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## ABDOMINPLASTY IN OBESE PATIENTS AS AN ALTERNATIVE APPROACH IN MIDLINE HERNIA REPAIR

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### ABSTRACT

**Objective:** Midline abdominal hernia is a common problem seen by the general surgeons. Several studies on direct approaches to the hernia showed that recurrence rates are as high as 49% when an autogenous repair is performed, and as high as 11% when prosthetic mesh is used as a "bridge" or onlay. Simultaneous abdominoplasty and repair of such hernia with reconstruction of the line alba was found to be safe and efficacious approach.

**Aim of the work:** to evaluate the abdominoplasty approach in midline hernia repair in obese patients.

**Methods:** This study analyzed results of midline hernia repair in "37" obese patients admitted to the Surgical Department of Sohag University Hospital in the period from July 1998 to December 1999. The age ranged from 29-63 years (5 males & 32 females) with an average of 46.84 years. The weight ranged from 72-92 kgs with an average of 81.3 kgs. According to the mode of accessing the hernia, patients were classified into two groups: the first group "20 cases" for whom the hernia was accessed directly by incision of the skin overlying it, the second group "17 cases" for whom the hernia was accessed through the abdominoplasty incision as described by Grazer, 1973.

**Results:** One case only of group (2) developed major systemic complication while there were no deaths in both groups. Wound complications were recorded in "8 cases" (21.6%) of all patients. Seroma was recorded in "3 cases" (15%) of group (1) and "one case" only (5.8%) of group (2). Wound discharge and partial necrosis of the distal flap were equally distributed among the two groups "2 cases in each group". There were "6 recurrent cases" (30%) in group (1) in comparison to "one recurrence" (5.8%) in group (2). Patient satisfaction was higher in group (2) than in group (1) due to the cosmetic results recorded with abdominoplasty.

**Conclusion:** Abdominoplasty in obese patients with placement of prolene mesh in the repair of midline hernia is effective and safe in elective situation. It compares favorably with other methods. Significant complications are low, recurrence rare, and patient satisfaction high.



## INTRODUCTION

Ventral/incisional abdominal hernias following celotomies continue to be a vexing problem for both patients and general and plastic surgeons, since no universally applicable preventive or reconstructive techniques have been evolved (Thomas *et al.*, 1993). Incisional hernias are common, occurring in approximately 12% of patients undergoing transpariental abdominal operations (Santora 1993). Midline hernias include epigastric and umbilical hernia in addition to those incisional hernias developing after midline laparotomies.

These median hernias are not caused by a genuine loss of abdominal wall tissues but occur because the unopposed contraction of the lateral abdominal muscles which separate the rectus sheaths. As well described by Abrahamson and El-dam (1988), pathophysiologically, this type of hernia occurs subsequent to division of the linea alba, which deprives the lateral abdominal wall fascia and musculature from its intended insertion. Subsequent to celiotomy or injury of the abdominal wall muscles, the abdominal viscera particularly the intestine will assume a position outside the intended domain of the abdominal coelom and the continued contraction of the lateral abdominal myofascial layers will maintain the defect. The lateral abdominal musculature finally assumes a chronically foreshortened position (Thomas *et al.*, 1993). When the linea alba is just stretched and widened without true herniation, the condition is known as diastasis recti. This usually occurs in multiparous females due to repeated pregnancies (Al-Qattan, 1997).

The morbidity and mortality associated with an untreated hernia per se are substantive (incarceration, strangulation, intestinal obstruction) and a patient's lifestyle may be profoundly affected by its presence. Save for some types of abdominal binders, as palliative therapy, surgery represents the only option for potential cure. Repairing an incisional ventral hernia is a major challenge for a surgeon. Many operations have been described to repair incisional hernias. e.g the overlapping techniques which can be employed when the edges of the fascial defect can be easily approximated. These techniques share their fundamental principles with that of "Mayo's Imbrication Operation (Mayo 1899) and may involve either transverse or vertical overlapping of the anterior rectus sheath. In general, operations for large and recurrent abdominal hernias have a high associated recurrence rate and with large hernias closed under tension, may be as high as 20 per cent (Linder 1986 & Balen *et al.*, 1998). Ideally, these hernias should be repaired using a "Tension Free" repair technique. Standard techniques that



attempt to repair these hernias by closing the muscle defect with sutures leads to unnecessary pulling of the tissues at the hernia area. This tension on muscles inhibits normal healing (Mathes *et al.*, 2000). Lujendijk *et al.* (2000) found that among patients with midline abdominal incisional hernias, mesh repair is superior to suture repair with regard to the recurrence of hernia, regardless of the size of the hernia.

