

A Study to Compare between 'Onlay' and 'Sublay' Hernioplasty in the Treatment of Uncomplicated Ventral Hernia

Jayesh Bodana¹, Krishnanand², Amit Sahu³

¹Resident, Department of General Surgery, LN Medical College and JK Hospital and Research Centre, Bhopal, ²Prof and HOD, Department of General Surgery, LN Medical College and JK Hospital and Research Centre, Bhopal, ³Resident, Department of General Surgery, LN Medical College and JK Hospital and Research Centre, Bhopal, India

Corresponding author: Dr Jayesh Bodana, Resident, Department of General Surgery, LN Medical College and JK Hospital and Research Centre, Bhopal, India

How to cite this article: Jayesh Bodana, Krishnanand, Amit Sahu. A study to compare between 'onlay' and 'sublay' hernioplasty in the treatment of uncomplicated ventral hernia. *International Journal of Contemporary Medicine Surgery and Radiology*. 2022;8(1):A1-A4.

A B S T R A C T

Introduction: Ventral hernia also can be categorized according to their characteristics into reducible, irreducible or incarcerated, strangulated and recurrent ventral hernia. The present study was conducted to compare between 'Onlay' And 'Sublay(retrorectus)' hernioplasty in the treatment of uncomplicated ventral hernia.

Material and Methods: In the present study 20 adult patients who had uncomplicated ventral hernia, either primary or secondary were included in the study. The patients were divided randomly into two groups according to the surgical technique used for the treatment of the uncomplicated ventral hernia: group A and group B. Group A patients (onlay mesh repair, 10 patients) and Group B patients (sublay i.e retrorectuc mesh repair, 10 patients). The two techniques were evaluated.

Results: In this study males were more(55%). Maximum patients were of age group 41-50yrs. In both group maximum type of hernia was Paraumbilical hernia. The mean total time taken to perform surgery in the onlay group was 82.65±10.23min compared with 87.76±7.87min in the sublay group. The drain in group A was removed after a period of 5.62±2.76days, whereas the drain in group B was removed after a period of 4.68±0.93days. After removal of the drain in group A, 2 patients developed wound seroma. In group B only one patient developed wound seroma. In group A, wound infection occurred in 2 patients but in group B wound infection occurred only in one patient. Mean duration of hospital stay in the onlay group was 4.54±0.32 days, whereas it was 2.63±0.78days in the sublay group.

The amount of blood loss in group A was 75.6±10.54ml, whereas in group B it was 75.97±12.5ml. Recurrence rate in both the groups were 1 patient respectively.

Conclusion: The present study concluded that drain was removed early in sublay(retrorectus) group and wound seroma, wound infections were less in sublay group. Mean hospital stay was also less in sublay group. Therefore sublay was better than onlay hernioplasty in the treatment of uncomplicated ventral hernia.

Keywords: Paraumbilical Hernia, Onlay, Sublay Group.

INTRODUCTION

Hernia, a word which has its roots in Greek language, means an offshoot or a bulge. And in Latin, it means rupture. And by definition, when the viscus from one anatomical space protrudes into another anatomical space it's termed as hernia. Hernia can also be defined as an outpouching of the parietal peritoneum into a preformed or secondarily established hiatus.^{1,2} The term ventral hernia describes any hernia due to inadequacy of the anterior abdominal wall muscles.³ Ventral hernia of the anterior abdominal wall, either primary or secondary, is a common surgical problem and is defined as any fascial defect of the anterolateral parietal abdominal wall, through which intermittent or continuous protrusion of intra-abdominal or preperitoneal contents occurs.⁴ Ventral hernia treatment

modalities vary from conservative management to surgical options such as open procedure, laparoscopic method, and further advanced robotic surgeries. Suturing alone remains acceptable for tiny defects while mesh support is recommended for elective repair of incisional hernias or a primary ventral hernia ≥ 2 cm in width with no contamination.⁵ The repair of ventral hernias varies from primary closure only, primary closure with relaxing incisions, primary closure with an onlay mesh reinforcement, onlay mesh placement only, inlay mesh placement, and intraperitoneal mesh placement.⁶ Primary closure techniques are usually performed for small fascial defects less than 5 cm in greatest diameter. Even for small hernia defects, recurrence rates in excess of 50% have been reported.⁷ An onlay, usually of polypropylene mesh, is sutured to the anterior rectus sheath after fascial defect has been

