Medico Research Chronicles

ISSN No. 2394-3971

Original Research Article

COMPARATIVE STUDY OF SUBLAY OVER ONLAY MESH FIXATION IN INCISIONAL HERNIA OF ANTERIOR ABDOMINAL WALL

[1]Dr. Md. Saiful Islam, [2]Dr. Rana Jahangir Alam, [3]Dr. Sayem Al Monsur Faizi, [4]Dr. Nelema Jahan

1.,2.,3. Medical Officer, Department of Surgery, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh
4. Assistant Professor, Department of Surgery, Shaheed Suhrawardy Medical College, Dhaka, Bangladesh

Submitted on: November 2016
Accepted on: December 2016
For Correspondence
Email ID: saifultipu32@gmail.com

Abstract

Background: Ventral hernia after abdominal surgery is a common complication. Several techniques for the repair of hernia of anterior abdominal wall have been described from time to time and it is a great challenge for a surgeon. The mesh placement by sublay technique authorized by Rives and Stoppa in Europe has been reported to be effective with low recurrence rate. **Objective:** The objective of this study was to evaluate the efficacy of sublay technique over the onlay mesh fixation in hernia of anterior abdominal wall. **Methodology:** This prospective study was conducted over a period of two years from January 2014 to December 2015. A total of 50 patients with hernia of anterior abdominal wall were included in this study. The patients were divided as group I (onlay mesh fixation) and group II (sublay mesh fixation). Data collected in data collection sheet regarding demographic data, severity of symptoms and post operative complains of patients which were then analyzed. **Result:** Total 50 patients were included in our study. Age ranged from 21-60 years. Male were 17(34%) and female were 33(66%). Post-operative complication was seroma 26 (52%), wound infection 18(36%) and no wound dehiscence in sublay mesh fixation. The 22(88%) patients in group II stay less than 5 days in hospital. While 19(76%) patients of group I was discharged from hospital >5th postoperative day. **Conclusion:** Sublay mesh repair in ventral hernia was found to be a better and effective technique with minimal complication rate.

Keywords: Ventral hernia, mesh repair, onlay, sublay.

Introduction:

Ventral abdominal wall incisional hernia is defined as a defect in the musculofascial layers of the abdominal wall in the region of postoperative scar. Ventral abdominal wall hernias (primary or incisional) are the most common operation performed worldwide[1]. It is estimated that in the United States alone, 250,000 ventral hernia repairs are performed each year[2]. Incisional hernia is a common complication of abdominal surgery, reported in up to 11 % of patients [3,4] and in up to 23 % of those who develop postoperative wound infection[5]. The open surgical treatment with prosthetic mesh (onlay technique and sublay

technique)[1]. Open incisional hernia repair with mesh are prone to developed wound complication like seroma formation and wound infection leading to increased morbidity[6,7]. This study was conducted to compare "sublay" mesh fixation (mesh placement at retro-rectus), "onlay" mesh fixation (mesh placement over anterior rectus sheath). The aim of this study is to compare the outcomes between two common techniques of mesh placement (onlay vs. sublay) in the patients who underwent incisional hernia repair of anterior abdominal wall.

Methods:

This was a prospective study of patient diagnosed as anterior abdominal wall hernia carried out in the department of Surgery, BSMMU, Dhaka from January 2014 to December 2015. Total 50 diagnosed cases of anterior abdominal wall hernia patients those attending in and outpatient department of this hospital were enrolled in this study. The comparative study was made and the patient was selected even and odd number respectively. Group I included those patients in whom onlay mesh fixation were performed. Group II included those patients in whom sublay mesh fixation were performed. In all patients, fundamental rules of incisional hernia repair were followed. In all patients, synthetic, light weight with large pores and non-absorbable mesh was used. The patients were given the same antibiotic at the time of induction of anaesthesia. The operative time for both procedures were recorded. The age of the patients were included in this study varies from 21 years to 60 years. Anterior abdominal wall hernias irrespective of sex distribution upto 10 cm in diameter were enrolled in this study. Patients with chronic obstructive pulmonary disease, abdominal malignancy, previous hernia repair with large scarred area of abdominal skin, massive ventral hernia (larger than 10 cm) were excluded in his study. There were no ethical problems as before study procedure conducted, verbal consent of each patient was taken. Relevant informations according to questionnaire were taken from the patients and physical examinations were done in detail. After operation patients were observed for any complication such as seroma formation, wound infection. Check dressing was carried out after 48 hours and drain was removed if discharge was less than 10 ml in 24 hours. Suture removal was carried out on the 10^{th} to 12^{th} post-operative day if no complications were observed. During discharge, they were scheduled post-operative visits at 1 month, 3 months and 6 months. A one year follow up examination was performed with special regard to recurrence. All data were collected and analyzed manually in view of the objective of this study. Frequency, distribution and proportions were calculated for the values and the results were established in a tabulated form.

