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Original Article

OUTCOME OF SUBLAY MESH REPAIR IN VENTRAL HERNIA

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ABSTRACT

Objective: To evaluate the outcome of sublay mesh repair in ventral hernia.
Study Design: Descriptive study (case series).
Duration and Setting: From 21st November 2009 to 20th November 2011 at the Department of Surgery Chandka Medical College Hospital Larkana.
Patients and Methods: A total of 195 patients of different age groups and both genders having different types of ventral herniae were included in the study. Polypropylene mesh repair was performed using sublay technique under general anaesthesia. Postoperatively patients were followed up for a period of 12 months for complications including seroma, haematoma, superficial wound infection, mesh infection and recurrence.
Results: Mean age was 50.26 years with female to male ratio of 4.9:1. Main presenting symptom was reducible swelling of abdomen with positive cough impulse (85%). Most common type of hernia was Incisional (48.7%) followed by paraumbilical (31.2%), epigastric (11.5%) and umbilical (8.8%). Mean operative time was 67.093 minutes with average postoperative hospital stay of 4.8 days. Postoperatively 76.1% of patients recovered uneventfully. Most common complication was seroma (10.6%) followed by superficial wound infection (6.2%), haematoma (3.07%), mesh infection (2.7%) and recurrence (1.8%).
Conclusion: Sublay mesh repair is the ideal technique with less postoperative complications for repair of all ventral herniae.

Key Words: Ventral hernia, Sublay mesh repair, Seroma, Haematoma, Mesh infection.

INTRODUCTION:

Ventral herniae occur through defects in the midline or in lateral abdominal wall and include Epigastric, Umbilical, Paraumbilical, Incisional and rare Spigelian hernia.

A hernia results when muscle weakness team up with strain in the form of chronic cough, constipation, heavy weight lifting or pregnancy. There are different predisposing factors for muscle weakness including smoking, malnutrition, obesity, acquired collagen deficiency and previous surgical scar et[1].

In general all herniae should be repaired unless local or systemic condition of the patient precludes a safe outcome or when herniae are too small or wide necked to pose any danger[2].

Approximately 90,000 ventral hernia repairs are performed in United States each year, many by conventional open method and some with laparoscope[3].

There are different techniques of surgical repair of ventral hernia: Primary herniorrhaphy (anatomical repair, Mayo's repair), Prosthetic mesh repair & Autogenous repair by vascularized innervated muscle flaps[4].

Effectiveness of surgical repair of ventral hernia depends in part on reducing or eliminating

tension at the site of wound. The tension free method preferred by most of the surgeons nowadays is placement of prosthetic mesh at the site of hernia. Prosthetic mesh has revolutionized the treatment of all herniae. This method creates little or no tension and has lower recurrence rate as well as faster recovery with minimal pain.

There are three alternative levels for placement of mesh: Onlay (anterior to the aponeurosis and the defect), Sublay / Retrorectus (between Rectus muscle & posterior rectus sheath), Inlay / Intraperitoneal (inside the peritoneum). Mesh can also be used to plug the hernial defect.

Although polypropylene mesh has long been regarded as implant of choice for repairing abdominal wall defects, there is still controversy regarding the best site of its placement[5].

Despite many advantages, mesh repair is not free of risks. Wound related complications are more frequently observed with mesh repair (whatever the position of mesh) than with primary herniorrhaphy[6].

A retrospective study by de Vries Reilingh *et al*. Compared mesh repair with inlay, onlay & sublay technique, and concluded that sublay was superior to other techniques in terms of low risk of wound related complications and recurrence[7,8,9]. However local studies are lacking.

Frequently observed complications with sublay mesh placement are Seroma (9.6-26.2%), Haematoma (4.5%), Superficial wound infection (9.8-33%), Mesh infection (1.6-8.2%) & Recurrence (3-8.2%)[10,11,12,13].

Early recognition and management of these complications is necessary to prevent failure of mesh repair.

