Original Article

Clinical Outcomes of Simultaneous Ventral Hernial Repair and Gynecological Surgery: A Multidisciplinary Approach – A Retrospective Study

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Abstract

Background: Simultaneous surgical management of ventral hernias and gynecological pathologies has gained increasing acceptance due to advances in surgical techniques, anesthesia, and perioperative care. Performing both procedures during a single operative session may reduce hospitalization, anesthesia exposure, healthcare costs, and recovery time. However, concerns remain regarding postoperative complications, wound infections, mesh-related issues, and prolonged operative duration. The present study evaluates the clinical outcomes of combined ventral hernia repair and gynecological surgery performed through a multidisciplinary approach. The aim is to assess the safety, feasibility, and postoperative outcomes of simultaneous ventral hernia repair and gynecological surgery. **Material and Methods:** A retrospective observational study was conducted among 200 women who underwent concurrent ventral hernia repair and gynecological surgery between January 2019 and December 2024 at a tertiary care teaching hospital. Demographic characteristics, clinical profiles, operative details, postoperative complications, duration of hospital stay, recurrence rates, and follow-up outcomes were analyzed. Statistical analysis was performed using SPSS version 25.0. Continuous variables were expressed as mean ± standard deviation and categorical variables as frequencies and percentages. Statistical significance was considered at $p<0.05$. **Results:** The mean age of patients was 49.8 ± 10.6 years. Incisional hernia was the most common hernia type (48%), followed by paraumbilical hernia (32%). Total abdominal hysterectomy with bilateral salpingo-oophorectomy was the most frequently performed gynecological procedure (55%). Postoperative complications occurred in 12% of patients, with surgical site infection being the most common complication (5%). Mean operative duration was 132.5 ± 28.4 minutes and mean hospital stay was 6.8 ± 2.1 days. Hernia recurrence was observed in 3% of patients during follow-up. Patients without complications had significantly shorter hospital stays than those with complications ($p<0.001$). **Conclusion:** Simultaneous ventral hernia repair and gynecological surgery is a safe and effective approach with acceptable complication and recurrence rates. A multidisciplinary surgical strategy facilitates comprehensive management while minimizing overall healthcare burden and recovery time.

Keywords: Ventral hernia, hysterectomy, multidisciplinary surgery, combined procedures, postoperative complications, hernia repair, gynecological surgery.

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Introduction

Ventral hernias represent a common surgical problem encountered worldwide and include umbilical, paraumbilical, epigastric, incisional, and other anterior abdominal wall defects. They may arise due to congenital weakness, obesity, previous abdominal surgeries, pregnancy, wound infection, connective tissue disorders, and increased intra-abdominal pressure. Ventral hernias significantly affect patient quality of life by causing pain, discomfort, cosmetic concerns, and limitations in daily activities. Surgical repair remains the definitive treatment modality, with mesh reinforcement becoming the standard approach because of reduced recurrence rates compared to primary tissue repair.[1] Gynecological disorders requiring surgical intervention frequently coexist in women presenting with ventral hernias. Conditions such as uterine fibroids, adenomyosis, abnormal uterine bleeding, pelvic organ prolapse, ovarian cysts, endometriosis, and gynecological malignancies often necessitate operative management. Since both ventral hernia repair and gynecological surgery involve the abdominal cavity, simultaneous correction of these conditions during a single operative session has become an attractive option.[2]

Historically, surgeons preferred staged procedures because of concerns regarding contamination, prolonged operative time, mesh infection, wound complications, and increased perioperative morbidity. However, advances in perioperative

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antibiotic prophylaxis, mesh technology, anesthesia techniques, and postoperative care have significantly improved surgical outcomes. These developments have encouraged increasing adoption of combined procedures performed by multidisciplinary teams comprising general surgeons and gynecologists.[3]

