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A COMPARATIVE STUDY BETWEEN SURGICAL PROCEDURES PERFORMED FOR INCISIONAL HERNIA IN OBESE PATIENTS

General Surgery

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ABSTRACT

Obesity can cause an incisional hernia to occur because of increased tension on the abdominal wall from the excessive bulk of thick pannus. In this study, we combined abdominoplasty with onlay/sublay hernioplasty and compared with patients who underwent only hernioplasty for incisional hernia in obese patients. The aim of this study is to evaluate the outcome in view of complications and cosmesis of onlay/sublay hernioplasty with abdominoplasty vs. onlay/sublay hernioplasty in 80 obese patients with incisional hernia. They were divided into four groups. Group A (n=20) with onlay hernioplasty with abdominoplasty and group B (n=20) with sublay repair with abdominoplasty and group C & D (each n=20) with only onlay&sublay hernioplasty respectively. They were evaluated regarding operative time and complications. Sublay hernioplasty with abdominoplasty proved to be better in cosmesis and with fewer complications compared to other procedures in obese patients.

KEYWORDS

Incisional hernia, obese patients, Abdominoplasty, Hernioplasty.

1. Introduction:

Currently, it is believed that up to 13% of laparotomy incisions will eventually develop hernias.[1] Recurrence after surgical treatment varies between 0%-46% and is at least twice as frequent following open suture repair than after mesh repair.[2] Although laparoscopic repair is a promising approach, it is not applicable to complex hernias with significant (> 15–20% of the abdominal contents) loss of domain.[3] Obesity, old age, malnutrition, steroids, wound infection and conditions that increase intraabdominal pressure predispose for incisional hernia. Of all risk factors obesity can cause an incisional hernia to occur because of increased tension on the abdominal wall from the excessive bulk of thick pannus and large omental mass. Traditional abdominoplasty techniques include dermolipectomy for removal of excess fat and skin, plication of the anterior rectus sheath for muscle diastasis, and transposition of the umbilicus to a new location in the abdominal wall skin.[4] A combined abdominoplasty with hernioplasty has many advantages; saves money and time, reduces pain and discomfort, has better recovery and reduces the chances of recurrence as obesity is most common predisposing factor for incisional hernia.

2. Aims and Objectives:

The aim of the study is to evaluate complications, cosmesis and safety of abdominoplasty with onlay/sublay hernioplasty in comparison with only onlay/sublay hernioplasty in obese patients.

3. Materials:

A comparative study of 80 cases of incisional hernia repairs performed in obese patients between June 2015 – August 2016, at Department of General Surgery, ASRAMS Hospital, Eluru were included. Patients were randomly allocated to each group.

GROUPS	PROCEDURE	No. Of Cases
Group A	Onlay hernioplasty+ abdominoplasty	20
Group B	Sublay hernioplasty+ abdominoplasty	20
Group C	Only onlay hernioplasty	20
Group D	Only sublay hernioplasty	20

4. Criteria for evaluation:

- Inclusion criteria –
  Age: Any age
  Both sexes
  Patients who had incisional hernia with abdominal wall laxity
  BMI: ≥ 30.0 kg/m^2
- Exclusion criteria -
  Patients who did not give consent for the study
  Patients with obstructed/strangulated incisional hernias, portal hypertension, malignant ascites, bleeding diathesis were excluded from the study.

5. Methodology:

Thorough history taken and physical examination was done. All patients were assessed for risk factors. Thromboembolic prophylaxis is started preoperatively in selected individuals. All operations were performed under epidural anaesthesia.