Our aim was to evaluate the outcome of sublay mesh repair in ventral hernia.

SUBJECTS AND METHODS:

STUDY DESIGN: Descriptive study (Case series)

SETTING: Department of surgery Chandka Medical College Hospital Larkana

STUDY PERIOD: 2 years From 21 November 2009 to 21 November 2011

SAMPLE SIZE: 195 cases

SAMPLING TECHNIQUE: Non-probability purposive

INCLUSION CRITERIA:

- Patients of either sex having ventral hernia (diagnosed clinically) who underwent prosthetic mesh repair.
- Patient from 20 to 75 years age.

EXCLUSION CRITERIA:

- Patients having obstructed or strangulated hernia who underwent an emergency operation.
- Patients below 20 & above 75 years age.
- Cirrhotic patients with hernia who underwent mesh repair.
- Patient with co-morbid conditions like diabetes, jaundice, cirrhosis, severe malnutrition, major cardiac, respiratory or renal dysfunction.

DATA COLLECTION:

This study included all the patients fulfilling inclusion criteria admitted via OPD in the department of surgery Chandka Medical college Teaching Hospital, Larkana.

The purpose and procedure of the study was explained to the patients and informed consent was obtained to participate as study subjects.

Patients were enrolled during first 12 months of study. Prophylactic antibiotic (1st generation cephalosporin 1 gm I/V) were given at the time of induction & continued for 48 hours postoperatively. Polypropylene mesh repair was performed using sublay technique under G.A. In all patients negative suction drain was placed, which was removed when drain output reduced to < 20 ml/day. Postoperative follow up period was 12 months, where patients were observed for different complications like seroma, haematoma, superficial wound infection, mesh infection and recurrence .

All the information was recorded on the proforma designed for this purpose.

DATA ANALYSIS:

Data was analyzed on SPSS version 17.

RESULTS:

A total of 195 patients underwent sublay mesh repair for various types of ventral herniae during initial twelve months of a two year study.

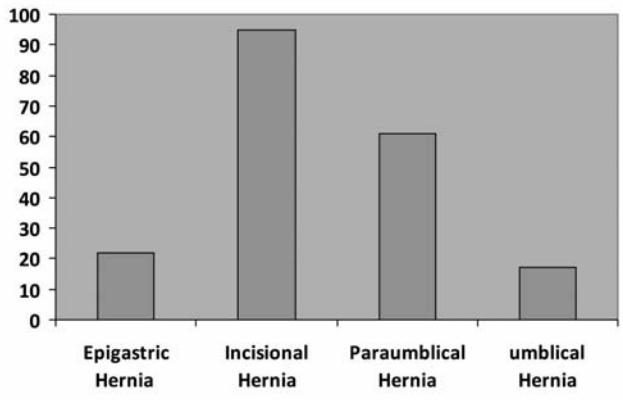
The youngest patient was 24 years old and the oldest was 75 years with mean age of 50.26 years (Table No.1). Incidence of

TABLE NO: 01
AGE DISTRIBUTION

Age in Groups	Frequency	Percent
20-30 Years	3	1.53
31-40 Years	18	9.23
41-50 Years	92	47.17
51-60 Years	68	34.87
61-70 Years	10	5.12
71-80 Years	4	2.05
Total	195	99.97

Types of Hernia

FIGURE NO.1



ventral hernia was highest in 4th and 5th decade of life. Out of 195 patients, 162 (83.19%) were females which outnumbered the 33 male patients (16.9%). The female to male ratio was 4.9:1 showing that the incidence of ventral hernia is higher in females. The main presenting complaint in all patients was swelling of abdomen which according to patients history was reducible in 165 patients (84.9%) and irreducible in 30 patients (15%).This was followed by dragging pain at the site of swelling in 74 patients (38%) .On clinical examination abdominal swelling was present in all patients with positive cough impulse in 165 patients (84.9%). In 5 patients (2.7%) there was a trophic ulcer at the most dependent part of the swelling.

