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ORIGINAL ARTICLE

A comparative study of onlay & preperitoneal sublay mesh repair technique in umbilical hernia

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ABSTRACT

Background: Ventral abdominal hernias are common in surgical practice. This study was conducted to compare the results of onlay and preperitoneal sublay mesh repair technique, with the variables like duration of surgery, suction drainage, hospital stay, seroma formation, surgical site infection and recurrence rate. **Materials & Methods:** The present study was conducted in the department of general surgery on 70 patients of with umbilical hernia. Patients were divided into 2 groups ie onlay and sublay group. Primary outcome measures comparison of recurrence of hernia within 3 months after surgery between onlay and sublay mesh repair group, duration of surgery between two groups, duration of suction drainage in both groups, hospital stay, seroma formation and surgical site infection within 1 month of surgery. **Results:** 31.4 percent (11 patients) of the patients of the Onlay group and 34.3 percent (12 patients) of the patients of the Sublay group belonged to the age group of 31 to 40 years. 42.9 percent of the patients (30 patients) had umbilical hernia, while 57.1 percent of the patients (40 patients) of the present study had para-umbilical hernia. Diabetes mellitus was seen in 4 in onlay and 6 in sublay group, obesity in 13 in onlay and 15 in sublay group and hypertension in 3 in onlay and 2 in sublay group. The mean operative time for the subjects of the Onlay group was 58.12 minutes and was significantly lower than subjects of the Sublay group, which was found to be 82.56 minutes (P- value < 0.05). **Conclusion:** Sublay mesh repair is associated with less chances of seroma formation and almost no recurrence with low post-operative complication like infection and wound edge necrosis.

Key words: Onlay, Sublay, Umbilical hernia.

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INTRODUCTION

Ventral abdominal hernias are common in surgical practice. This term includes inguinal, umbilical, para umbilical and epigastric hernia.¹ An umbilical hernia is a protrusion, bulge, or projection of an organ or part of an organ through the body wall such as the abdominal wall.¹ Para-umbilical hernia (PUH) results through a defect in the linea alba. It is a common surgical problem consisting of 10% of all primary hernia. They are more common in parous, obese, middle aged and elderly women. Obesity and multiparity are important predisposing factors not only for primary, but also for recurrent cases.²

Hernia surgery is one of the most commonly performed procedures worldwide. Numerous techniques have been described for hernia repair and hernioplasty, but tension free mesh placement is widely used in current practice.³ Basic strategy involved is inversion of hernia sac contents back to the cavity they normally belong then weak spot can be stitched (herniorrhaphy) or reinforced (Hernioplasty) and hernia is repaired. Most commonly employed surgical intervention involves the closure of weak spot along with insertion of mesh to reinforcement the defective area (Hernioplasty) hence the recurrence chance is minimized. Mesh plasty may be of onlay and sublay type.⁴

Repair of the complex ventral/incisional (V/I) hernia remains a challenge. The use of mesh for repair is now accepted as standard of care. The mesh can be placed intraperitoneally now that we have barrier-coated meshes, in the retrorectus position or as an onlay.⁵ This study was conducted to compare the results of onlay and preperitoneal sublay mesh repair technique, with the variables like duration of surgery, suction drainage, hospital stay, seroma formation, surgical site infection and recurrence rate.

MATERIALS & METHODS

The present study was conducted in the department of general surgery Adhesh institute of medical science and research, Bathinda. The study was approved from institutional ethical committee. patients were informed and written consent was obtained. Inclusion criteria was patients with umbilical hernia, para-umbilical hernia and age between 20 to 70 years. Exclusion criteria was groin hernia, divarication of recti and age less than 20 year and greater 70 years of age.

Onlay mesh repair

The onlay repair was done under general anesthesia with skin incision over the bulge or the defect. Using blunt dissection, both the rectus sheath and the defect containing the hernia contents were identified. The hernia sac was clearly dissected and the contents were removed and the margins of the defect were held by Kocher forceps. The sac was dealt with and its contents were reduced into the abdominal cavity. With non-absorbable suture, the defect in the linea alba was closed and a prolene mesh of adequate size was placed on the rectus sheath and fixed with stitches. Hemostasis was secured and wound was closed over a

suction drain. A dose of broad-spectrum antibiotic was given prior to anaesthesia.

Sublay mesh repair

After the sac being dissected and delineated, the defect was opened and the preperitoneal plane was created between the posterior rectus sheath and the rectus muscle for the placement of the mesh. The posterior rectus sheath along with the peritoneum was closed by using prolene suture. A prolene mesh tailored to the size was placed in the already created plane behind the recti. The mesh was secured with few interrupted 2/0 polypropylene sutures. The anterior rectus sheath was closed with continuous 1/0 polypropylene sutures. Suction drain was placed in the subcutaneous plane and the skin closed.

