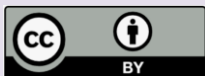



Abdominoplasty as Combined Procedure for Large Incisional Hernias

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<p>Correspondence to: Brigadier General Masroor Hasan ✉ masroor762@hotmail.com; ☎ +8801715042039</p>  <p>This open-access article is distributed under the terms of the Creative Commons Attribution 4.0 International License (CC BY 4.0), which permits unrestricted use, distribution and reproduction in any medium, provided the original author and source are properly credited.</p>  <p>Scan the QR code for the Journal Homepage</p>	<p>Large incisional hernias are now commonly encountered in surgical practice. Obesity and laxity of the abdominal wall is also present in many of these patients. Abdominoplasty can be combined with hernia repair surgery to provide some additional benefit for the patient. A total of 72 patients (67 females and 5 males) were included in the study. The period was from 1st January 2018 to 30th December 2021. The place of study was Combined Military Hospital, Dhaka. Out of the 72 patients, 61 had comorbidities like DM and hypertension. 11 had no comorbidities. 47 patients had full abdominoplasty and 20 had mini-abdominoplasty along with hernia repair surgery. Complications were minimal, with 2 partial flap necrosis, 2 umbilical necrosis and 1 wound dehiscence. There was no recurrence of hernia during the follow-up period. Abdominoplasty can be conveniently combined with large incisional hernia repairs as it allows the incision line to be transverse rather than vertical and away from the hernia repair line. In addition, it can significantly relieve the patient from the excessive load of his/her lower abdominal fat and redundant skin. It also provides a much better aesthetic result.</p> <p>Keywords: Abdominoplasty, Combined Procedure, Large Incisional Hernias.</p>	
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INTRODUCTION

Abdominoplasty is one of the most common aesthetic procedures performed by the plastic surgeons¹. A frequently encountered problem associated with the occurrence of fascial laxity or Diastasis Recti is abdominal wall hernias – where a variable amount of intra-abdominal contents herniates outside, into the hernial sac. Repair of massive ventral hernias remains a challenging problem for surgeons. Abdominoplasty approach provides access to all components of the abdominal wall, identifies previously undetected hernias and at the same time provides a more aesthetic postoperative appearance. The ideal reconstruction would be one that corrects and prevents visceral eventration, provides dynamic muscle support and allows for tension-free repair during a one stage procedure^{2,3}. Techniques developed for the surgical approach to abdominoplasty include the use of the transverse lower abdominal incision and the resection of excess skin^{4,5}. We describe the incorporation of this technique into the surgical management of ventral incisional hernia. The use of large sheets of synthetic material for hernia repair often results in a rigid, noncompliant, adynamic abdominal wall and is contraindicated in case of contamination. In 1990, Ramirez et al introduced the “components separation technique” to bridge the fascial gap without the use of prosthetic material. By using this technique, up to 10 cm of unilateral advancement can be achieved, thus permitting a tension-free abdominal closure^{6,7}. This manuscript describes the application of abdominoplasty in conjunction with hernia repair, emphasizing the benefits of this combined approach in improving both functional and aesthetic outcomes for patients with large incisional hernias. Through a detailed exploration of patient selection, surgical techniques and postoperative results, we aim to provide a comprehensive understanding of the advantages and challenges associated with this combined procedure.

METHODS

Patients with large incisional hernias and recurrent ventral hernias, as well as those with primary hernias and obesity, were included in this study. Exclusion criteria encompassed patients with paramedian or subcostal scars, while thin patients were not excluded. Patients with large incisional hernias and long midline incisions were also included, though these cases were approached through the previous scar rather than a low transverse incision. Known factors affecting recurrence rates, such as obesity, large hernia size, preoperative presence of mesh and postoperative wound infection were considered. We performed a retrospective review of 72 patients with incisional hernia, with or without diastasis recti, between January 1, 2018 and December 30, 2021, at the Department of Plastic Surgery, Combined Military Hospital, Dhaka. For each patient, demographic data, presence of comorbidities, characteristics of the incisional hernia, initial surgical procedure, postoperative complications, recurrence and total follow-up were collected. Preoperative pictures were taken (Figures 1a&2a) after obtaining consent from the patients, with markings done thereafter. Photographs were captured in five different views: antero-posterior, right and left