GROUP A & B:

Surgical marking was performed with the patient standing. After anesthesia has been induced the umbilicus was tattooed and the circumferential incision is made. The umbilical stalk is dissected to the level of the anterior abdominal fascia. The extended pfannensteil incision is given. Flaps were raised from the pubic/inguinal region cephalad at the level of the anterior abdominal wall fascia up to umbilicus and umbilicus is skeletonised completely from the abdominal apron. Sac was opened, contents were reduced, and excess sac was excised. In GROUP A patients defect was approximated with continuous/intermittent prolene sutures. In cases of laxity and underlying diastasis they were repaired additionally by a running monofilament suture. After that onlay polypropylene mesh was placed with 5cms overlap and fixed. While in GROUP B patients peritoneum was closed with absorbable suture. Adequate preperitoneal plane was created, mesh placed and fixed. Musculoaponeurotic structures were approximated. The skin and subcutaneous tissue is retracted down over to the lower suprapubic incision and excised up to desired extent. The umbilicus is delivered through marked incision and sutured using 5-0 nylon. Two suction drains were placed and skin closed with 2-0 ethilon.

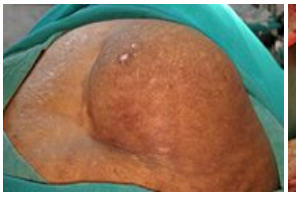


Figure: 1 preop case of incisional hernia

fig: 2 elevation of flaps

Fig: 3 dermolipectomy

fig: 4 after closure

GROUP C & D:

In GROUP C and D patients only onlay hernioplasty and sublay hernioplasty were performed respectively.

Postoperatively in selected cases, patients were started with LMW heparin to prevent DVT. Abdominal binder is suitably provided. Drains were removed when there was < 30ml/48hours. The four groups were evaluated on the basis of the following parameters: age and sex distribution, duration of operative procedure (from incision to skin closure), amount of intraoperative blood loss (using gravimetric measurements by measuring irrigation fluid and weighing surgical sponges), duration of drainage (until it reached <30 ml/48 hours), complications of surgery: wound infection, wound dehiscence, incidence of seroma and hematoma formation, flap necrosis, mesh rejection, DVT, Iatrogenic perforation, postoperative hospital stay, and recurrence rate. The follow-up data were obtained during return visits at 3, 6, and 12 months after the operation, or when the patient had a complaint.

6. Results:

Out of 80 patients, 61 (76.25%) were female and 19 (23.5%) were male. Their ages ranged from 25 to 64 years with a mean ±SD age of 45.1±8.9 years. The female to male ratio was 3.2: 1. [Table 1]

Table 1: Demographic data of the studied cases

Studied cases (n=80)	
Age	
Mean ± SD	45.1±8.9
Range	25-64
Sex [n (%)]	
Male	19(23.5%)
Female	61(76.25%)

The mean total time taken to perform surgery in group A was 120-200 (156 ± 27) min while in group B was 150-200(170±16) and in group C was 75-100(83.4±10.2) while in group D was 90-110(95.5±7.25). The amount of blood loss ranged from 90-110(95.5±7.25) ml and 130-180(154.5±14.1) ml in group A & B respectively while in group C & D was 50-90(68.7±13.3) and 50-110(72.5±18.3) ml respectively. The drain in group A & B was removed after a period of 8-10(8.9±0.8) and 6-9(7.4±1)days respectively, whereas the drain in group C & D was removed after a period of 5-7(5.7±0.8) and 4-6(4.7±0.8) days respectively. [Table 2]

Table 2: Operative and postoperative details

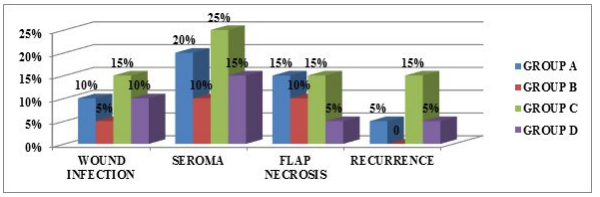
	GROUP A (n=20)	GROUP B (n=20)	GROUP C (n=20)	GROUP D (n=20)
Duration of surgery(min)	120-200 (156±27)	150-200 (170±16)	75-100 (83.4±10.2)	90-110 (95.5±7.25)
Intra-op blood loss(ml)	150-200 (169.6±11.7)	130-180 (154.5±14.1)	50-90 (68.7±13.3)	50-110 (72.5±18.3)
Drain removal(days)	8-10 (8.9±0.8)	6-9 (7.4±1)	5-7 (5.7±0.8)	4-6 (4.7±0.8)
Postoperative hospital stay(days)	9-11 (9.6±0.8)	7-10 (8.3±1)	6-8 (6.5±0.7)	5-7 (5.7±0.8)