Patients were seen at 2 weeks, 1 months and 6 month postoperatively and at other times if needed. They were asked to return for examination if they thought their hernia will recurred or if any complication occurs and return after 6 months. The examination was carried out by an independent surgeon. Primary outcome measures comparison of recurrence of hernia within 3 months after surgery between onlay and sublay mesh repair group, duration of surgery between two groups, duration of suction drainage in both groups, hospital stay, seroma formation and surgical site infection with in 1 month of surgery.

All the results were summarized in Microsoft excel sheet and were analyzed by SPSS software version 17.0. P- value of less than 0.05 was taken as significant.

RESULTS

Table I: Age-wise distribution of patients

Age group (years)	Onlay		Sublay		P- value
	Frequency	Percentage	Frequency	Percentage	
20- 30	9	25.7	10	28.7	0.52
31- 40	11	31.4	12	34.3	
41- 50	5	14.2	4	11.4	
51- 60	4	11.4	4	11.4	
61 and above	6	17.2	5	14.2	
Total	35	100	35	100	

Table I shows that 31.4 percent (11 patients) of the patients of the Onlay group and 34.3 percent (12 patients) of the patients of the Sublay group belonged to the age group of 31 to 40 years. No significant results were obtained while comparing the age-wise distribution of subjects among the two study groups.

Table II Incidence of type of hernia

Type of hernia	Frequency	Percentage
Umbilical	30	42.9
Para-umbilical	40	57.1
Total	70	100

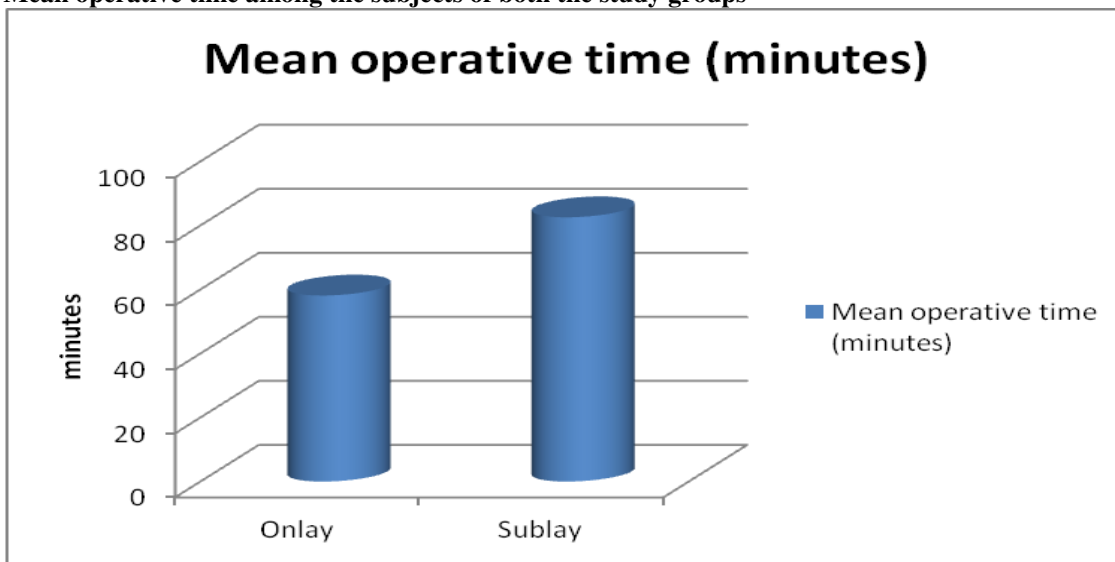
Table II shows that 42.9 percent of the patients (30 patients) had umbilical hernia, while 57.1 percent of the patients (40 patients) of the present study had para-umbilical hernia.

Table III Distribution of patients according to diseases

Type of disease	Onlay	Sublay
Diabetes mellitus	4	6
Obesity	13	15
Hypertension	3	2