oblique, right and left lateral views. The marking comprised a standard abdominoplasty incision in the lower abdomen just above the pubic hairline (Figure 1b). For large hernias, general anesthesia was preferred to relax the muscles and facilitate the repositioning of abdominal organs back into the peritoneal cavity. For smaller hernias, combined spinal epidural anesthesia was administered to aid in postoperative pain relief. An incision was made and the hernial sac was identified in the midline and delineated up to the neck. The sac was opened, adhesions between the omentum or intestine and the abdominal wall were released and the contents were reduced. A mop was placed inside the peritoneal cavity to protect the viscera. An incision was then made at the junction of the anterior and posterior rectus sheath to locate the rectus muscle, followed by Rives Stoppa retro-rectus dissection to bring the posterior rectus sheath to the midline. If achieving midline placement was challenging, transversus abdominis release (TAR) was performed. The posterior rectus sheath from both sides was sutured at the midline. A soft prolene mesh with large pore size was placed over the posterior rectus sheath behind the rectus muscle and fixed with 2/0 prolene (2b). The anterior rectus sheath was then closed in front of the mesh using number 1 prolene. If any supraumbilical divarication of recti was found, it was plicated with number 1 prolene (2c). The skin and fat flap was split in the midline and the umbilicus was relocated to a new position (2d). If the umbilicus was distorted by the hernia, a new umbilicus was reconstructed. In cases of excessive skin redundancy, anchor-type excision for a better aesthetic outcome was performed, also referred to as a fleur-de-lis tummy tuck. If skin redundancy was not significant, a mini-abdominoplasty was performed along with mesh hernioplasty. The final skin flap closure was achieved in two layers, with a drain placed in the subcutaneous plane (2e). The drain was typically removed on the third or fourth postoperative day.



Figure 1a: Male patient with large incisional Hernia



Figure 1b: Ventral Hernia with Divarication of Recti exposed after dissection of skin and fat flap



Figure 2a: Female patient with Ventral Hernia



Figure 2b: Mesh placement below the Rectus Abdominis muscle plane (sublay) in Rives Stoppa repair



Figure 2c: Umbilicus detached and skin flap split along the midline for better exposure



Figure 2d: Per operative picture of Abdominoplasty (Fluer de lis excision)

RESULTS

Seventy-two patients were included in this study, comprising 67 females and 5 males, with an age range of 32 to 70 years and an average age of 53 years. Twenty-one patients had diabetes, 25 had hypertension, 15 had both diabetes and hypertension. Eleven patients had no comorbidities. During the operation, 39 patients had incisional hernia alone, 28 had diastasis with incisional hernia and 5 had diastasis recti. Initial surgical procedures included lower uterine segment cesarean section (LUCS) in 42 patients, gynecological surgeries in 23 patients and laparotomy for malignancy surgeries in 7 patients. Full

abdominoplasty without any component separation was performed in 41 patients, with component separation in 6 patients. Mini-abdominoplasties were performed in 20 patients and rectus muscle plication with a vertical approach was performed in 5 patients. Complications were minimal and infrequent. There were 2 cases of partial flap necrosis, 2 cases of umbilical necrosis and 1 case of wound dehiscence. There were no recurrences in any of the patients.



Figure 2e: After completion of Hernioplasty and Abdominoplasty

Table 1: Gender distribution (N=72)

Gender	Number	Percentage
Female	67	93.06%
Male	5	6.94%

Table 2: Comorbidities distribution (N=72)

Comorbidity	Number	Percentage
Diabetes	21	29.17%
Hypertension	25	34.72%
Both (Diabetes and Hypertension)	15	20.83%
No Comorbidities	11	15.28%

Table 3: Hernia and Diastasis Distribution (N=72)

Condition	Number	Percentage
Incisional Hernia Alone	39	54.17%
Diastasis with Incisional Hernia	28	38.89%
Diastasis Recti	5	6.94%

Table 4: Initial Surgical Procedures

Initial Surgical Procedure	Number	Percentage
LUCS	42	58.33%
Gynecological Surgeries	23	31.94%
Laparotomy for Malignancy Surgeries	7	9.72%

Table 5: Types of Abdominoplasty

Type of Abdominoplasty	Number	Percentage
Full Abdominoplasty	41	56.94%
Full Abdominoplasty with Component Separation	6	8.33%
Mini Abdominoplasty	20	27.78%
Rectus Muscle Plication with Vertical Approach	5	6.94%

Table 6: Postoperative Complications

Complication	Number	Percentage
Partial Abdominal Flap Necrosis	2	2.78%
Loss of Umbilicus	2	2.78%
Wound Dehiscence	1	1.39%
Recurrence	0	0.00%

DISCUSSION

A thorough understanding of the anatomy of abdominal wall, including blood supply, innervation, fascial components, and musculature is essential.

When there is a large and long standing hernia, there is almost always significant laxity of the abdominal wall along with excess fat and skin. The heavy and pendulous lower abdomen often causes irritation, intertrigo and fungal infection of the skin. In this group of patients, removal of the lower abdominal skin and fat along with hernia repair is therefore a better option, than doing a hernia repair alone⁸.

