



Original Research Article

Outcomes of Open Ventral Wall Hernia Repair with Abdominoplasty- Case Series

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Abstract

Background: Ventral wall hernias are often associated with abdominal wall laxity and redundant skin. Combined hernia repair with abdominoplasty offers single-stage anatomical and aesthetic correction.

Methods : This retrospective case series included 25 patients who underwent concomitant open mesh hernioplasty with abdominoplasty. Demographic, operative, postoperative complication, umbilical viability, and 30-day recurrence data were analyzed.

Results: There were 21 females (84.0%) and 4 males (16.0%), with a mean age of 44.5 years. Diabetes mellitus was present in 17 patients (68.0%) and hypertension in 16 patients (64.0%). Onlay mesh repair was performed in 16 patients (64.0%) and retrorectus repair in 9 patients (36.0%). Superficial SSI occurred in 5 patients (20.0%) and deep SSI in 2 patients (8.0%). Umbilical viability was preserved in 19 patients (76.0%), mild epidermolysis occurred in 5 patients (20.0%), and deep ischemia/necrosis in 1 patient (4.0%). No recurrence was observed at 30 days.

Conclusion: Concomitant open ventral wall hernia repair with abdominoplasty is a feasible single-stage procedure with acceptable early wound outcomes, preserved umbilical viability, and no short-term recurrence.

Keywords: Ventral hernia; Abdominoplasty; Open mesh hernioplasty; Abdominal wall reconstruction; Surgical-site infection; Umbilical viability; Hernia recurrence; Case series.

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Introduction

Ventral abdominal wall hernias, including primary and incisional hernias, are common surgical conditions that may cause pain, functional limitation, progressive abdominal wall deformity and impaired quality of life. Patients with large or longstanding ventral hernias frequently have associated rectus diastasis, abdominal wall laxity, redundant skin and a dependent abdominal pannus. Consequently, conventional hernia repair alone may correct the fascial defect without adequately restoring abdominal contour or addressing the accompanying soft-tissue deformity.[1,2]

Open ventral hernia repair allows direct visualization of the defect, adhesiolysis, anatomical fascial closure and reinforcement with prosthetic

mesh. Mesh reinforcement is generally preferred over primary suture repair because it provides a more durable reconstruction and reduces the risk of recurrence.[1] In patients with substantial abdominal wall laxity or redundant skin, combining open hernia repair with abdominoplasty enables excision of excess skin and subcutaneous tissue, correction of rectus diastasis and restoration of abdominal wall contour during the same operation.[2,3] The wider exposure obtained during abdominoplasty may also facilitate identification of multiple defects, mesh placement and reconstruction of the abdominal wall.

Several studies have demonstrated the feasibility of this combined approach. McKnight et al. described concomitant sublay mesh repair of umbilical hernia

and abdominoplasty, highlighting the ability to reinforce the defect while preserving the umbilical blood supply.[2] Cheesborough and Dumanian subsequently reported 32 patients who underwent mesh-reinforced abdominal wall reconstruction with abdominoplasty. They observed no surgical-site infections, only two postoperative seromas and no hernia recurrence during follow-up, suggesting that the combined procedure can provide safe and durable functional and aesthetic outcomes in appropriately selected patients.[3] A randomized trial by Moreno-Egea et al. also found that adding abdominoplasty to incisional hernia repair improved patient satisfaction and quality of life without a significant increase in postoperative morbidity.[4]

Nevertheless, performing both procedures simultaneously remains controversial because the extensive soft-tissue dissection required for abdominoplasty may compromise flap and umbilical perfusion, create a large dead space and increase the risks of seroma, surgical-site infection, wound dehiscence, skin necrosis and thromboembolic events.[5] An analysis of the ACS-NSQIP database found that concurrent panniculectomy was associated with higher odds of wound complications, unplanned reoperation and venous thromboembolism compared with ventral hernia repair alone.[5] Similarly, a systematic review and meta-analysis involving 917 patients reported a pooled surgical-site occurrence rate of 27.9%, although the pooled hernia recurrence rate remained relatively low at 4.9%.[6] More recent evidence also suggests that concurrent panniculectomy may reduce recurrence but can increase surgical-site infection, skin necrosis, reoperation and length of hospital stay.[7]