closed primarily. The potential advantage of this repair keeps the mesh separated from the abdominal contents by full abdominal muscle fascial wall thickness. The disadvantages of this repair include a repair under tension, large subcutaneous dissection that allows for seroma formation, and mesh infection when the surgical wound becomes infected. The sublay (reterorectus) placement of mesh, more commonly known as Stoppa technique, became popular during 1990. The recurrence rates with this repair have been stated to be less than 10%.⁸ The present study was conducted to compare between 'Onlay' And 'Sublay' hernioplasty in the treatment of uncomplicated ventral hernia.

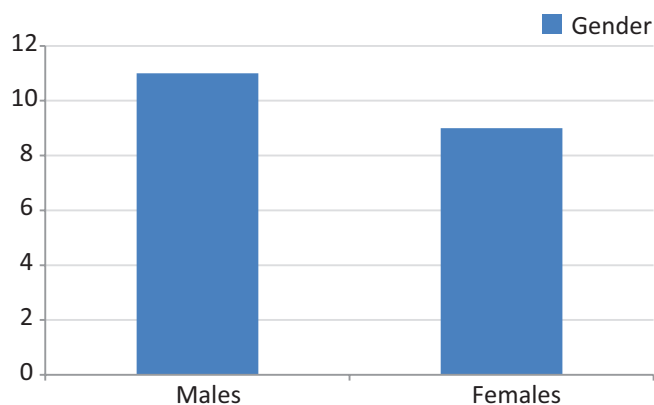
MATERIAL AND METHODS

In the present study 20 adult patients who had uncomplicated ventral hernia, either primary or secondary were included in the study. Informed consent was obtained from all patients included in the study. The patients who had no other serious disease/illness, including hemorrhagic disorders; had uncomplicated ventral hernias only; and agreed to undergo surgery following either onlay mesh repair or sublay (retromuscular) mesh repair were included in the study. The patients who had inflamed, obstructed, or strangulated ventral hernias and very large ventral hernia defects that need special consideration before surgical interference, such as component separation technique, tissue expansion-assisted closure, and vacuum-assisted closure therapy were excluded from the study. Complete medical history, physical examination, preoperative investigations and radiological investigations were taken. The patients were divided randomly into two groups according to the surgical technique used for the treatment of the uncomplicated ventral hernia: group A and group B. Group A patients (onlay mesh repair, 10 patients) and Group B patients (sublay mesh repair, 10 patients). The two techniques were evaluated on the basis of the following parameters: type of ventral hernia, duration of operative procedure, amount of intraoperative blood loss, duration of drainage, incidence of seroma, wound infection, postoperative hospital stay, and recurrence rate. The follow-up data was obtained. Statistical analysis was conducted using statistical package for the social sciences (SPSS, version 20; SPSS Inc., Chicago, Illinois, USA) on an IBM compatible computer.

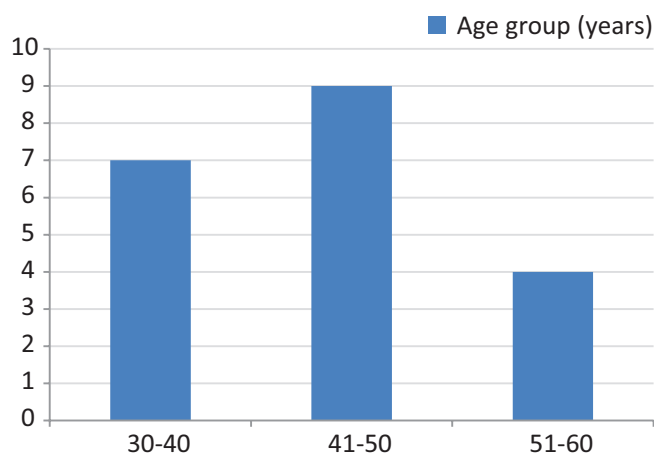
RESULTS

In the present study total patients were 20 and which were divided into two groups i.e. Group A and Group B. Group A patients (onlay mesh repair, 10 patients) and Group B patients (sublay mesh repair, 10 patients). In this study males were more(55%). Maximum patients were of age group 41-50yrs. In both group maximum type of hernia was Paraumbilical hernia. The mean total time taken to perform surgery in the onlay group was

