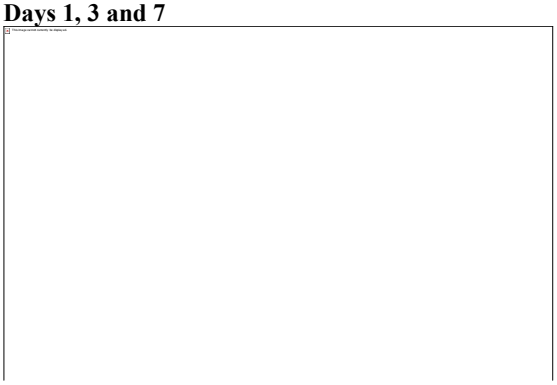


Table 12: Comparison of Wound Infection (SSI) Between Drain and No-Drain Groups

Wound Infection (SSI)	Group A – Drain n (%)	Group B – No Drain n (%)	Total n (%)
Yes	15 (50.0%)	14 (63.64%)	29 (55.77%)
No	15 (50.0%)	8 (36.36%)	23 (44.23%)
Total	**30 (100%)**	**22 (100%)**	**52 (100%)**
Test: Chi-square (χ^2)	**χ^2 = 0.957**	**df = 1**	**p = 0.3280**

Figure 12: Comparison of Wound Infection (SSI) – Drain vs. No-Drain Groups

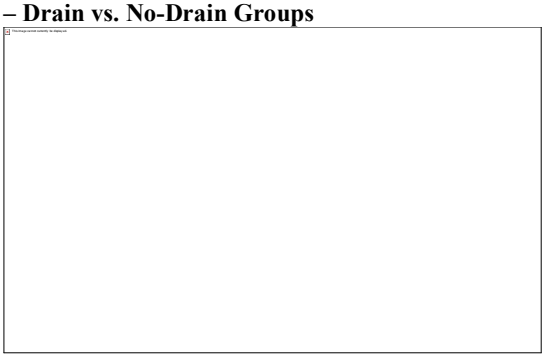


Table 13: Comparison of Seroma Formation Between Drain and No-Drain Groups

Seroma Formation	Group A – Drain n (%)	Group B – No Drain n (%)	Total n (%)
Yes	15 (50.0%)	9 (40.91%)	24 (46.15%)
No	15 (50.0%)	13 (59.09%)	28 (53.85%)
Total	**30 (100%)**	**22 (100%)**	**52 (100%)**
Test: Chi-square (χ^2)	**χ^2 = 0.422**	**df = 1**	**p = 0.5159**

Figure 13: Comparison of Seroma Formation – Drain vs. No-Drain Groups

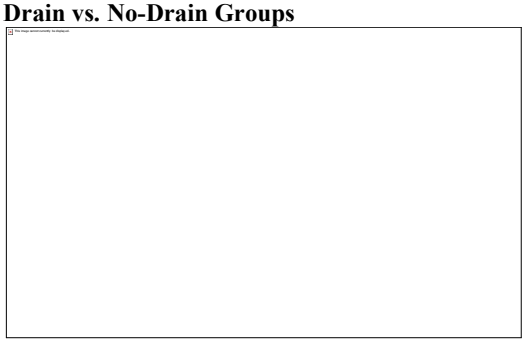


Table 14: Comparison of Hematoma Formation Between Drain and No-Drain Groups

Hematoma Formation	Group A – Drain n (%)	Group B – No Drain n (%)	Total n (%)
Yes	5 (16.67%)	9 (40.91%)	14 (26.92%)
No	25 (83.33%)	13 (59.09%)	38 (73.08%)
Total	**30 (100%)**	**22 (100%)**	**52 (100%)**
Test: Chi-square (χ^2)	**χ^2 = 3.791**	**df = 1**	**p = 0.0515**

Figure 14: Comparison of Hematoma Formation – Drain vs. No-Drain Groups

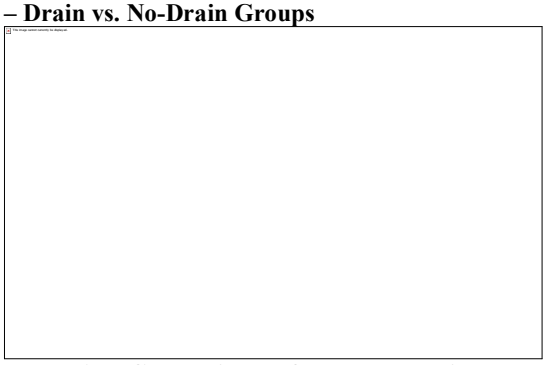


Table 15: Comparison of Wound Dehiscence Between Drain and No-Drain Groups

Wound Dehiscence	Group A – Drain n (%)	Group B – No Drain n (%)	Total n (%)
Yes	10 (33.33%)	16 (72.73%)	26 (50.0%)