Most common variety was incisional hernia in 95 patients(48.7%) followed by paraumbilical hernia in 61 patients (31.2%), epigastric hernia in 22 patients(11.5%), umbilical hernia in 17 patients(8.8%). No patient had spigelian hernia (Figure No: 1).All incisional herniae were through midline scar and majority through lower midline or lower part of full midline scar.

Nature of previous surgery included Caesarean Section, hysterectomy and laparotomy for appendix or gut perforation.

148 patients(76%) had defect size less than 4 cm while the remaining 47 patients (23.8%) had larger hernia defect.

Operative time ranged from 50.00 to 81.5 minutes; mean operative time was 67.093 minutes. Reasons for prolonged operative time were difficult dissection in obese patients, adhesions between contents and the sac and presence of more than one defect.

Postoperatively 148 patients (76.1%) recovered uneventfully, 43 patients (22.15) developed various wound related complications and 4 patients (1.8%) died of some unrelated cause (Figure No. 2).

Common complications were seroma in 21 patients (10.6%), which was managed by needle aspiration and local dressings; haematoma in 6 patients (3.07%), which also responded to needle aspirations; superficial wound infection in 12 patients (6.2%) and mesh infection in 5 patients (2.7%). These patients were managed in outpatient department with antibiotics according to culture and sensitivity and local wound care. All responded to this treatment except three patients who required extensive wound debridement with removal of grossly infected mesh.

Recurrence of hernia was observed in three patients (1.8%) (Table No. 2).

Average postoperative hospital stay was 4.8 days; the reason for prolonged hospital stay was either some sort of wound complications, prolonged paralytic ileus or continuous drain output of more than 20 ml/day

FIGURE NO.2
OUTCOME OF OPERATION

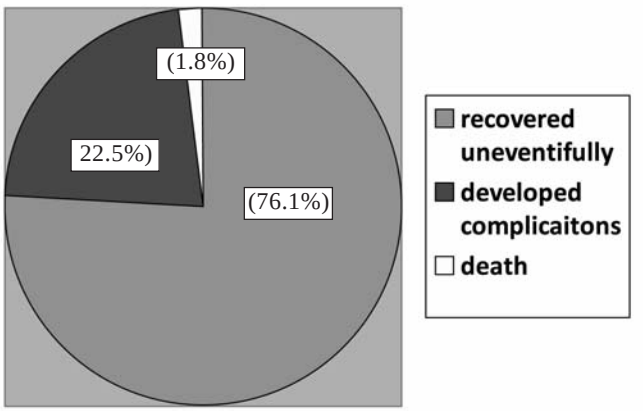


TABLE NO: 02
POSTOPERATIVE COMPLICATIONS

	Frequency	Percent
Recovered	148	75.8
Haematoma	06	3.07
Mesh infection	05	2.56
Mesh infection, Recurrence	03	1.53
Seroma	21	10.7
Sup.wound inf	12	6.1
Total	195	100.0

DISCUSSION

Different types of ventral hernia are reasonably common all over the world but their optimum treatment is yet to be decided[14]. Ventral hernia includes both spontaneous and incisional hernia after an abdominal operation[15]. The estimated incidence of ventral hernia is 15-20%[16]. Different surgical options have progressed from simple tissue repair to mesh and recently introduced laparoscopic repair technique. Small herniae less than 4 cm in diameter are successfully closed by primary tissue repair; however larger ones have recurrence rate of upto 30-40% when a tissue repair alone is performed[17]. Hernia recurrence is distressing to patient and embarrassing for surgeon5. Nowadays tension free repair using prosthetic mesh has decreased recurrence to negligible[18]. Although polypropylene mesh has long been regarded as implant of choice for repairing abdominal wall defects, there is still controversy regarding best site of its placement[19]. According to literature, ventral hernia is common in middle age group though it can occur at any age. In our study mean age was 50.26 years (range = 24-75 years) with maximum number of patients (81.4 %) in 4th and 5th decade of life. In a study done by Berrovet and associates, mean age was 54.8 years[20]. Hamilton Le described mean age of 55 years and J M east mentioned mean age of 46 years in his study[13].