82.65±10.23min compared with 87.76±7.87min in the sublay group. The drain in group A was removed after a period of 5.62±2.76days, whereas the drain in group B was removed after a period of 4.68±0.93days. After removal of the drain in group A, 2 patients developed wound seroma. In group B only one patient developed wound seroma. In group A, wound infection occurred in 2 patients but in group B wound infection occurred



Graph-1: Distribution according to gender



Graph-2: Distribution according to age group

Parameter	N(%)
Gender	
Males	11(55%)
Females	9(45%)
Age Groups(yrs)	
30-40	7(35%)
41-50	9(45%)
51-60	4(20%)

Table-1: Demographic data

Types of hernia	Group A N=10	Group B N=10	Total N=20
Paraumbilical hernia	5(50%)	7(70%)	12(60%)
Incisional hernia	2(20%)	1(10%)	3(15%)
Epigastric hernia	2(20%)	1(10%)	3(15%)
Umbilical hernia	1(10%)	1(10%)	2(10%)

Table-2: Hernia distribution in the studied cases

Types of hernia	Group A N=10	Group B N=10	P value
Operative time (mins)	82.65±10.23	87.76±7.87	0.321
Drain removal (days)	5.62±2.76	4.68±0.93	0.001
Seroma formation	2	1	0.008
Wound infection	2	1	0.008
Postoperative hospital stay(days)	4.54±0.32	2.63±0.78	0.056
Amount of blood loss in both groups(ml)	75.6±10.54	75.97±12.5	0.084
Recurrence rate	1	1	0.092

Table-3: Operative and postoperative complications

only in one patient. Mean duration of hospital stay in the onlay group was 4.54±0.32 days, whereas it was 2.63±0.78days in the sublay group. The amount of blood loss in group A was 75.6±10.54ml, whereas in group B it was 75.97±12.5ml. Recurrence rate in both the groups were 1 patient respectively.

DISCUSSION

Ventral Abdominal wall hernia are a common surgical problem encountered in clinical practice. The outcome of the surgery is based not only on the technique used but on the experience of the operator, meticulous dissection, tension free repair etc.(26)many methods are available to deal with these hernias. Common practiced techniques for hernia repair use mesh, which is placed either in a sublay or onlay position.⁹

In this study males were more (55%). Maximum patients were of age group 41-50yrs. In the present study total patients were 20 and which were divided into two groups i.e. Group A and Group B. Group A patients (onlay mesh repair, 10 patients) and Group B patients (sublay mesh repair, 10 patients). In both group maximum type of hernia was Paraumbilical hernia. The mean total time taken to perform surgery in the onlay group was 82.65±10.23min compared with 87.76±7.87min in the sublay group. The drain in group A was removed after a period of 5.62±2.76days, whereas the drain in group B was removed after a period of 4.68±0.93days. After removal of the drain in group A, 2 patients developed wound seroma. In group B only one patient developed wound seroma. In group A, wound infection occurred in 2 patients but in group B wound infection occurred only in one patient. Mean duration of hospital stay in the onlay group was 4.54±0.32 days, whereas it was 2.63±0.78days in the sublay group. The amount of blood loss in group A was 75.6±10.54ml, whereas in group B it was 75.97±12.5ml. Recurrence rate in both the groups were 1 patient respectively.