No	20 (66.67%)	6 (27.27%)	26 (50.0%)
Total	**30 (100%)**	**22 (100%)**	**52 (100%)**
Test: Chi-square (χ^2)	**$\chi^2 = 7.879$**	**df = 1**	**p = 0.0050**

Figure 15: Comparison of Wound Dehiscence – Drain vs. No-Drain Groups

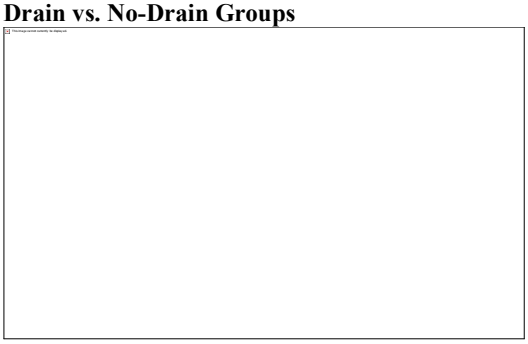


Table 16: Summary of Overall Wound Complication Rates in the Total Study Population

Complication	Group A – Drain n (%)	Group B – No Drain n (%)	Total n (%)
Wound Infection (SSI)	15 (50.00%)	14 (63.64%)	29 (55.77%)
Seroma Formation	15 (50.00%)	9 (40.91%)	24 (46.15%)
Wound Dehiscence **	10 (33.33%)	16 (72.73%)	26 (50.00%)
Hematoma Formation	5 (16.67%)	9 (40.91%)	14 (26.92%)
**** p=0.005 (statistically significant)**			

Figure 16: Summary of Wound Complication Rates (Dehiscence p=0.005)**

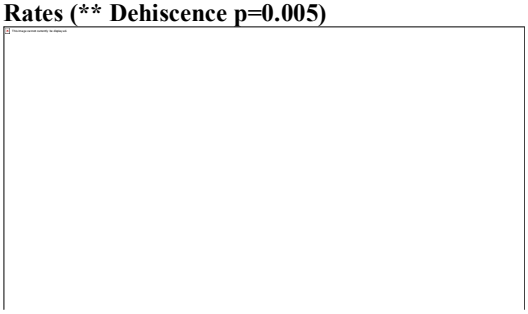


Table 17: Comparison of Duration of Hospital Stay Between Groups

Parameter	Group A – Drain (n=30)	Group B – No Drain (n=22)
Hospital Stay Mean ± SD (days)	7.97 ± 3.23	10.41 ± 2.67
Range (days)	4 – 13	5 – 13
Test: Welch's Independent t-test	**t = −2.981 (df=49.24)**	**p = 0.0045**

Figure 17: Hospital Stay Duration – Drain vs. No-Drain **(p=0.0045)

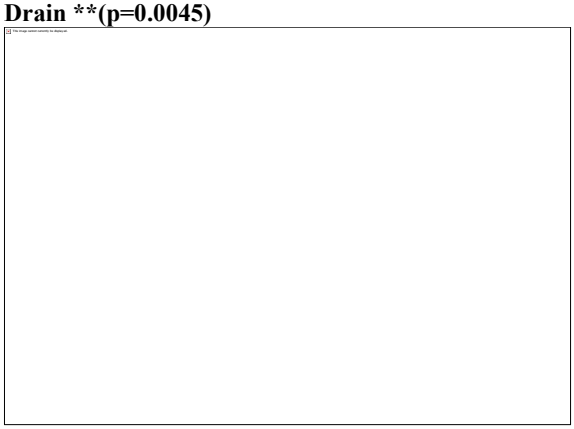


Table 18: Comparison of Wound Healing Time Between Groups

Parameter	Group A – Drain (n=30)	Group B – No Drain (n=22)
Healing Time Mean ± SD (days)	15.47 ± 3.27	16.00 ± 3.79
Range (days)	9 – 22	7 – 22
Test: Welch's Independent t-test	**t = −0.531 (df=41.23)**	**p = 0.5984**

Figure 18: Wound Healing Time – Drain vs. No-Drain (p=0.5984, NS)