Incidence of ventral hernia is more in females. In our study 162 patients (83%) were females and female to male ratio was 4.8:1. This is supported by a study done by Malik AM in which 81% patients were female[14]. Another study done by Linas Venclauskas also showed female preponderance (74%)[21]. Rajesh Godara and Gleysteen however found a male predominance in their studies with male to female ratio of 2.3:1.7 and 3:1 respectively.[5,22]

In our study, main presenting complaint in all 195 (100%) patients was swelling of abdomen, followed by dragging pain in 74 patients (38%) and irreducibility in 30 patients (15%).This is supported by a national study done by Fakhar Hameed and colleagues[17].

In a series of 61 patients, 33 patients had Incisional hernia13 and Incisional hernia was the most common type of ventral hernia in our study also (48.6%) followed by Paraumbilical hernia in 61 patients (30.9%), Epigastric hernia in 22 patients (11.5%) and Umbilical hernia in 17 patients (8.84%).

Mean operative time in our study was 69.093 minutes; this is in contrast to an average operative time of 63.15±15 minutes and

79.9 minutes in studies done by Rajesh Godara and Berrovet respectively[5,20.]

Average postoperative hospital stay was 4.8 days in our study which is quite comparable with other studies[11,20;] while in Rajesh Godara's study mean postoperative hospital stay for sublay mesh repair was 6.8±1.5 days [5.]

The ultimate test of any hernia operation is the recurrence rate; other desirable features are ease of performance and minimal complications[13].

Considering the important aspect of our study, wound related complications in our study were Seroma in 21 patients (10.6%), Haematoma in 6 patients (3.07%), Superficial wound infection in 12 patients (6.2%), Mesh infection in 5 patients (2.7%) and recurrence in 3 patients (1.8%). This is comparable with many national and international studies which include a study done by Kurzer on open sublay mesh repair in which incidence of seroma was 9.6%10. In a long term follow up of 254 ventral hernia patients treated by sublay meshplasty, incidence of haematoma was 4% [23].

Superficial wound infection was found in 4% cases as described by Gleysteen.[22] Incidence of mesh infection was 3% in Corey W. Iqbal et al series23 and 1.6% in a Martin Kurzer's study[10]. In contrast incidence of wound related complications is higher as shown in few other studies[11,13.]

In different studies recurrence rate ranged from 3-5% [10,11,20,22,] which supported our study; while Rajesh Godara5 and a study done in Sweden showed a recurrence rate of 7.3% [12]

CONCLUSION:

Sublay mesh repair is the method of choice for repair of ventral abdominal herniae with less postoperative complications and very little risk of recurrence.

Results of our study affirm that preperitoneal mesh repair/Sublay meshplasty is the ideal repair technique and highly recommended for large ventral abdominal herniae.