Zia LA et al concluded that Sublay is better than onlay technique with less postoperative complications, but operative time is slightly greater in sublay technique.¹⁰ Ibrahim AH et al found that sublay use of the mesh in the treatment of ventral hernia significantly reduced the time to remove the drains (which was longer in the onlay mesh group; P = 0.001), seroma formation after drain removal (which was significantly higher in

the onlay mesh group; P = 0.010), and wound infection (which was significantly higher in the onlay mesh group; P = 0.010) in comparison with onlay mesh repair. And concluded that retromuscular (sublay) mesh repair is the ideal technique for ventral hernia repair.¹¹

Chitrambalam TG et al did a study with ventral hernia randomizing patients into 2 groups. Group A (Onlay meshplasty) and Group B (Sublay meshplasty) and found that mean duration of surgery in group A was 48.49±0.71 minutes and in group B was 72.84±0.72 minutes. Group B experienced significantly lesser pain when compared with group A. The mean asepsis score in group A was 3.60±1.09 and in group B was 0.47±0.30 with a p value of 0.006. Group A had significantly longer hospital stay (9.39 days) than group B (5.71 days). The recurrences in both the groups were statistically insignificant (Group A- 2 patients; Group B- 1 patient). And concluded that Sublay meshplasty although requires longer time to perform, proves to be a better alternate in terms of post-operative pain, wound infection and hospital stay.¹²

CONCLUSION

The present study concluded that drain was removed early in sublay group and wound seroma, wound infections were less in sublay group. Mean hospital stay was also less in sublay group. Therefore sublay was better than onlay hernioplasty in the treatment of uncomplicated ventral hernia.

REFERENCES

1. Fitzgibbons Jr RJ, Forse RA. Groin hernias in adults. *N Engl J Med.* 2015;372(8):756-63.
2. Hernias CJ. Current neurology and neuroscience reports. U.S. National Library of Medicine; 1970. Available at: <http://www.ncbi.nlm.nih.gov/books/NBK6888/>. Accessed on 2 February 2019.
3. Williams NS, Bulstrode CJ, Connell PR, editors. Bailey and Love's Short Practice of Surgery. 26th ed. New York: CRC Press; 2013. p. 948-9.
4. Ahmed M, Niaz A, Hussain A, et al. Polypropylene mesh repair of incisional hernia. *J Coll Physicians Surg Pak* 2003; 13 :440-442.
5. Liang MK, Holihan JL, Itani K, Alawadi ZM, Gonzalez JR, Askenasy EP, et al. Ventral hernia management: Expert consensus guided by systematic review. *Ann Surg* 2017;265:80-9.

6. Millikan KW. Incisional hernia repair. *Surg Clin N Am J* 2003; 83 :1223-1234.
7. Buerger JW, Lange JF, Halm JA, et al. Incisional hernia prevention. In: Schumpelick V, Nyhus LM, editors. *Mesher: benefits and risks*. 2004. 399-405.
8. Alsoudany SE, Khalil OO, Shebl AM. Comparative Study between. *The Egyptian Journal of Hospital Medicine*. 2018 Oct 1;73(4):6423-30.
9. Stey AM, Russell MM, Sugar CA, Hall BL, Zingmond DS, Lawson EH, et al. extending the value of the National Surgical QualityImprovement Program claims dataset to studylong-term outcomes: Rate of repeat ventral hernioplasty. *Surgery*.2015; 157:1157-65.
10. Zia LA, Farooq A, Amin I. Comparative Study between Sublay and Onlay Technique of Repairing Ventral Abdominal Hernia. *PAKISTAN JOURNAL OF MEDICAL & HEALTH SCIENCES*. 2016 Apr 1;10(2):670-2.
11. Ibrahim AH,El-GammalAS,HeikalMM. Comparative study between'onlay'and'sublay'hernioplasty in the treatment of uncomplicated ventral hernia. *Menoufia Medical Journal*. 2015 Jan 1;28(1):11.
12. Chitrambalam TG, Anguraj P, Sundaraj J, Pethuraj M. A comparative study between onlay and sublay meshplasty in ventral hernias: a randomized controlled trial. *Int Surg J* 2019;6:1264-8.

Source of Support: Nil; **Conflict of Interest:** None

Submitted: 10-01-2023; **Accepted:** 14-02-2023; **Published online:** 30-03-2023