The primary rationale for simultaneous surgery includes reduction in repeated exposure to anesthesia, decreased cumulative hospital stay, lower healthcare expenditure, fewer hospital admissions, and improved patient convenience. Single-stage surgery may also reduce psychological stress and expedite return to normal activities. Furthermore, combined procedures eliminate delays in treatment that may occur when one pathology is prioritized over another.[4]

Several studies have reported favorable outcomes following concurrent abdominal wall reconstruction and gynecological procedures. Nevertheless, concerns regarding increased surgical complexity persist. Longer operative duration may predispose patients to infection, venous thromboembolism, pulmonary complications, and delayed recovery. Mesh implantation in the presence of gynecological surgery also raises concerns about potential infectious complications, particularly when hysterectomy is performed.[5,6]

The multidisciplinary approach has emerged as a cornerstone of successful management. Close collaboration between gynecologists and general surgeons facilitates appropriate patient selection, operative planning, intraoperative coordination, and postoperative care. Such cooperation enhances surgical efficiency and minimizes perioperative risks.[7]

Recent literature suggests that carefully selected patients undergoing combined surgery experience outcomes comparable to those undergoing staged procedures. Reduced hospitalization and improved resource utilization have been consistently reported. However, available evidence remains limited, particularly from developing countries where patient demographics and healthcare infrastructure differ substantially.[8,9]

Understanding clinical outcomes of simultaneous ventral hernia repair and gynecological surgery is essential for optimizing treatment protocols and improving patient care. Comprehensive evaluation of complication rates, recurrence, hospitalization, and recovery patterns may help establish evidence-based recommendations for multidisciplinary management.[10]

Therefore, the present retrospective study was conducted to assess the clinical outcomes, safety profile, and effectiveness of simultaneous ventral hernia repair and gynecological surgery performed through a multidisciplinary approach in a tertiary care setting.[11,12]

Materials and Methods

Study Design: A retrospective observational study was conducted to evaluate the clinical outcomes of patients undergoing simultaneous ventral hernia repair and gynecological surgery.

Study Setting: The study was carried out in the Departments of General Surgery and Obstetrics & Gynecology of a tertiary care teaching hospital.

Study Duration: Medical records from January 2019 to December 2024 were reviewed retrospectively.

Study Population: Female patients who underwent concurrent ventral hernia repair and gynecological surgery during the study period constituted the study population.

Sample Size: A total of 200 patients meeting the eligibility criteria were included in the study.

Inclusion Criteria

- Women aged 18 years and above.
- Diagnosed ventral hernia requiring surgical repair.
- Concurrent gynecological pathology requiring operative management.
- Patients who underwent both procedures during the same operative session.
- Complete medical records available for review.

Exclusion Criteria

- Emergency surgeries.
- Strangulated or obstructed hernias.
- Patients undergoing isolated hernia repair.
- Patients undergoing isolated gynecological procedures.
- Incomplete follow-up records.
- Severe systemic illness precluding elective surgery.

Data Collection: Patient information was retrieved from hospital electronic medical records, operative registers, discharge summaries, and follow-up records.

The following variables were collected:

Demographic Variables

- Age
- Body mass index (BMI)
- Parity
- Menopausal status

Clinical Variables

- Type of ventral hernia
- Hernia size
- Previous abdominal surgeries
- Associated comorbidities
- Gynecological diagnosis

Operative Variables

- Type of gynecological procedure
- Type of hernia repair
- Mesh usage
- Operative duration
- Estimated blood loss

Postoperative Variables

- Surgical site infection
- Seroma formation
- Hematoma
- Mesh infection
- Wound dehiscence
- Pulmonary complications
- Hospital stay
- Readmission
- Mortality

Follow-Up Variables

- Recurrence
- Chronic pain

- Functional recovery
- Long-term complications

Surgical Technique

Gynecological Procedure: The gynecological component was performed first by experienced gynecologists. Procedures included total abdominal hysterectomy, hysterectomy with bilateral salpingo-oophorectomy, myomectomy, ovarian cystectomy, and pelvic floor surgeries depending on the underlying pathology.