REFERENCES

1. Medline plus: Hernia [electronic] July 2008 [cited 2011 Aug 15]; Available from: URL:http://www.nlm.nih.gov/medlineplus/hernia.html.
2. Wantz GE. Abdominal wall hernias. In: Schwartz SI, Shires GT, Spencer FC. Principles of Surgery. USA: Mcgraw- Hill; 1969.p. 1517-43.
3. Bingener J, Buck L, Richards M, Michalek J, Schwesinger W, Sirinek K. Long term Outcome in Laparoscopic vs. Open Ventral Hernia Repair. Arch Surg. 2007; 142: 562-567.
4. Cushieri A, Steele RJ, Moossa AR. Disorders of the abdominal wall and peritoneal cavity. In: Cushieri A, Steele RJ, Moossa AR. Essential Surgical practice. London: Arnold; 2002.p. 143-82.
5. Godara R, Garg P, Raj H, Singla SL. Comparative evaluation of Sublay versus Onlay meshplasty in ventral hernia. Indian J Gastroenterol.2006; 25: 222-3.
6. Zerey M, Herniford BT. Laparoscopic versus open surgery for ventral hernia repair-which is best?. J Am Coll Gastro Enterol Hepatol.May2006; 3:372-73.
7. Anderson LP, Klein M, Gogenur I, Rosenberg J. Long term recurrence and complication rates after incisional hernia repair with the open onlay technique. BMC Surg.2009; 9:6.
8. Klinge U, Conze J, Krones CJ, Schumpelick V. Incisional hernia: open techniques. World J Surg. 2005 Aug; 29(8): 1066-72.
9. Vichová B, Oravský M, Schnorrer M. Scar hernia repairs using a mesh—the sublay technique. Rozhl Chir. 2008 Mar; 87(3): 138-40.
10. Kurzer M, Kark A, Selouk S, Belsham P. Open mesh repair of incisional hernia using sublay technique: Long term follow up. World J Surg. 2007; 32(1): 31-6.
11. Misra MC, Bansal VK, Kulkarni MP, Pawar DK. Comparasion of Laparoscopic and open repair of incisional and primary ventral hernia: Results of Prospective randomized study. Surg Endosc.2006; 20(12): 1839-45.
12. Israelsson LA, Smedberg S, Montgomery A, Nordin P, Spangen L. Incisional hernia repair in Sweden 2002. Hernia.2006 June; 10(3): 258-61.
13. East JM. Mesh tuck repair of ventral hernias of the abdomen: a simplified technique for sublay herniorrhaphy. West Indian Med J. 2007; 56(6): 514-19.
14. Malik AM, Jawaid A, Talpur AH, Laghari AA, Khan A. Mesh versus non-mesh repair of ventral abdominal wall hernias. J Ayub Med Coll Abbottabad 2008;20(3): 54-6.
15. Winkler MS, Gerharz E, Dietz UA. Overview and evolving strategies of ventral hernia repair. Urologe A. 2008;47(6):740–747.
16. Wéber G, Horváth OP. Results of ventral hernia repair: comparison of suture repair with mesh implantation (onlay vs sublay) using open and laparoscopic approach—prospective, randomized, multicenter study. Magy Seb. 2002 Oct; 55(5): 285-9.
17. Hameed F , Ahmed B, Ahmed A, Dab RH, Dilawaiz. Incisional Hernia Repair by Preperitoneal (Sublay) Mesh Implantation. A.P.M.C January-June 2009; 3 (1): 27-31.
18. Al-Salamah SM, Hussain MI, Khalid K, Al-Akeely MH. Suture versus mesh repair for incisional hernia. Saudi Med J.2006; 27: 652–6.
19. Den Hartog D, Dur AH, Tuinebreijer WE, Kreis RW. Open surgical procedures for incisional hernias. Cochrane Database of Systematic Reviews 2008 Jul 16; (3) : CD006438.
20. Berrevoet F, D'Hont F, Rogiers X, Troisi R, Hemptinne BD. Open intraperitoneal versus retromuscular mesh repair for umbilical hernias less than 3cm diameter. Am J Surg. 2010 Jun 8.
21. Venclauskas L, Silanskaite J, Kanisauskaite J, Kiudelis M. Long-term results of incisional hernia treatment. Medicina (Kaunas) 2007; 43(11): 855-60.
22. Gleysteen JJ. Mesh-reinforced ventral hernia repair: preference for 2 techniques. Arch Surg. 2009 Aug; 144(8): 740-5.
23. Iqbal CW, Pham TH, Joseph A, Mai J, Thompson GB, Sarr MG. Long-Term Outcome of 254 Complex Incisional Hernia Repairs Using the Modified Rives-Stoppa Technique. Worl J of Surg. December 2007; 31(12): 2398-2404.