As obesity is one of the leading factors to the development of midline hernias, patients having a midline hernia usually have a redundant abdominal skin and an excessive abdominal wall fat, the removal of which will be advantageous both to the patient and the surgeon. Simultaneous abdominoplasty and repair of such midline hernia and reconstruction of the linea alba was found to be safe and efficacious approach (Mathes *et al.*..., 2000).

### **AIM OF THE WORK:**

To evaluate the abdominoplasty approach in midline hernia repair in obese patients.

### **Place:**

The study was conducted in the General Surgery Department of Sohag University Hospital, South Valley University, in the period from July 1998 to December 1999.

### **PATIENTS AND METHODS:**

Thirty seven obese patients with ventral abdominal hernia including epigastric, paraumbilical (primary & recurrent) and incisional hernia were selected for this trial.

All patients were subjected to the following work up:

- History and clinical examination.
- Routine laboratory investigations: blood picture, blood sugar, blood urea and liver functions.
- Abdominal ultrasonography was done in both elective and emergency situations. In elective situation, it was performed to document the presence of impalpable abdominal defects, an associated rectus diastasis and concomitant intra-abdominal pathology. In emergency situation in addition to those, it was done to detect the presence of intra-abdominal collection.
- C.T scanning was done whenever indicated to document the presence of an associated rectus diastasis when clinical examination and abdominal ultrasonography had failed to do so.



Following diagnoses patients were classified into two groups:

**Group (1):** for whom the hernia was approached through direct incision of the overlying skin (20 patients).

**Group (2):** for whom the hernia was approached through the abdominoplasty procedure (17 patients) as described by Grazer, 1973.

### **Operative techniques:**

In group (1): (direct approach), which included (20 patients) (54%), the midline hernia was accessed through the usual incision in the skin overlying the hernia. A vertical midline incision extending about one inch above and one inch below the hernia was done and the two edges of the incision were dissected laterally. Then the hernial sac was cautiously dissected from the subcutaneous fat and tissues, the sac was opened near its neck, the contents of the sac were carefully dissected out, any adhesions were divided by the scissors and the intestinal loops were returned back into the abdominal cavity while the excess omentum is transfixed and cut away. After dealing with the contents, the sac is excised and a vertical plication of the two edges of the linea alba is done using #2 vicryl suture including at least one inch above and another one inch below the original defect. When the hernial defect was wide and the repair was under undue tension, a prolene mesh was overlaid and fixed to the anterior rectus sheath on either side of the repair. Mesh reinforcement was performed in 12 patients (60%) while vertical repair without mesh was done in 8 patients (40%). The wound is then irrigated with normal saline, and a suction drain is inserted before the skin incision was finally closed. The patients were advised to wear an abdominal corset two days after the operation, then after, they were encouraged to walk. The suction drain was noticed for the amount and character of its contents. It was usually removed in the fifth postoperative day.

**Concurrent procedures:** included "7" patients" (35%), "5" of which (25%) were manifested with picture of strangulation, for whom omentectomy was done in "4 cases" (20%) and small intestinal resection was performed in "one" (5%). Concomitant cholecystectomy was done in "one case" (5%) and adhesiolysis in "another case" (5%).

In group (2) (abdominoplasty group), which included "17



patients"(46%), the midline hernia was accessed through a lower transverse abdominoplasty incision running from one anterior superior iliac spine to the other. The procedure was only conducted in elective situation. On the area usually covered by the under wears, an open lazy W is drawn with the central segment near the pubic hairline and the lateral segment following the inguinal fold. The length of the lateral segment depends on the abdominal shape and skin elasticity (Pina 1985). The skin of the upper flap is dissected from the underlying abdominal wall fascia and muscle. The dissection is extended towards the subcostal angle exposing most of the anterior abdominal wall. In the presence of huge or incisional midline hernia, there is usually no available fascial flap for the accomplishment of the vertical Mayo's repair. Here, anatomical repair of the linea alba is done in the midline with Keel reinforcement. When midline repair is under some tension, a non-absorbable synthetic mesh is used to support it. The mesh should be properly - sized so as to cover the two paramedian anterior rectus sheaths except for the lateral-most two centimeters just medial to the linea semilunaris. Mesh reinforcement was used in "12 patients"(70%) while vertical repair without mesh was done in "5 patients"(30%) . Redrapping of the skin flaps after leaving two suction drains is done as described by Grazer, 1973. Properly sized abdominal corset is kept in the early postoperative period.