The outcome of combined surgery is influenced by patient-related factors such as obesity, diabetes mellitus, smoking and previous abdominal operations, as well as hernia size, mesh position, component-separation requirements and the extent of flap undermining.[5–7] Careful patient selection, preoperative optimization, preservation of perforating vessels and umbilical blood supply, meticulous haemostasis, appropriate mesh placement and effective management of postoperative dead space are therefore essential for achieving satisfactory outcomes.

Despite increasing interest in simultaneous ventral hernia repair and abdominoplasty, the available evidence remains heterogeneous, and relatively few case series have described outcomes following an open combined approach in different clinical settings. Therefore, the present case series was undertaken to evaluate the clinical and surgical outcomes of patients undergoing open ventral abdominal wall hernia repair with concomitant abdominoplasty, with particular emphasis on

postoperative complications, wound-related morbidity, hernia recurrence and overall functional and aesthetic outcomes.

Methodology:

Study Design and Setting

This retrospective case series was conducted in the Department of General Surgery, SIMSRC, Bengaluru, from January 2024 to March 2025.

Study Population

A total of 25 adult patients who underwent combined open ventral wall hernia repair with abdominoplasty were included.

Inclusion and Exclusion Criteria

Inclusion Criteria

- Patients aged above 18 years
- Patients diagnosed with umbilical or paraumbilical hernia
- Patients with associated abdominal wall laxity, rectus diastasis, or redundant abdominal skin
- Patients who underwent combined open hernia repair with abdominoplasty

Exclusion Criteria

- Patients with recurrent hernia
- Patients who underwent emergency surgery
- Patients with incomplete medical records
- Patients lost to follow-up

Surgical Procedure

All patients underwent open mesh hernioplasty using either onlay or retrorectus mesh placement. Full abdominoplasty with rectus sheath plication, umbilical preservation or reconstruction, drain placement, and primary skin closure was performed as required.

Data Collection

Demographic details, comorbidities, hernia characteristics, operative findings, mesh position, postoperative complications, hospital stay, and 30-day follow-up outcomes were collected from medical records.

Outcome Measures

Primary outcomes included surgical site infection, wound complications, umbilical viability, seroma, hematoma, and recurrence. Secondary outcomes included operative time, drain duration, and length of hospital stay.

Statistical Analysis

Data were summarized using descriptive statistics. Continuous variables were expressed as mean or

median, and categorical variables as frequency and percentage.

Ethical Consideration

Institutional ethical approval was obtained, and patient confidentiality was maintained throughout the study.

Case Series

This retrospective case series included 25 patients diagnosed with ventral wall hernia who underwent concomitant open hernia repair with abdominoplasty. Surgical access was obtained through either a curvilinear or midline incision. After dissection of the hernial sac, its contents were inspected and reduced, followed by fascial repair.

Mesh reinforcement was performed according to intraoperative findings. Depending on the integrity of the posterior rectus sheath and the extent of the fascial defect, polypropylene mesh was placed either in the retrorectus or onlay plane and fixed with Prolene sutures. In cases where umbilical vascularity was compromised, umbilicectomy was performed.

Following hernia repair, abdominoplasty was completed with reconstruction of a neoumbilicus by anchoring the skin to the anterior rectus sheath using a purse-string technique. Closed-suction drains were placed, and primary skin closure was done using non-absorbable sutures. The surgical technique was consistent with previously described approaches for combined abdominoplasty and hernia repair. [5]

Results:

A total of 25 patients underwent concomitant open ventral wall hernia repair with abdominoplasty. The mean age was 44.5 years (range: 31–58 years). The study population was predominantly female, comprising 21 (84.0%) women and 4 (16.0%) men. The mean body mass index was 30.8 kg/m² (range: 24.4–35.6 kg/m²), while the mean hernia defect size was 3.58 cm (range: 1.7–5.7 cm) (Table 1).

