e-ISSN: 0976-822X, p-ISSN:2961-6042

Available online on http://www.ijcpr.com/

International Journal of Current Pharmaceutical Review and Research 2026; 18(5); 1435-1439

Original Research Article

Pre Peritoneal Vs Onlay Mesh Repair of Ventral Hernias: A Comparative Observational Study

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Received: 01-02-2026 / Revised: 15-03-2026 / Accepted: 21-04-2026

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Conflict of interest: Nil

Abstract

Background: Both spontaneous and incisional hernias following an abdominal procedure are considered ventral hernias in the anterior abdominal wall. Mesh repair may be pre-peritoneal or onlay. The use of either type of meshplasty is controversial because of variations in the procedure's ease of execution, duration, post-operative problems, and recurrence.

Methods: The Department of Surgery at the Govt. Medical College and Hospital in Bettiah, West Champaran, Bihar, carried out a comparative observational study between August 2025 and January 2026 on 50 patients of ventral hernias who admitted different surgical units.

Results: Of the fifty patients, twenty-five had onlay and twenty-five had preperiotneal mesh repair. Only eight of the twenty-five onlay instances required more than an hour to operate. Only four of the twenty-five preperitoneal mesh repair cases had hospital stays longer than five days, two had seromas, one had wound infections, and the majority had lower postoperative pain scores.

Conclusion: Preperitoneal mesh repair is a rather decent option even if the time of surgery is somewhat longer than onlay mesh repair, according to an examination of the outcomes and five variables: duration of surgery, post-op pain, seroma, wound infection, and length of hospital stay.

Keywords: Ventral Hernia; Onlay Vs Preperitoneal; Mesh Repair.

DOI: 10.25258/ijcpr.18.5.233

Introduction

A protrusion via an irregular aperture in the anterior abdominal muscles is known as a ventral hernia. Umbilical and paraumbilical hernias, epigastria hernias, and incisional hernias from prior surgical incision sites are examples of ventral hernias. The standard of treatment for repairing ventral hernias is mesh rather than suture, which has significantly improved long-term results. However, numerous studies show that mesh implantation increases the incidence of wound complications, including as infections, seromas, and mesh erosions [12].Mesh can be positioned in the peritoneal cavity or over the anterior rectus sheath (onlay). These two methods are similar to each other. [1] Every mesh position has potential advantages and disadvantages. The need to produce skin flaps during onlay repair raises the risk of mesh infection and wound complications.[2, 4] The location of the mesh has an impact on the risks of problems following surgery. For instance, mesh that comes into contact with intra-abdominal contents may raise the risk of fistula formation, bowel blockage, and adhesions.[10, 11] The mesh may be shielded from intraperitoneal contents and superficial wound complications by the preperitoneal space. Furthermore, it permits the formation of load-bearing tissue in two directions.[5] The onlay mesh approach will have a

higher rate of immediate post-operative problems such as seroma and wound infection due to increased fat mobilization and disruption of perforators.[3] The purpose of this comparative study is to highlight the benefits and drawbacks of two different meshplasty techniques.[6]

The aim of the study is to regarding operative time, ease of procedure, its early post-operative complications, duration of hospital stay.

Materials and Methods

This comparative observational study conducted at Department of Surgery, Govt. Medical College and Hospital, Bettiah, West Champaran, Bihar for a period of six months (August 2025 to January 2026). Patients admitted in the surgical wards with ventral hernias at GMCH. Case sheets and investigation reports of the above said patients also form the materials Clinical examination, biochemical and radiological investigations, surgical management and follow up are the methods. 50 patients, treated for ventral hernias. Patients was followed up in the immediate post-operative period with standardized protocol and variables like duration of procedure, pain in immediate post-operative period of three days with standardized analgesic regimen of Voveran 80mg IM BD for three days and Inj. Fortwin and Inj. Phenergan 1cc IM. HS on the day of surgery, seroma collection, wound infection, duration of hospital stay between two group of patients operated by two different techniques will be compared.[7][8].