Results:

The age ranged from 21-60 years. There were 17 males (34%) and 33 females (66%). The male to female ratio was 1:1.9. For the descriptive purpose patients were divided into two groups. The group I comprises of 25 (50%) patients who underwent onlay hernia mesh repair and group II had 25 (50%) patients who underwent sublay hernia mesh repair. Majority of the patients 41 (82%) were above the age of 40 years. Pfannenstiel ventral anterior abdominal wall incisional hernia was most common 30(60%) followed by midline incisional hernia 9(18%). The size of hernial defect was more than 5 cm in 32 (64%) patients. (Table I)

Table I: Patients profile presented with incisional hernia.

Variables	Group I (Onlay) 25	Group II (Sublay) 25
Age of patients		
21-30	2(8%)	0(0%)
31-40	4(16%)	3(12%)
41-50	10(40%)	10(40%)
51-60	9 (36%)	12(48%)
Gender		
Male	8(32%)	9(36%)
Female	17(68%)	16(64%)
Associated risk factors		
Obesity	11(44%)	9(36%)
Hepertension	8(32%)	10(40%)
Diabetes	6(24%)	6(24%)
Site of incision of hernia		
Midline	3(12%)	6(24%)
Subcostal	1(4%)	2(8%)
Pfannenstiel	19(76%)	11(44%)
Grid iron	2(8%)	6(24%)
Size of hernial defect		
3-5 cm	10(40%)	8(32%)
6-10 cm	15(60%)	17(68%)

The recorded operative time in group I was less than 90 minutes in 15 (60%); while in group II, 17(68%) required more than 90 minutes. The operative time was different in onlay mesh fixation compared to sublay mesh fixation. The wound infection was more frequent in group I patients 13 (52%) as compared to group II patients 5(20%). Seroma formation in group I was more common 20(80%) as compared to group II 6(24%) patients. Wound dehiscence was present only in 3 (12%) patients of group I. Majority of the patients 22(88%) in group II were discharged from hospital on 5th postoperative day. (Table II).

Table II: Outcome variable comparison of onlay vs sublay hernia mesh repair

Variables	Group I(Onlay) 25	Group II(Sublay) 25
Operative time		
60-90 min	15(60%)	8(32%)
>90 min	10(40%)	17(68%)
Seroma formation		
Yes	20(80%)	6(24%)
no	5(20%)	19(76%)
Wound infection		
Yes	13(52%)	5(20%)
No	12(48%)	20(80%)

Wound dehiscence		
Yes	3(12%)	0(0%)
no	22(88%)	25(100%)
Hospital stays		
5days	6(24%)	22(88%)
>5 days	19(76%)	3(12%)

Discussion:

Ventral hernia in the anterior abdominal wall includes both spontaneous and, most commonly, incisional hernias after an abdominal operation. It is estimated that 2-11% of all abdominal operations result in an incisional hernia[8]. Hernia recurrence is distressing to the patient and embarrassing to surgeon. However primary tissue repair is associated high unacceptable recurrence rate but nowadays tension free mesh repair is ideal hernia repair technique[9,10]. One study documented that the use of mesh has increased from 34.2% in 1987 to 65.5% in 1999[11]. The refinement of sublay technique decreased the recurrence rates and gave better outcome, making it the standard of care of ventral hernias[12,13].

In our study, the majority of patients 21(42%) were in 51-60 years of age group with female 33(66%) and male 17(34%). Hameed F, Ahmed B showed the female to male ratio was 4:1 and the highest incidence was in the 5th decade of life[14].

This study showed among the incisional hernia pfannensteil incision 30(60%) which were most common than midline incision 9(18%), grid iron incision 8(16%) and subcostal incision 3(6%). The high female preponderance can be attributed to the majority of index operations being gynaecological operations with a pfannensteil incision, which result in incisional hernia. Rajsiddharth et al also showed incidence among ventral hernias were incisional hernia 40%, paraumbillical hernia 30%, umbilical hernia 18.3% and epigastric hernia 11.7%[15].

This study showed 20(40%) patients were obese, 18(36%) were hypertensive, and 12(24%) were diabetic. Rajsiddharth et al. in their study revealed associated risk factors that were obesity 15(25%), diabetic 8(13.33%), anaemic 1(1.67%) and hypothyroid 1(1.67%)[15].