Type 2 diabetes mellitus was present in 17 (68.0%) patients, hypertension in 16 (64.0%), and both conditions in 14 (56.0%). Five patients (20.0%) had no comorbidity. Regarding smoking status, 3 (12.0%) patients were active smokers, 3 (12.0%) were former smokers, and 19 (76.0%) were non-smokers (Table 2).

All patients underwent open mesh hernioplasty combined with abdominoplasty. Onlay mesh repair was performed in 16 (64.0%) patients, whereas retrorectus mesh repair was performed in 9 (36.0%) patients (Table 3 and Figure 1).

The mean operative time was 178.1 minutes, ranging from 130 to 218 minutes. The mean length of hospital stay was 3.0 days (range: 1–4 days). Drains were removed after a mean duration of 6.7 days, with removal occurring between postoperative days 3 and 9 (Table 4).

No surgical-site infection (SSI) occurred in 18 (72.0%) patients. Superficial SSI developed in 5 (20.0%) patients, while deep SSI occurred in 2 (8.0%). Thus, the overall SSI rate was 28.0% (7/25) (Table 5 and Figure 2). SSI was observed in 4 of 16 patients in the onlay group and 3 of 9 patients in the retrorectus group. No statistically significant association was found between mesh position and SSI.

Umbilical viability was preserved without ischemic changes in 19 (76.0%) patients. Mild epidermolysis occurred in 5 (20.0%) patients, while deep umbilical ischemia or necrosis developed in 1 (4.0%). Overall, umbilical ischemic changes were observed in 6 (24.0%) patients (Table 6 and Figure 3). Mesh position was not significantly associated with the development of umbilical ischemia or necrosis.

No hernia recurrence was recorded in any patient during the 30-day follow-up period, resulting in a short-term recurrence-free rate of 100% (Table 7 and Figure 4).

SSI occurred in 4 of 17 diabetic patients (23.5%) and 3 of 8 non-diabetic patients (37.5%). Diabetes mellitus was not significantly associated with SSI in this cohort. Similarly, obesity showed no statistically significant association with postoperative infection.

Table 1. Baseline Demographic and Clinical Profile

Variable	Result
Total patients	25
Female	21 (84.0%)
Male	4 (16.0%)
Mean age	44.5 years
Age range	31–58 years
Mean BMI	30.8 kg/m ²
BMI range	24.4–35.6 kg/m ²
Mean hernia defect size	3.58 cm
Hernia defect size range	1.7–5.7 cm

Table 2. Comorbidities and Risk Factors

Variable	Result
Type 2 diabetes mellitus	17 (68.0%)
Hypertension	16 (64.0%)
Both diabetes and hypertension	14 (56.0%)
No comorbidity	5 (20.0%)
Active smoker	3 (12.0%)
Reformed smoker	3 (12.0%)
Non-smoker	19 (76.0%)

Table 3. Hernia Repair Technique

Technique	Number	Percentage
Onlay mesh repair	16	64.0
Retrorectus mesh repair	9	36.0
Total	25	100.0

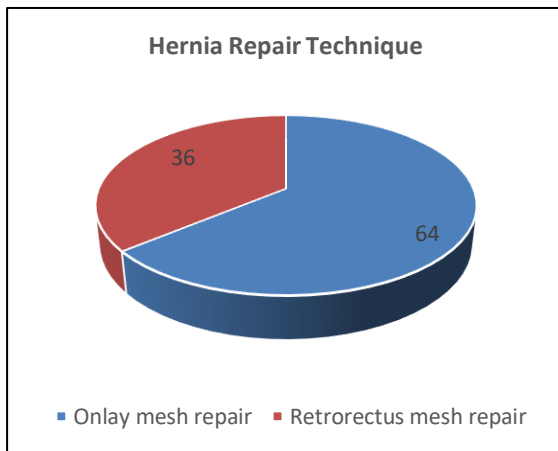


Figure 1. Hernia Repair Technique

Table 4. Operative and Hospital Course

Variable	Result
Mean operative time	178.1 minutes
Operative time range	130–218 minutes
Mean length of hospital stay	3.0 days
Length of stay range	1–4 days
Mean drain removal time	6.7 days
Drain removal range	3–9 days