**Concurrent procedures:** included "7 patients" (37%). Appendicectomy was done in "one case"(5.8%),cholecystectomy in "one"(5.8%), omentectomy in "3"(18%) to reduce the contents and adhesiolysis in "2" (11.8%).

**Follow up:** clinical examination, for each patient, was done every 3 months while ultrasonography was done every 6 months. C.T scanning was done whenever indicated. Follow up started for each patient from the date of operation and December 2000 was considered the closing date which allow a maximum follow up of 30 months and a minimum of 12 months. The median follow up was 18 months.

**Statistical analysis:** relations between variables were analyzed and if the P values  $< 0.05$  , they were significant .

## RESULTS

Patient's characteristics were given in (table 1). There were "37" obese patients (5 males &32 females) with ventral abdominal hernias.

"13 primary" (35.4%), "13 recurrent" (35.4%) and "11 incisional" (29%) operated and followed in this prospective trial. The hernial defect was classified as small (<10cm) in "7 cases" (19%), medium (11-19 cm) in "16" (43%) and large (>19 cm) in "14" (38%) according to Balen *et al.*, 1998 with some modifications. The defects were eventually distributed among the epigastric, midabdominal and hypogastric sites.

**In group (1):** sixteen patients were females while only four were males. The age of the patients ranged from 29 to 63 years with an average of 46.08 years. The weight of the patients ranged from 72 - 85 kgs with an average of 77.5 kgs. The mean operative time was 75 minutes. The hospital length of stay (including the operation date) ranged from 2 to 12 days. Median stay was 4 days.

**In group (2):** sixteen cases were females while one was male. The age of the patients ranged from 37-57 years with an average of 47.6 years. The weight of the patients ranged from 79-92 kgs with an average of 81.3 kgs. The mean operative time was 130 minutes. The hospital length of stay (including the operation date) ranged from 2 to 14 days. The median stay was 5 days.

Table (1) shows patient characteristics in both groups

	Group 1	Group 2	Total
* Gender (n)			
Male	4 (20%)	1 (5.8%)	5 (13.5%)
Female	16 (80%)	16 (94.2%)	32 (86.5%)
Age range	29-63	37-57	29-63
average	46.08	47.6	46.84
Weight range	72-85	79-92	72-92
average	77.5	86	81.3
Size of the hernia			
small	4 (20%)	3 (18%)	7 (19%)
medium	10 (50%)	6 (35%)	16 (43%)
large	6 (30%)	8 (47%)	14 (38%)



	Group 1	Group 2	Total
Type of the hernia			
primary ventral	3 (15%)	2(11.8%)	5 (13.5%)
- epigastric	5 (25%)	3(17.8%)	8 (21.6%)
- P.U.H			
recurrent ventral			4 (10.8%)
- epigastric	2 (10%)	2(11.8%)	5(12.8%)
- P.U.H	4 (20%)	5(29.%)	
incisional			2 (5.4%)
- post prostatectomy	2 (10%)	3 (17.8%)	5 (12.8%)
- post cesarean	3 (15%)	2 (11.8%)	5 (8.2%)
- post exploratory	1 (5%)		
* Urgency			
- Elective	15 (75%)	17(100%)	32 (86.4%)
- Emergency/urgent	5 (25%)		5 (13.6%)
* Type of repair			
- vertical alone	8 (40%)	5 (30%)	13 (35.%)
- vertical plus mesh reinforcement	12 (60%)	12 (70%)	24 (65%)
* Concurrent procedure			
- resection& anastomosis	1 (5%)		1 (2.7%)
- omentectomy	4 (20%)	3 (18%)	7 (19%)
- cholecystectomy	1 (5%)	1 (5.8%)	2 (5.4%)
- appendicectomy		1 (5.8%)	1 (2.7%)
- adhesiolysis	1 (5%)	2 (11.8%)	3 (8.1%)

postoperative complications (table 2): There were no deaths in both groups. No blood transfusions were necessary. Significant major systemic complication included only respiratory embarrassment, that demanded redoing less tight repair was reported



in "one case"(2.7%) of group (2). Postoperative fever improved after 3days was recorded equally in both groups "2 cases in each group". As regard to the local wound complications, there were "8 cases" (21.6%) in both groups. Seroma was more frequently recorded in group (1) "3/20"(15%) than in group (2) "1/17"(5.8%) but without statistically significant difference . Seromas disappeared completely on repeated aspiration in both groups. Postoperative wound discharge and partial necrosis of the distal part of the flap were equally distributed among the two groups. "2patients in each group". They all healed with antibiotics and local wound care including excision of the necrotic skin & subcutaneous tissue. The pattern of systemic and local complications were neither affected by concurrent procedures nor emergency situations .