All patients of age group more than 18 years who were presented with ventral hernias and undergone surgery were taken and analysed. Patients less than 18 years, groin hernia, epigastric hernia, divarication of recti, medically not fit for surgery. And not giving consent were excluded in this study.

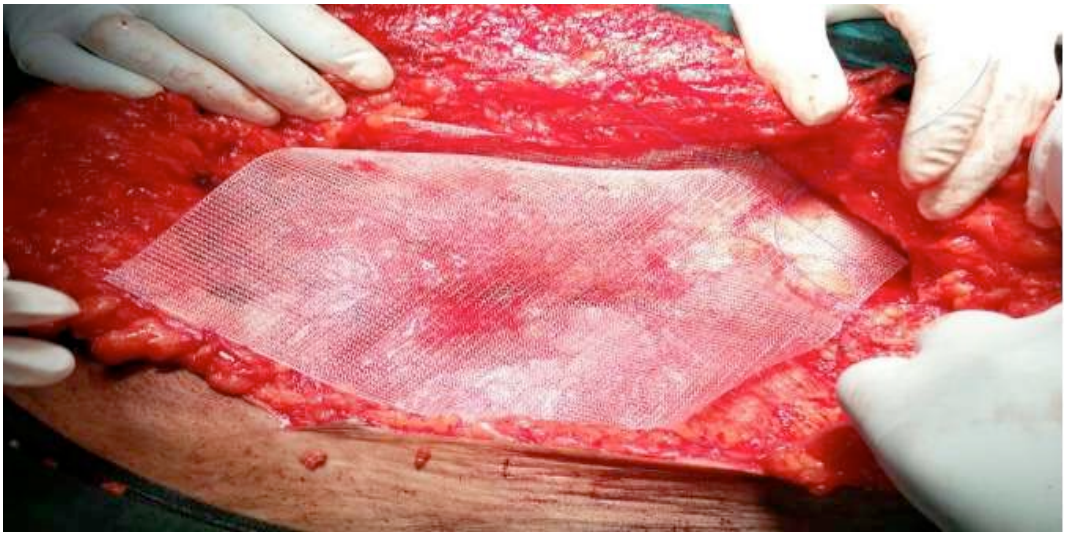

Figure 1: Onlay mesh placement

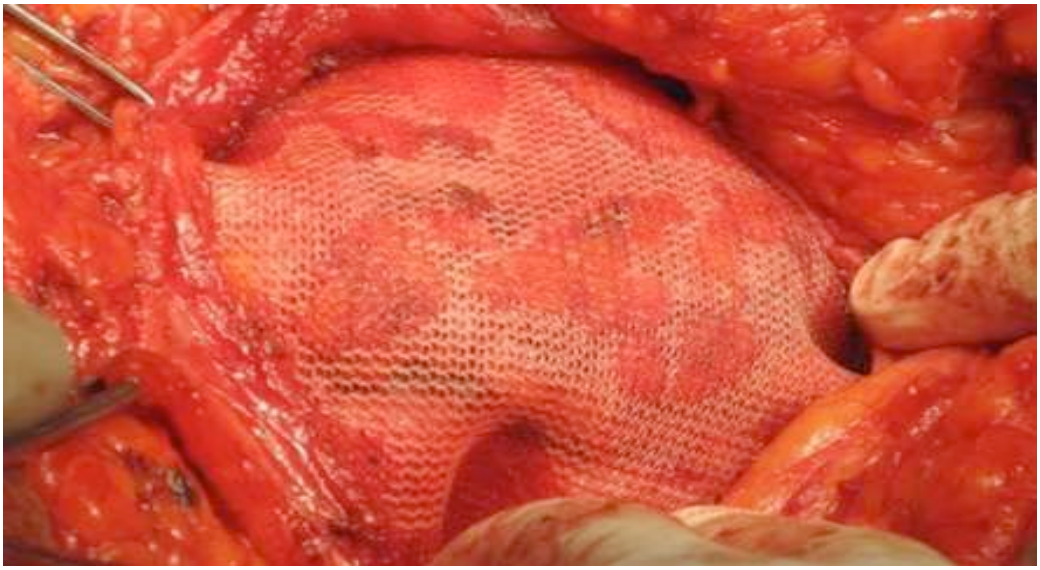

Figure 2: pre peritoneal mesh placement

Results

Table 1: Descriptive Statistics

	No. of cases	Range	Minimum	Maximum	Mean	Std. Deviation
Duration of Surgery	50	48	42	90	67.18	13.080
Hospital stay	50	11	3	14	6.26	2.230
Age	50	64	21	85	48.16	15.710

Table 2: Sex distribution of patients

Gender	No. of cases	Percentage
Male	30	60.0%
Female	20	40.0%
Total	50	100.0%

Table 3: Type of Ventral Hernia

Type of Ventral Hernia	No. of cases	Percentage
Paraumblical	13	26.0%
Umblical	16	32.0%
Incisional	17	34.0%
Epigastric	4	8.0%
Total	50	100.0%

Table 4: Mesh Repair

Mesh Repair	No. of cases	Percentage
Onlay	25	50.0%
Preperitoneal	25	50.0%
Total	50	100.0%

Table 5: Post-Operative Pain Score

Post-Operative Pain Score	No. of cases	Percentage
3	2	4.0
4	7	14.0
5	17	34.0
6	12	24.0
7	7	14.0
8	5	10.0
Total	50	100.0

Table 6: Wound Infection

Wound Infection	No. of cases	Percentage
Present	7	14.0%
Absent	43	86.0%
Total	50	100.0

Table 7: Seroma

Seroma	No. of cases	Percentage
Present	8	16.0%
Absent	42	84.0%
Total	50	100.0%

Table 8: Age Distribution

Age Distribution	No. of cases	Percentage
<30years	7	14.0%
30-50years	22	44.0%
50-70years	16	32.0%
>70years	5	10.0%
Total	50	100.0%

Table 9: Duration of Surgery

Duration Of Surgery	No. of cases	Percentage
<1Hour	17	34.0%
>1Hour	33	66.0%
Total	50	100.0%

Table 10: Duration of Hospital Stay

Hospital Stay	No. of cases	Percentage
<5Days	23	46.0%
>5Days	27	54.0%
Total	50	100.0%

Discussion