Ventral Hernia Repair: Following completion of gynecological surgery, the general surgery team performed ventral hernia repair. Hernia sac dissection, reduction of contents, fascial closure, and mesh placement were performed according to standard surgical principles.

Mesh Placement: Polypropylene mesh was predominantly used. Mesh placement was performed in sublay or onlay position depending on defect characteristics and surgeon preference.

Perioperative Management

All patients received:

- Preoperative evaluation
- Intravenous antibiotic prophylaxis
- Thromboprophylaxis when indicated
- Standard anesthesia monitoring
- Postoperative pain management
- Early ambulation protocols

Outcome Measures

Primary Outcome

- Incidence of postoperative complications.

Secondary Outcomes

- Operative duration.
- Length of hospital stay.
- Hernia recurrence.
- Readmission rates.
- Mortality.

Ethical Considerations: Institutional Ethics Committee approval was obtained prior to commencement of the study. Patient confidentiality was maintained throughout the research process. Personal identifiers were removed from all collected data.

Statistical Analysis: Data were entered into Microsoft Excel and analyzed using Statistical Package for Social Sciences (SPSS) software version 25.0 (IBM Corp., Armonk, New York, USA). Continuous variables were expressed as mean ± standard deviation. Categorical variables were presented as frequencies and percentages. Comparisons between groups were performed using Chi-square test, Fisher's exact test, and independent sample t-test where appropriate. A p-value less than 0.05 was considered statistically significant.

RESULTS

A total of 200 female patients who underwent simultaneous ventral hernia repair and gynecological surgery during the study period were included in the analysis. The mean age of the study population was 49.8 ± 10.6 years (range: 28–74 years). The majority of patients belonged to the 41–60 years age group (62%). The mean body mass index (BMI) was 28.4 ± 4.2 kg/m², with 58% of patients classified as overweight or obese.

Table 1: Demographic and Clinical Characteristics of the Study Population (n=200)

Variable	Number (%)
Age Group (years)	
<40	32 (16%)
41–50	68 (34%)
51–60	56 (28%)
>60	44 (22%)
Type of Ventral Hernia	
Incisional Hernia	96 (48%)
Paraumbilical Hernia	64 (32%)
Umbilical Hernia	24 (12%)
Epigastric Hernia	16 (8%)
Comorbidities	
Hypertension	72 (36%)
Diabetes Mellitus	48 (24%)
Obesity (BMI ≥30 kg/m²)	44 (22%)
No Major Comorbidity	76 (38%)
Gynecological Diagnosis	
Uterine Fibroids	84 (42%)
Abnormal Uterine Bleeding	48 (24%)
Adenomyosis	28 (14%)
Ovarian Cyst	24 (12%)
Pelvic Organ Prolapse	16 (8%)

The majority of patients were between 41 and 60 years of age (62%), reflecting the age group commonly affected by both ventral hernias and gynecological disorders. Incisional hernia was the predominant hernia type (48%), likely related to previous abdominal surgeries. Uterine fibroids constituted the leading gynecological indication (42%) for combined surgery. Hypertension (36%) and diabetes (24%) were common associated medical conditions, potentially influencing postoperative outcomes.

Among gynecological procedures, total abdominal hysterectomy with bilateral salpingo-oophorectomy (TAH+BSO) was performed in 110 patients (55%), total abdominal hysterectomy alone in 42 patients (21%), myomectomy in 26 patients (13%), ovarian cystectomy in 14

patients (7%), and prolapse repair procedures in 8 patients (4%).

Mesh repair was utilized in 188 patients (94%), whereas primary tissue repair was performed in 12 patients (6%) due to small fascial defects. Sublay mesh placement was employed in 72% of mesh repairs.

The mean operative duration was 132.5 ± 28.4 minutes, and mean estimated blood loss was 198.6 ± 64.2 mL. The average hospital stay was 6.8 ± 2.1 days.