Table 5. Surgical Site Infection

SSI status	Number	Percentage
No SSI	18	72.0
Superficial SSI	5	20.0
Deep SSI	2	8.0
Any SSI	7	28.0
Total	25	100.0

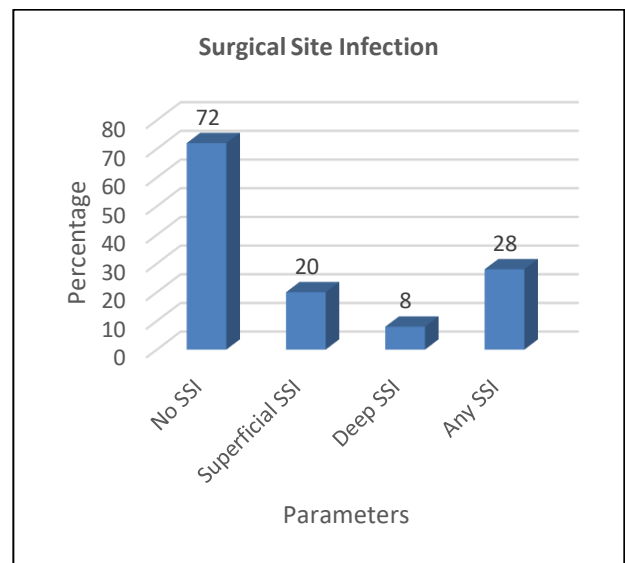


Figure 2. Surgical Site Infection

Table 6. Umbilical Viability

Umbilical outcome	Number	Percentage
No ischemia/necrosis	19	76.0
Mild epidermolysis	5	20.0
Deep ischemia/necrosis	1	4.0
Any umbilical ischemic change	6	24.0
Total	25	100.0

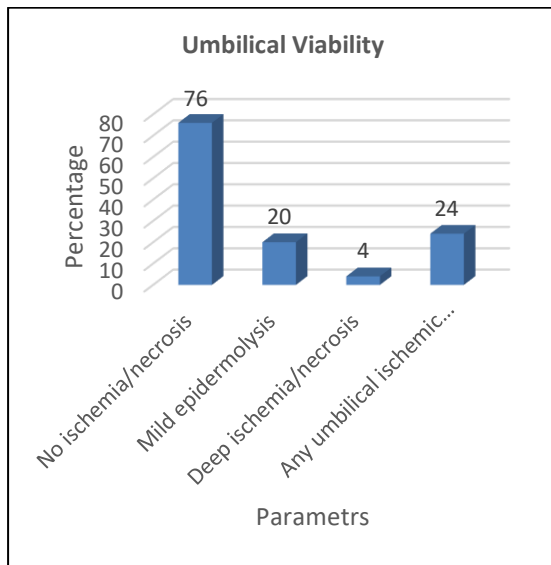


Figure 3. Umbilical Viability

Table 7. Recurrence

Recurrence status	Number	Percentage
No recurrence	25	100.0
Recurrence	0	0.0
Total	25	100.0

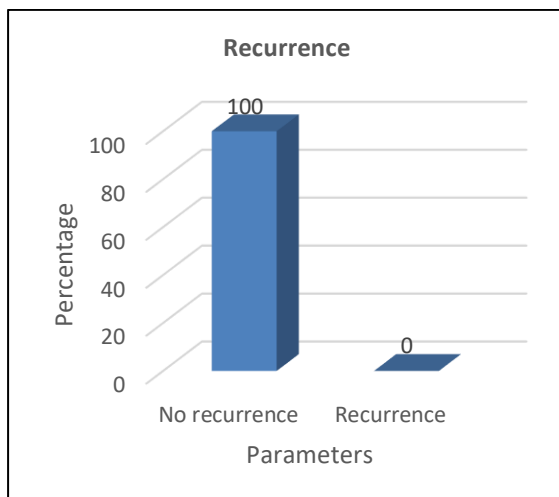


Figure 4. Recurrence

Discussion

In our study, 25 patients underwent concomitant open ventral wall hernia repair with abdominoplasty. Most patients were female 21/25 (84.0%), with a mean age of 44.5 years. This reflects the common association of abdominal wall hernia