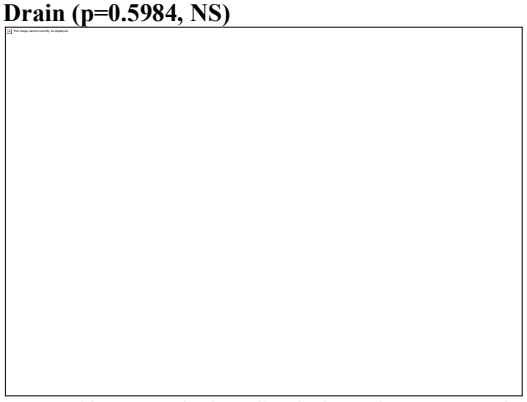


Table 19: Descriptive Statistics of Total Drain Output – Group A (n=30)

Parameter	Value
Number of Patients	30
Mean Total Drain Output (ml)	85.67
Standard Deviation (ml)	39.87

Median Drain Output (ml)	86.00
Minimum Output (ml)	23
Maximum Output (ml)	149
Mean Duration of Drain Retention (days)	5.37
SD – Duration of Drain (days)	1.75

Figure 19: Distribution of Total Drain Output (ml) – Group A (n=30)

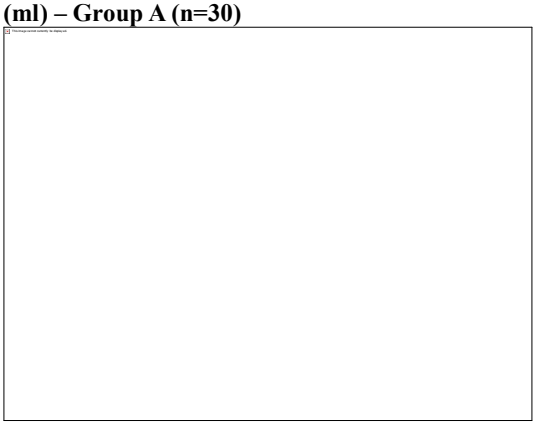


Table 20: Mean Hospital Stay According to Wound Complication Status

Complication Status	Mean Hospital Stay (days)	n
Wound Infection – Yes	10.17	29
Wound Infection – No	7.52	23
Wound Dehiscence – Yes	11.88	26
Wound Dehiscence – No	6.12	26

Figure 20: Mean Hospital Stay by Wound Complication Status

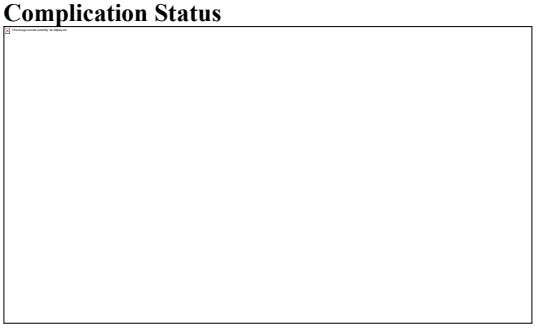


Table 21: Association Between Comorbid Conditions and Wound Infection

Comorbid Condition	WI Yes n (%)	WI No n (%)	Total (n)
DM + HTN	9 (75.00%)	3 (25.00%)	12
Obesity	7 (58.33%)	5 (41.67%)	12
None	6 (54.55%)	5 (45.45%)	11
DM only	3 (42.86%)	4 (57.14%)	7
HTN only	4 (40.00%)	6 (60.00%)	10
Total	**29 (55.77%)**	**23 (44.23%)**	**52**
Test: Chi-square*	**χ^2 = 3.319**	**df = 4**	**p = 0.5059**

Figure 21: Wound Infection Rate by Comorbid Condition

Table 22: Association Between Type of Ventral Hernia and Wound Infection

Type of Hernia	WI Yes n (%)	WI No n (%)	Total (n)
Umbilical Hernia	12 (63.16%)	7 (36.84%)	19
Incisional Hernia	11 (61.11%)	7 (38.89%)	18
Epigastric Hernia	3 (33.33%)	6 (66.67%)	9
Para-Umbilical Hernia	3 (50.00%)	3 (50.00%)	6
Total	**29 (55.77%)**	**23 (44.23%)**	**52**
Test: Chi-square*	**χ^2 = 2.546**	**df = 3**	**p = 0.4670**