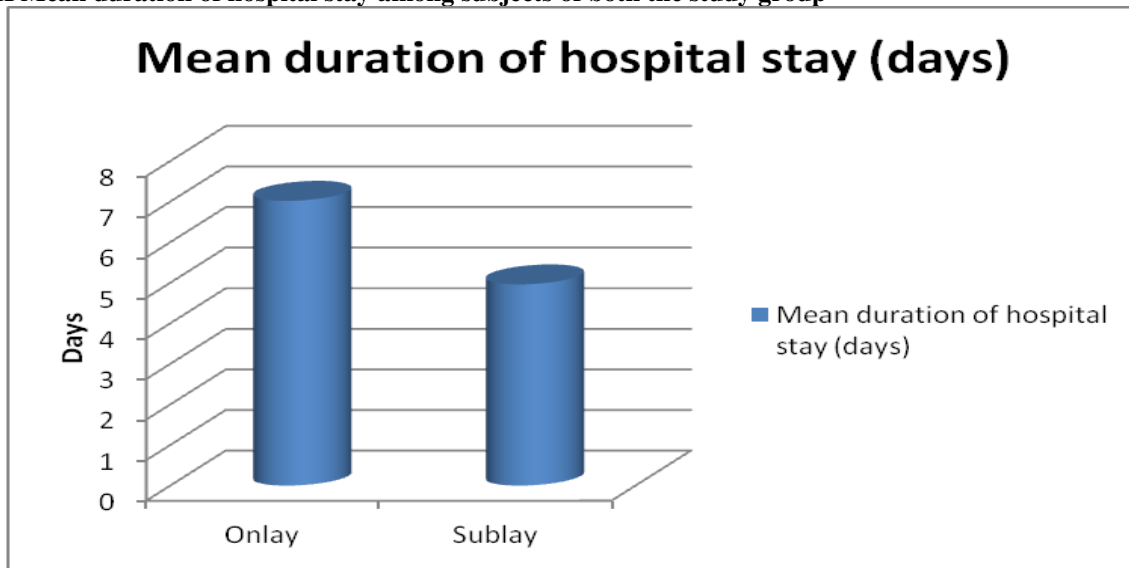
Table III shows that diabetes mellitus was seen in 4 in onlay and 6 in sublay group, obesity in 13 in onlay and 15 in sublay group and hypertension in 3 in onlay and 2 in sublay group.

Graph I Mean operative time among the subjects of both the study groups



Graph I shows that mean operative time for the subjects of the Onlay group was 58.12 minutes and was significantly lower than subjects of the Sublay group, which was found to be 82.56 minutes (P- value < 0.05).

Graph II Mean duration of hospital stay among subjects of both the study group



Graph II shows that mean duration of hospital stay was significantly higher for the subjects of the Onlay group (1.25 days), in comparison to the subjects of the Sublay group (0.80 days).

Table IV Incidence of complications

Complications	Onlay	Sublay
Seroma formation	7	15
Surgical site infection	6	4

Table IV shows that seroma formation was present in 7 in onlay and 15 in sublay group. Surgical site infection was seen in 6 in onlay and 4 in sublay group.

DISCUSSION

In a prospective randomized controlled non-blinded study we compared the onlay mesh repair technique with sublay mesh repair technique in umbilical and para-umbilical hernia management. Mean age of the patients of the Onlay group and the sublay group was 41.36 years and 40.15 years respectively. Our results were in concordance with the results obtained by Dhaigude BD et al⁶ who also reported similar findings in their study. Mean age of the patients of the Onlay group and Sublay group in the study conducted by Shehryar HA⁷ was 51.4 years and 52.3 years respectively. Approximately equal number of males and females were present in both the study groups in the present study. Similar results were reported by Shehryar HA et al, who also reported non-significant findings while comparing the gender distribution of patients.

Recurrence, the ultimate nightmare of a hernia surgeon, adds significantly to health care costs, and poses a further economic burden. In the present study, recurrence occurred in 17.2 percent of the patients (6 patients) of the Onlay group and 5.7 percent of the patients (2 patients) of the Sublay group respectively. Recurrence was significantly higher in the Onlay group in comparison to the Sublay group (P- value < 0.05). Our results were in concordance with the results obtained by Raghuveer MN et al⁸, who reported that mean recurrence rate in Onlay group was significantly higher in comparison to the mean recurrence rate in the Sublay group (4.32). A study done by FS Aodaet al⁹ the sublay group shows 0% and the onlay group shows 2% recurrence. In a recent study done by A Saber et al¹⁰ the recurrence rate was 8% in on lay group and 3% in sub lay group. Our study is comparable with other studies with respective of recurrence.

Mean operative time among the subjects of the Onlay group was 58.12 minutes and was found to be significantly more than mean operative time of the sublay group, in which mean operative time was found to be 82.56 minutes respectively (P- value < 0.05). In previous studies, the mean operative time was longer in sublay than onlay techniques due to the time consumed to create the preperitoneal tunnel.¹¹

Mean time after which drain was removed for the subjects of the Onlay group was 5.2 days, and was found to be significantly higher than the subjects of the Sublay group, where the mean time after which drain was removed was 4.10 days (P- value < 0.05). In a study done by FS Aodaet al⁹ in on lay group drain was removed after 2-5 days and in sub lay group drain was removed after 2-3 days.

In the present study, mean duration of hospital stay for the subjects of the sublay group and onlay group was 4.96 days and 7.02 days respectively. Our results were in concordance with the results obtained by Raghuveer MN et al⁸, who reported similar findings in their study.