During abdominoplasty, repair of fascial or muscular defect is done over a long area. That is why pressure is dissipated uniformly throughout the whole abdomen. The use of abdominoplasty approach isolates the incision line from the hernial defect and repair.

General surgeons undertaking abdominoplasty while doing a hernia repair, must be fully aware of the locations of the perforator vessels which supply the skin flaps. Otherwise inadvertent damage to these perforator can happen, resulting in flap necrosis in the postoperative period^{9,10}.

Component separation with Transversus Abdominis Release (TAR) and placement of sublay mesh in the retro-Rectus plane requires skill and meticulous dissection¹¹. This technique should be applied only when a significant portion of the abdominal contents are inside the hernial sac (domain loss). The use of Botox injection 3 to 4 weeks prior to the surgery can sometimes be added, in order to achieve additional muscle relaxation while repairing large hernial gaps¹².

Our study's findings support the efficacy of combining abdominoplasty with hernia repair. Among the 72 patients included in the study, complications were minimal and infrequent, with only 2 cases of partial flap necrosis, 2 cases of umbilical necrosis and 1 case of wound dehiscence. Importantly, there were no recurrences of hernia during the follow-up period. These results underscore the advantages of this combined surgical approach, offering both functional and aesthetic benefits to patients with large incisional hernias.

CONCLUSION

Combining abdominoplasty with hernia repair for patients with large incisional hernias offers significant benefits, both functionally and aesthetically. This approach effectively addresses abdominal wall laxity and excess skin, alleviating issues such as irritation, intertrigo and fungal infections, which are common in patients with pendulous lower abdomens. Our study demonstrated that this combined procedure is safe and results in minimal complications, with no recurrence of hernias observed during the follow-up period. The techniques employed, including the component separation method and Transversus Abdominis Release, proved to be effective in achieving tension-free abdominal closure and optimal patient outcomes. Given these findings, abdominoplasty combined with hernia repair should be considered a valuable option in the surgical management of large incisional hernias, providing enhanced structural support and improved postoperative appearance for patients.

REFERENCES

1. Matos WN, jr, Ribeiro RC, Marujo RA, et al. Classification for indications of lipoabdominoplasty and its variations. *Aesthet Surg J*. 2006;26:417–431.
2. Shermak MA. Hernia repair and abdominoplasty in gastric bypass patients. *Plast Reconstr Surg* 2006;117:1145–1150.
3. Koolen PG, Ibrahim AM, Kim K, et al. Patient selection optimization following combined abdominal procedures: analysis of 4925 patients undergoing panniculectomy / abdominoplasty with or without concurrent hernia repair. *Plast Reconstruct Surg*. 2014;134:539 e-550 e. – PubMed
4. Robertson JD, de la Torre JI, Gardner PM, Grant JH III, Fix RJ, Váscónez LO. Abdominoplasty repair for abdominal wall hernias. *Ann Plast Surg* 2003;51:10–16.
5. Moreno-Egea A, Camilla-Soto A, Morales-Cuenca G. Does abdominoplasty add morbidity to incisional hernia repair? A randomized controlled. *Trial Surg Innov*. 2016;23(5):474-480. – PubMed
6. Ramirez OM, Ruas E, Dellon AL. "Components separation" method for closure of abdominal-wall defects: an anatomical and clinical study. *Plast Reconstr Surg* 1990;86:519–26.
7. Mazzocchi M, Dessy LA, Ranno R, Carlesimo B, Rubino C. "Component separation" technique and panniculectomy for repair of incisional hernia. *Am J Surg*. 2011;201:776-783. – PubMed
8. Persichetti P, Simone P, Scuderi N. Anchor-line abdominoplasty: A comprehensive approach to abdominal wall reconstruction and body contouring. *Plast Reconstr Surg* 2005;116:289–294.
9. Al-Qattan MM. Abdominoplasty in multiparous women with severe musculoaponeurotic laxity. *Br J Plast Surg* 1997;50:450–455.
10. Xia Y, Zhao J, Cao DS. Safety of lipoabdominoplasty versus abdominoplasty: a systematic review and meta-analysis. *Aesthetic Plast Surg*. 2019;43:167-174. – PubMed
11. Saldanha OR, Pinto EB, Matos WN Jr, Lucon RL, Magalhães F, Bello EM. Lipoabdominoplasty without undermining. *Aesthetic Surg J*. 2001;21:518-526. – PubMed
12. De Jesus, L.E., Leve, T.C., Fulgencio, C. et al. Botulinum toxin abdominal wall injection and post-omphalocele ventral hernia repair: database and proposal of a protocol. *Ann Pediatr Surg* 16, 56 (2020). <https://doi.org/10.1186/s43159-020-00058-4>