with multiparity, rectus divarication, and redundant abdominal skin. Triana et al. [8] reported increasing global trends in aesthetic procedures over 14 years, supporting the growing relevance of abdominoplasty in surgical practice. Toms et al. [9] also found increased body contouring procedures among GLP-1 receptor agonist users, reflecting rising demand after weight reduction. The present cohort had a high-risk profile, with Type 2 diabetes mellitus in 17 patients (68.0%), hypertension in 16 patients (64.0%), and both conditions in 14 patients (56.0%). Active smoking was present in 3 patients (12.0%) and reformed smoking in 3 patients (12.0%). Van der Beek et al. [10] reported an overall complication rate of 27.9% and major complication rate of 8.8% after post-bariatric body contouring surgery, with stable weight for at least 3 months significantly reducing complications. O'Neill et al. [11] emphasized perioperative optimization, nutritional assessment, and weight stability in patients undergoing plastic surgery after injectable weight-loss therapy. Despite metabolic risk factors, diabetes was not associated with increased SSI in our study, as SSI occurred in 4/17 diabetics (23.5%) and 3/8 non-diabetics (37.5%).

Onlay mesh repair was performed in 16 patients (64.0%) and retrorectus repair in 9 patients (36.0%). SSI occurred in 4/16 patients (25.0%) in the onlay group and 3/9 patients (33.3%) in the retrorectus group, showing no significant association between mesh position and SSI. Rios-Diaz et al. [12] reported that reoperation through a prosthetic-reinforced abdominal wall was associated with increased postoperative complications and healthcare utilization, emphasizing the importance of careful mesh planning.

The mean operative time was 178.1 minutes, mean hospital stay was 3.0 days, and mean drain removal time was 6.7 days. Regan and Casaubon [13] described abdominoplasty as requiring careful flap design, vascular preservation, and structured postoperative care to reduce complications such as hematoma, seroma, wound dehiscence, infection, and contour irregularities. Our findings support the importance of routine drains and close postoperative monitoring in combined procedures. No SSI was observed in 18 patients (72.0%), superficial SSI occurred in 5 patients (20.0%), and deep SSI occurred in 2 patients (8.0%), giving an overall SSI rate of 28.0%. Vidal et al. [14] reported that local complications after abdominoplasty occur in approximately 10–20% of patients and include seroma, hematoma, infection, skin necrosis, wound dehiscence, and umbilical abnormalities. Our superficial SSI rate was comparable to the upper range of reported complications, while deep SSI remained limited.

Umbilical viability was preserved in most patients, with no ischemia in 19 patients (76.0%). Mild epidermolysis occurred in 5 patients (20.0%), and deep ischemia/necrosis occurred in 1 patient (4.0%). Regan and Casaubon emphasized vascular preservation during abdominoplasty [13], while Vidal et al. [14] identified umbilical abnormalities and skin necrosis as known complications. Our low deep ischemia rate suggests that careful dissection and selective umbilical management help preserve umbilical viability.

No hernia recurrence was observed during 30-day follow-up. This supports satisfactory early anatomical repair after mesh-reinforced hernioplasty with abdominoplasty. However, longer follow-up is required to assess durable recurrence outcomes.

Conclusion

Concomitant open ventral wall hernia repair with abdominoplasty was found to be a feasible and safe single-stage procedure in this case series. Most patients had preserved umbilical viability, acceptable wound healing, and no recurrence during 30-day follow-up. Careful patient selection, meticulous dissection, appropriate mesh placement, and structured postoperative care are essential for optimal outcomes.

Limitations

This study was limited by its retrospective design, small sample size, and single-centre experience. The short 30-day follow-up period limits assessment of long-term recurrence and delayed mesh-related complications.

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