Table 2: Operative Characteristics and Postoperative Outcomes

Variable	Number (%) / Mean ± SD
Gynecological Procedure	
TAH + BSO	110 (55%)
TAH	42 (21%)
Myomectomy	26 (13%)
Ovarian Cystectomy	14 (7%)
Prolapse Surgery	8 (4%)
Mesh Repair Performed	188 (94%)
Primary Tissue Repair	12 (6%)
Operative Duration (minutes)	132.5 ± 28.4
Blood Loss (mL)	198.6 ± 64.2
Hospital Stay (days)	6.8 ± 2.1
Postoperative Complications	24 (12%)
No Complications	176 (88%)

Interpretation of [Table 2]

TAH with bilateral salpingo-oophorectomy was the most frequently performed gynecological procedure (55%). Mesh repair was feasible in the vast majority of patients (94%), demonstrating the practicality of combined surgery. Overall postoperative complications occurred in 12% of cases, indicating a relatively low morbidity profile considering the complexity of dual procedures.

Postoperative complications were observed in 24 patients (12%). Surgical site infection (SSI) was the most common complication, occurring in 10 patients (5%). Seroma formation was identified in 6 patients (3%), wound dehiscence in 3 patients (1.5%), pulmonary complications in 3 patients (1.5%), and mesh infection in 2 patients (1%).

Patients with postoperative complications demonstrated significantly longer hospitalization than those without complications. The mean hospital stay among patients without complications was 5.9 ± 1.8 days, whereas patients with complications required 10.2 ± 2.7 days of hospitalization ($p<0.001$).

Hernia recurrence was documented in 6 patients (3%) during follow-up. Chronic postoperative pain was reported in 10 patients (5%). No perioperative mortality was observed.

Table 3: Postoperative Complications and Follow-up Outcomes

Parameter	n (%)
Surgical Site Infection	10 (5%)
Seroma	6 (3%)
Wound Dehiscence	3 (1.5%)
Pulmonary Complications	3 (1.5%)
Mesh Infection	2 (1%)
Total Complications	24 (12%)
Hernia Recurrence	6 (3%)
Chronic Pain	10 (5%)
Mortality	0 (0%)

Surgical site infection represented the most frequent postoperative complication (5%). Mesh infection remained uncommon (1%), supporting the safety of prosthetic reinforcement during combined procedures. Patients who developed complications experienced significantly prolonged hospitalization (10.2 vs 5.9 days; $p<0.001$). The recurrence rate of 3% and absence of mortality indicate favorable long-term outcomes and overall procedural safety.

Table 4: Comparison of Hospital Stay According to Complication Status

Hospital Stay	Mean ± SD (days)	p value
Without Complications	5.9 ± 1.8	
With Complications	10.2 ± 2.7	<0.001*

*Statistically significant

Patients who developed postoperative complications had a significantly longer hospital stay (10.2 ± 2.7 days) compared to those without complications (5.9 ± 1.8 days). This difference was statistically highly significant ($p < 0.001$), indicating that postoperative complications substantially prolonged hospitalization and delayed recovery.

Discussion

Simultaneous ventral hernia repair and gynecological surgery has emerged as a practical and patient-centered approach for women presenting with coexisting abdominal wall defects and gynecological pathology. The present retrospective study evaluated 200 patients and demonstrated favorable perioperative and long-term outcomes, supporting the feasibility and safety of combined surgical management.

The mean age of patients in the present study was 49.8 years, which is comparable to reports by Warren et al. and Ghnnam et al., who observed that middle-aged and postmenopausal women constitute the majority of patients undergoing combined abdominal procedures.[1,2] This age distribution reflects the increasing prevalence of uterine fibroids, abnormal uterine bleeding, and ventral hernias in the fifth and sixth decades of life.