One of the most frequent surgical procedures carried out globally is ventral hernia repair surgery.[13]. Surgical advancements have made it easier for surgeons to do ventral hernia repair [14–15]. It is generally acknowledged that mesh surgery is safe, effective, and has a very low risk of complications.

The most common mesh replacement techniques for hernia treatment are sublay and onlay. Researchers claim that the sublay technique should be regarded as the gold standard because to the decreased risk of mesh infection and stoma formation [16–17].

The length of hospital stay, complications following surgery, recurrence, and return to regular job are the most significant similar factors. [9]. The aforementioned results are compared at the conclusion of the analysis.

According to the aforementioned findings, onlay mesh repair required less time during surgery than preperitoneal mesh repair. Sixty-eight percent of onlay mesh repairs required less than an hour to complete. However, 100% of preperitoneal mesh repairs required more than an hour of operating time.

Less than five days were spent in the hospital following 84% of preperitoneal mesh repairs. Hospital stays exceeded five days in 92% of onlay mesh repairs. Seroma occurred in 24% of onlay mesh repair cases. However, seroma only occurred in 8% of preperitoneal mesh repairs.Wound infections occurred in 24% of onlay mesh repair cases. However, wound infection only occurred in 4% of preperitoneal mesh repair cases. In about 70% of the preperiotneal mesh repair cases, the postoperative pain score was between 4 and 5. However, in the majority of onlay mesh repair instances, the pain score was greater than 5.

Conclusion

Preperitoneal mesh repair is therefore a preferable option than onlay mesh repair due to less wound-related problems, postoperative pain, and an early return to work.

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