Wound infection was noted in 2(10%) in both group A&D and in 3(15%) patients in group C while one 1(5%) in group B. Seroma was noted in 3(15%), 5(25%), 3(15%) in group A, C& D respectively while only 2(10%) developed in group B. Flap necrosis was noted in 3(15%) in group A&C and 2(10%) patients in group B while only 1(5%) in group D. Hematoma, mesh rejection and DVT were not noted in any of the groups. [Table 3] Mean duration of hospital stay in group A&B was ranged from 9-11(9.6±0.8) days and 7-10(8.3±1) days respectively, whereas it was 6-8(6.5±0.7) & 5-7(5.7±0.8) days in group C&D respectively.

Table 3: operative and postoperative complications

	GROUP A(n=20)	GROUP B(n=20)	GROUP C(n=20)	GROUP D(n=20)
COMPLICATIONS	n (%)	n (%)	n (%)	n (%)
Wound infection	2(10%)	1(5%)	3(15%)	2(10%)
Wound dehiscence	0(0%)	0(0%)	0(0%)	0(0%)
Seroma	3(15%)	2(10%)	5(25%)	3(15%)
Hematoma	0(0%)	0(0%)	0(0%)	0(0%)
Flap necrosis	3(15%)	2(10%)	3(15%)	1(5%)
Mesh rejection	0(0%)	0(0%)	0(0%)	0(0%)
Iatrogenic perforation	0(0%)	0(0%)	0(0%)	0(0%)
DVT	0(0%)	0(0%)	0(0%)	0(0%)
Death	0(0%)	0(0%)	0(0%)	0(0%)
Recurrence	1(5%)	0(0%)	3(15%)	1(5%)

Graph 1: postoperative complications



Patients were followed up for a period of 12 months; only one (5%) patient of group A&D developed hernia recurrence and 3 (15%) cases of recurrence in group C while no recurrence was noted in group B.

7. Discussion:

Numerous studies have been conducted to understand the hernial mechanism and the methods of repair. All studies stressed on managing hernial defects as a part of generalized abdominal wall disorders.[5] Careful evaluation of the patient who presents with an abdominal defect reveals predisposing factors for herniation either for primary or for secondary ventral hernia, including inadequate local fascial and muscular layers due to prior tissue loss, muscle denervation or vascular insufficiency due to prior irradiation, wound infection, obesity, chronic pulmonary disease, malnutrition, sepsis, anemia, corticosteroid dependency, and/or current malignant process.[6,7] Of all risk factors obesity can cause an incisional hernia to occur because of increased tension on the abdominal wall from the excessive bulk of thick pannus and large omental mass. Abdominoplasty with hernioplasty is a gratifying procedure for correction of anterior abdominal wall defects along with correction of abdominal contour defects. Here defect in abdominal wall is dealt with onlay/sublay mesh repair and is combined with removal of redundant flaccid skin, excess adipose tissue giving a more aesthetic outcome.

With open repairs, placing the mesh in sublay position is claimed to be technically difficult. Placing the mesh in this plane has mechanical and physiologic advantages. Intra-abdominal pressure tends to push the mesh firmly against the adjacent abdominal wall. A large overlap gives a sufficient surface area for tissue in growth and firm fixation, providing strong reattachment for the lateral abdominal muscles. If the anterior sheath can be closed, the mesh is also separated from the subcutaneous tissues.[8]