Figure 22: Wound Infection Rate by Type of Ventral Hernia

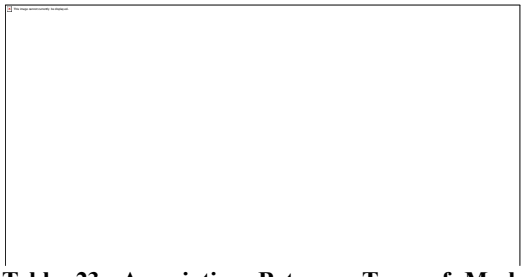


Table 23: Association Between Type of Mesh Repair and Wound Complications

Complication	Onlay Repair n (%)	Sublay Repair n (%)	Test	p-value

Wound Infection	14/25 (56.00 %)	15/27 (55.56 %)	Chi-sq=0.001	0.9743
Wound Dehiscence	16/25 (64.00 %)	10/27 (37.04 %)	Chi-sq=3.775	0.0520
Seroma Formation	15/25 (60.00 %)	12/27 (44.44 %)	Chi-sq=1.258	0.2620
Hematoma Formation	6/25 (24.00 %)	8/27 (29.63 %)	Chi-sq=0.244	0.6214
Onlay n=25 | Sublay n=27				

Figure 23: Complication Rates by Type of Mesh Repair (* Dehiscence p=0.052)

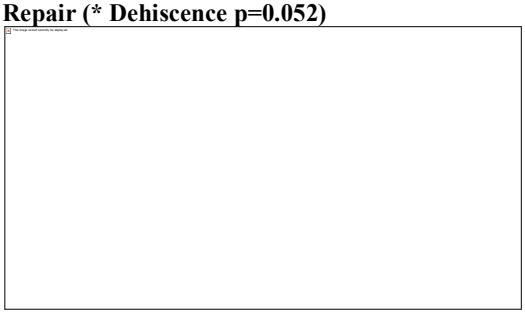
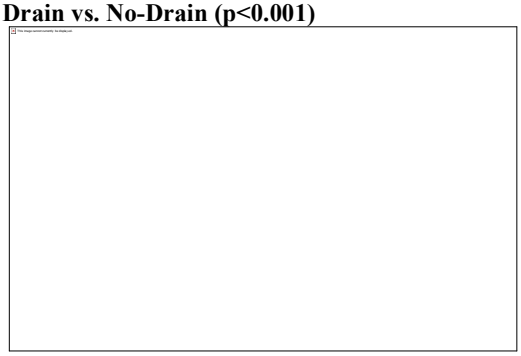


Table 24: Comparison of Hernia Defect Size Between Drain and No-Drain Groups

Parameter	Group A – Drain (n=30)	Group B – No Drain (n=22)
Mean Defect Size ± SD (cm)	4.58 ± 0.94	2.92 ± 0.67
Test: Welch's Independent t-test	**t = 7.396**	**p < 0.001**

Figure 24: Comparison of Hernia Defect Size – Drain vs. No-Drain (p<0.001)



DISCUSSION

The present study was undertaken with the primary aim of evaluating the role of subcutaneous drain placement in preventing postoperative wound complications following ventral hernia repair. Ventral hernia repair is one of the most commonly performed procedures in general surgery, yet postoperative wound morbidity remains an important concern despite advances in operative technique and mesh-based reconstruction. Complications such as surgical site infection, seroma formation, hematoma, wound dehiscence, delayed wound healing, prolonged hospital stay, and increased postoperative discomfort can adversely affect recovery, increase treatment cost, prolong hospitalization, and reduce overall surgical success. In routine clinical practice, the use of subcutaneous drains after ventral hernia repair remains controversial. Some surgeons advocate their use to reduce dead space and evacuate fluid collections, while others avoid them due to concern regarding infection risk, pain, or doubtful benefit. This uncertainty makes the topic highly relevant for prospective clinical evaluation. The significance of the present study lies in its attempt to provide evidence on whether subcutaneous drains truly influence postoperative outcomes in patients undergoing ventral hernia repair. By comparing patients managed with and without drains and assessing multiple clinically meaningful endpoints such as pain, wound infection, seroma, hematoma, dehiscence, healing time, and hospital stay, the study helps clarify the practical value of drain placement in a real-world surgical setting. The study is also significant because it considers associated factors such as hernia type, defect size, mesh repair plane, and comorbid conditions, thereby allowing a more complete understanding of wound behavior after surgery. Since prevention of postoperative complications is essential for improving patient recovery and optimizing use of hospital resources, the findings of this study may contribute to better operative decision-making and support a more selective, evidence-based approach to drain usage in ventral hernia repair.

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