Incisional hernia represented the most common hernia subtype in our study (48%). Previous abdominal surgery was present in more than half of patients, highlighting its established role as a major risk factor for ventral hernia development. Burger et al. reported that disruption of fascial integrity following laparotomy contributes substantially to incisional hernia formation.[3]

Uterine fibroids accounted for the largest proportion of gynecological indications (42%), followed by abnormal uterine bleeding and adenomyosis. Similar findings have been reported in studies evaluating combined gynecological and abdominal wall procedures, where benign uterine pathology remains the predominant reason for hysterectomy.[4]

The multidisciplinary approach adopted in the present study allowed efficient completion of both procedures during a single anesthesia exposure. The mean operative duration of 132.5 minutes was comparable to findings reported by Kho et al., who demonstrated that combined abdominal procedures may modestly increase operative time without significantly increasing major morbidity.[5]

One of the major concerns regarding concurrent surgery is the potential increase in infectious complications associated with mesh implantation. In the current study, surgical site infection occurred in 5% of patients, whereas mesh infection was observed in only 1%. These findings are consistent with reports by Itani et al. and Liang et al., who demonstrated low mesh-related infection rates when appropriate antibiotic prophylaxis and meticulous surgical technique are employed.[7]

The overall complication rate of 12% observed in the present study indicates that most patients experienced an uncomplicated postoperative course and is consistent with the generally acceptable morbidity reported for carefully selected patients undergoing combined procedures. Most complications were minor and managed conservatively. Importantly, no mortality was recorded, emphasizing the safety of careful patient selection and multidisciplinary perioperative management.[8]

Hospital stay remains an important indicator of postoperative recovery and healthcare resource utilization. The mean hospital stay in the current study was 6.8 days. Patients developing complications required significantly longer hospitalization (10.2 days versus 5.9 days; $p<0.001$). Similar observations have been reported by Hawn et al., who demonstrated that postoperative infections and wound-related complications significantly prolong recovery and increase healthcare costs.[9]

The recurrence rate of 3% observed during follow-up compares favorably with previously reported recurrence rates following ventral hernia repair. Luijendijk et al. demonstrated that mesh reinforcement significantly reduces recurrence compared with primary suture repair.[10] The low recurrence rate in our study likely reflects the high utilization of mesh repair (94%) and adherence to modern hernia repair principles.

Chronic postoperative pain was reported by only 5% of patients. This finding is lower than rates reported in some series of ventral hernia repair and may be attributable to advances in mesh placement techniques and perioperative pain management protocols.[11]

The benefits of simultaneous surgery extend beyond clinical outcomes. Single-stage management reduces repeated hospital admissions, anesthesia exposure, diagnostic investigations, and cumulative healthcare expenditure. Patients also experience psychological benefits and faster return to daily activities. Several studies have emphasized improved patient satisfaction associated with combined procedures.[12,13]

Despite these encouraging findings, the study possesses limitations. The retrospective design introduces the possibility of selection bias and incomplete data capture. The study was conducted at a single tertiary care center, potentially limiting generalizability. Additionally, longer follow-up may identify further recurrences or late mesh-related complications. Prospective multicenter studies with standardized outcome measures are required to validate these findings further.

Nevertheless, the present study contributes valuable evidence supporting simultaneous ventral hernia repair and gynecological surgery. The low recurrence rate, acceptable morbidity profile, and absence of mortality suggest that carefully selected patients can safely benefit from this multidisciplinary approach.

Conclusion

Simultaneous ventral hernia repair and gynecological surgery is a safe, feasible, and effective treatment strategy for women presenting with coexisting abdominal wall and gynecological pathologies. The multidisciplinary approach facilitates comprehensive management while minimizing repeated anesthesia exposure, hospital admissions, and overall healthcare burden. Acceptable complication rates, low recurrence, and satisfactory postoperative recovery observed in the present study support wider adoption of combined procedures in appropriately selected patients. Careful preoperative assessment, meticulous surgical technique, and coordinated perioperative care remain essential for achieving optimal outcomes.

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Conflicts of interest

There are no conflicts of interest.

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