In the present study, seroma formation occurred in 20 percent of the patients (7 patients) of the sublay group, and occurred in 42.9 percent of the patients (15 patients) of the onlay group. Significant results were obtained while comparing the incidence of Seroma formation among the subjects of the Onlay group and Sublay group. Seroma formation is a common complication after repair of abdominal wall hernia, which can lead to significant morbidity.¹²

Apart from recurrence, other postoperative complications like seroma formation and wound infection attributed largely to extensive dissection and tissue handling during hernia repair. There was slightly more chance of seroma formation in onlay group, which may be due to extensive tissue dissection and increased blood loss. Duration of hospital stay give us an indirect indication of degree of morbidity in terms of postoperative complications. The incidence of seroma formation is highest following onlay procedures as during an onlay procedure, not only are many blood vessels transected during the required wide mobilization of subcutaneous tissue flaps, but also the insertion of foreign material temporarily establishes an effective barrier between the circulatory system of the subcutaneous tissues and that of the deeper parietal layers. In sublay repair, the retromuscular space is an already existing anatomical plane, requiring no dissection, and the bare posterior surface of the of the rectus muscles is rich in lymphatic is capable to absorb any collecting seroma. A Saber et al (2015) assessed that the seroma formation 38 was 8% in on lay group and sub lay 2%. Our study is comparable to other studies with respective to seroma formation.^{13,14}

In the present study, surgical site infection occurred in 17.2 percent of the patients (6 patients) of the Onlay group, and occurred in 11.4 percent of the patients (4 patients) of the Sublay group. In a study done by M Kurzer et al¹⁵ there is no patient suffered from SSI's within 30 days in patients treated with sub lay repair technique but subsequently two mesh were infected and removed.^{14, 15}

CONCLUSION

Authors concluded that Sublay mesh repair is associated with less chances of seroma formation and almost no

recurrence with low post operative complication like infection and wound edge necrosis.

REFERENCES

1. Afridi SP, Siddiqui RA, Rajput A. Complications of Onlay and Sublay Mesh Plasty in Ventral Abdominal Hernia Repair. *J Surg Pakistan (International)*. 2015; 20(2): 48- 51.
2. Martel G, Ahmad J, Taylo Mr. Novel treatment of refractory seroma after incisional hernia repair. *Gut* 2013;62: 1-7.
3. Milad NM, Said SM, Samir M. Comparison between onlay and retromuscular drainless mesh repair for para-umbilical hernia with divarication of recti. *Kasr El Aini J Surg* 2009;10:11-6.
4. Goda El-Santawy HM, El-Sisy 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.
5. Oh T, Hollands MJ, Langcake ME, Parasyn AD. Incisional hernia repair: a Retrospective review and early experience of laparoscopic repair. *Surgery* 2004; 74 :50-56.
6. Dhaigude BD, Sugunan A, Panchbhai SV, Francis M, Patel K, Metta V. Comparative evaluation of sublay versus onlay mesh plasty in incisional and ventral hernias. *IntSurg J*. 2018; 5(1):187-192.
7. Shehryar HA, Shahka MA, Javed MU. Comparison of Sublay versus Onlay Mesh Technique of Ventral Hernia Repair. *P J M H S*. 2018; 12(1): 57- 59.
8. Raghuvveer MN, Muralidhar S, Shetty H, Veena V. Onlay versus sublay mesh repair for ventral hernia. *IntSurg J*. 2018; 5(3):823-826.
9. FS Aoda, AS Ibrahim. Sub lay versus on lay mesh repair of ventral hernia. *QMJ* 2013; 9; 208-16.
10. A Saber, EK Bayumi. On lay versus sub lay mesh repair for ventral hernia. *Journal of surgery*. 2015; 4; 1-4.
11. Colavita PD, Tsirlina VB, Belyansky I, Walters AL, Lincourt AE, Sing RF et al. Prospective, long-term comparison of quality of life in laparoscopic versus open ventral hernia repair. *Ann Surg*. 2012; 256(5):714-22.
12. M leithy, M loulah, HA Grewida, FA Jaker, AM Hayer. Sub lay hernioplasty versus on lay hernioplasty in incisional hernia in diabetic patients. 2014; 27; 353-8.
13. QAF Murad, TA Awan, A Khan, AZ Malik. On lay versus Sub lay technique of repairing ventral abdominal hernia. *Journal of Rawalpindi medical college* 2013; 17(2); 192-4.
14. Bessa SS, El-Gendi AM, Ghazal AH, Al-Fayoumi TA. Comparison between the shortterm results of onlay and sublay mesh placement in the management of uncomplicated para-umbilical hernia: a prospective randomized study. *Hernia*. 2015; 19(1):141-6.
15. M Kurzer, AKark, S Selouk, P Blesham. Open mesh repair of incisional hernia using a sublay technique: Long term follow up. *World J surg* 2008; 32; 31-6.