The main advantages of preperitoneal mesh repair are as follows: less chance of mesh infection and erosion through the skin because the graft lies in the preperitoneal plane between the posterior rectus sheath and the peritoneum; avoidance of adhesions, bowel obstruction, enterocutaneous fistula, and erosion of the mesh; and minimal morbidity. The main disadvantages are that the procedure is more time consuming and requires extensive preparation of the preperitoneal plane and surgical experience.[9]

In contrast, with an onlay mesh, the repair is less mechanically sound as abdominal wall forces tend to push the mesh off the repair. In addition, an onlay mesh requires extensive subcutaneous dissection, increasing the risk of hematoma, seroma, and infection; it is associated with a high incidence of local wound problems, although a meeting of experts concluded that it was technically simpler than sublay repair and could be carried out by surgical residents.[10]

In our study Seroma was noted in 3(15%), 5(25%), 3(15%) in group A, C& D respectively while only 2(10%) developed in patients who

underwent sublay hernioplasty with abdominoplasty. Hamy et al found that the incidence of seroma formation following onlay hernioplasty was 30%. Roshdy H et al[11], reported seroma formation after Combined Abdominal Dermolipectomy-Hernioplasty was 9.5% while in van Geffen and simmermacher study (2005)[12] found that incidence of seroma after hernioplasty was 23%, Leonidas et al. (2000) report the incidence of seroma formation after abdominal dermolipectomy following weight loss was 5.2% and for sublay hernioplasty it was 30% in a study conducted by De Vries Reilingh et al.

In our study wound infection was noted in 2(10%) in both group A&D and in 3(15%) patients in group C while one 1(5%) in group B showing less incidence of surgical site infection in patients who underwent sublay hernioplasty with abdominoplasty. Milad and his colleagues reported that the retromuscular plane is highly vascular and helps preventing infection, and if any infection occurs in the subcutaneous plane, it will not affect the mesh, as the mesh is retromuscular in a deeper plane.[13] Prakash V. Chauhan et al[18] reported 11.11% had wound infection after preperitoneal mesh repair.

In our study, only one (5%) patient of group A&D developed hernia recurrence which was similar to a study conducted by Ibrahim et al[16] and 3 (15%) cases of recurrence in group C while no recurrence was noted in group B showing less chances of recurrence following sublay hernioplasty with abdominoplasty because of all risk factors obesity can cause an incisional hernia to occur. The recurrence rate of hernioplasty in many studies such as Carbajo[14] reported recurrence rate of 4.4% while Le Blanc[15] reported 9%.

In our study the drain in group A & B was removed after a period of 8-10(8.9±0.8) and 6-9(7.4±1)days respectively, whereas the drain in group C & D was removed after a period of 5-7(5.7±0.8) and 4-6(4.7±0.8) days respectively while a study conducted by Ibrahim et al[16] the drain in onlay hernioplasty group was removed after a period of 4-9 (5.63 ± 2.14) days, whereas the drain in sublay group was removed after a period of 2-6 (4.51 ± 0.95) days which were similar to our study.

In our study mean duration of hospital stay in group A&B was ranged from 9-11(9.6±0.8) days and 7-10(8.3±1) days respectively which was similar to a study conducted by Roshdy H et al[11], reported mean hospital stay after Combined Abdominal Dermolipectomy-Hernioplasty was 8.2 days, whereas it was 6-8(6.5±0.7) & 5-7(5.7±0.8) days in group C&D respectively while in a study conducted by Ibrahim et al[16] in the onlay group ranged from 3 to 9 (4.63 ± 0.35) days and 1-4 (2.62 ± 0.74) days in the sublay group. In Ortega J et al study[17], there is not an increase in the rate of complications when panniculectomy is associated with other procedures.

8. Conclusion:

To conclude all incisional hernias should be repaired surgically. In the present study, sublay hernioplasty with abdominoplasty repair had excellent long-term results with minimal morbidity. Sublay mesh repair is a good alternative to onlay mesh repair with low complication and recurrence rate. Adding with the sublay hernioplasty combined with abdominoplasty is safe procedure with fewer rates of complications and recurrence especially in obese patients with incisional hernia.

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