In our study post-operative complications were seroma formation 26(52%), wound infection 18(36%) and wound dehiscence 3(6%). But in sublay mesh fixation there was no wound dehiscence. In comparison seroma formation and wound infection rate were less in sublay technique. Gleysteen et al found 12% incidence of seroma in sublay technique[16].

In a study by Ibrahim et al., mean duration of hospital stay in the onlay group ranged from 3 to 9 (4.63 ±0.35) days, whereas it was 1-4 (2.62 ±0.74) days in the sub lay group (p=0.063)[17]. In this study, most of the 22(88%) patients in group II stay less than 5 days in hospital. While 19(76%) patients of group I was discharged from hospital >5th postoperative day.

Conclusion:

Sublay mesh repair has a definitive role over onlay mesh repair in the management of incisional hernia of anterior abdominal wall. The operative time, postoperative complication like seroma formation and hospital stay were found significant in sublay mesh fixation. The overall post-operative complications rate was very low.

REFERENCES:

1. Malik AM. Laparoscopic versus open repair of para-umbilical hernia. It is good alternative. Pak J Med Assoc 2015; 65:865-8.
2. Breuing K, Butler CE, Ferzoco S, Franz M, Hultman CS, Kilbridge JF, et al. Incisional ventral hernias: Review of the literature and

recommendations regarding the grading and technique of repair. Surgery 2010; 148:544-58.
3. Kuzbari R, Worseg AP, Tairych G, Deutinger M, Kuderna C, Metz V et al., Sliding door technique for the repair of midline incisional hernias. Plast Reconstr Surg. 1998; 101:1235–1242.
4. Machairas A, Misiakos EP, Liakakos T, Karatzas G., Inci sional hernioplasty with extraperitoneal onlay polyester mesh. Am Surg. 2004; 70(8):726–729.
5. San Pio JR, Damsgaard TE, Momsen D, Villadsen I, Larsen J., Repair of giant incisional hernias with polypropylene mesh: a retrospective study. Scand J Plast Reconstr Surg Hand Surg. 2003; 37:102–10.
6. Shell DH, de La Turre J, Anradis P, Vesconez OI. Open repair of ventral incisional hernia. Surg Clinc North Am 2008; 83:1233-4.
7. Kaya B, Uçtum Y, Eris C, Bat O, Ziyade S, Kutanis R. The surgical results of onlay mesh repair for incisional hernia. J Clin Anal Med 2012; 3:425-8.
8. Leithy M, Loulah M, Greida HA, Baker FA, Hayes AM. Sublay hernioplasty versus onlay hernioplasty in incisional hernia in diabetic patients. Menoufia Med J. 2014; 27: 353-8.
9. Mehmud A. Tension free mesh hernioplasty: a review of 96 cases. JPMI 2004; 18: 46-51.
10. Buclenall TE, Cox PJ, Ellish H. Burst abdomen and incisional hernia: A prospective study of 1129 major laparotomies. Br. Med J 1982; 284: 931-3.
11. Shell DH, Torre JDL, Andrades P, Vasconez LO. Open repair of ventral hernia incisions. Surg Clin North Am. 2008; 88:61-83.
12. El-Santawy HMG, El-Sisy El-Azeem AA, El-Gammal AS, El-Kased AF, Sultan HM. Evaluation of retromuscular mesh repair technique for treatment of ventral incisional hernia. Menoufia Med J. 2014; 27:226-9.
13. Oh T, Hollands MJ, Langcake ME, Parasyn AD. Incisional hernia repair: a Retrospective review and early experience of laparoscopic repair. Surgery 2004; 74:50-6.
14. Hameed F, Ahmed B, Ahmed A, Dab RH, Dilawaiz. Incisional hernia repair by preperitoneal (sublay) mesh implantation. A. P.M.C 2009 ; 3 : 27-31.
15. Rajsiddhartha et al. A comparative sudy of onlay and pre-peritoneal mesh repair in the management of ventral hernias. International Journal of Scientific Study. 2015; 3: 122-8.
16. Gleysteen JJ. Mesh-reinforced ventral hernia repair: Preference for 2 techniques. Arch Surg 2009; 144: 740-5.
17. Ibrahim AH, El-Gammal AS, Heikal MMM. Comparative study between 'onlay' and 'sublay' hernioplasty in the treatment of uncomplicated ventral hernia. Menoufia Med J 2015; 28:11-6.