Table (2) shows postoperative complications:-

Complication	Group (1)	Group (2)	Total
Wound Complications			
Seroma	3 (15%)	1 (5.8%)	4(10.8%)
Wound discharge	1 (5%)	1 (5.8%)	2 (5.4%)
Partial necrosis of the distal part of the flap	1 (5%)	1 (5.8%)	2 (5.4%)
Total	5 (25%)	3(17.6%)	8(21.6%)
Systemic Complications			
Postoperative fever lasting for three days	2 (10%)	2(11.8%)	4(10.8%)
Postoperative embarrassment demanding redoing less tight repair	---	1 (5.8%)	1 (2.7%)
Total	2 10%	3(17.6%)	5(13.5%)

**Post-operative recurrence:** Recurrence within the first 6 months was never recorded in both groups (table 3). Recurrences were palpable clinically and documented by abdominal ultrasonography except for "one case"(5%) of group (1) where C.T scan was indicated to document the recurrence.

Table 3 shows frequency distribution of post - operative recurrence

Group	6months	12months	18months	24months	30months	Total
Group (1)	-	1	2	2	1	6
Group (2)	-	-	-	1	-	1
Total	-	1	2	3	1	7

There were 7 recurrences (19%) in both groups(table 4 & fig 1):-  
 In group (1)“4 recurrences”(50%) were recorded after vertical repair without mesh (4/8) and “2 recurrences” were recorded after mesh repair(2/12)(16.6%) .In group (2) there was only “one recurrence”(5.8%) out of the 17 cases and it was only recorded after vertical repair alone . There was a statistically significant deference in favor of group (2) ( P = 0.0242 ) .

Table (4) Shows the number of recurrence according to the type of repair in both groups:-

Group	Vertical repair alone				Mesh repair				Total				P value
	Pat.	%	Rec	%	Pat	%	Rec.	%	Pat.	%	Rec	%	
Group 1	8	40%	4	50%	12	60%	2	16.6%	20	54%	6	30%	0.0242
Group 2	5	30%	1	20%	12	70%	-	-	17	46%	1	5.8%	
Total	13	35%	5	38.5%	24	65%	2	5.4%	37	100%	7	19%	

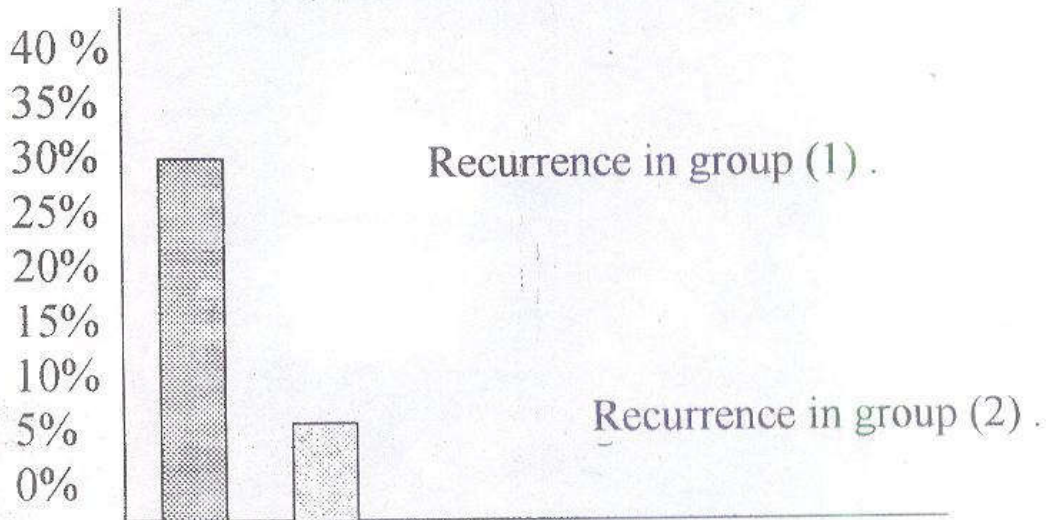


Fig (1) shows the recurrence rates in both groups .