A prospective comparative Clinical Trial of Onlay Versus Sublay Mesh Repair for Treatment of Ventral Hernia

ABSTRACT

INTRODUCTION: -This randomized clinical study was done at Sharda Hospital on patients admitted to the Surgery ward with Ventral hernias after taking an Informed consent. Patients were investigated as a part of the pre-operative evaluation and Hernia Repair surgery is done as planned.

AIMS & OBJECTIVE: - To compare the onlay vs sublay mesh repair techniques for ventral hernias in patients coming to Sharda hospital for 1) post-operative pain (vas) 2) Duration of hospital stay, 3) Time required to return to work 4) Complications (Seroma, Hematoma, Wound Infection, Recurrence.)

MATERIAL AND METHODS: - Patients reporting to General surgery OPD of SMS&R, S. hospital, G. N. with Ventral hernia were included in the study. Patients will be randomized into two groups: -group A, patients operated upon by Onlay mesh repair, and group B, patients by Sublay component separation repair. Patients followed up for- 1) post-operative pain (day 2, day 7, 1 month, and 3 months) using VAS, 2) mean hospital stay (in days), 3) return to basic activity (in days), and 4) complications including Seroma, Hematoma, SSI and recurrence.

RESULT: - Data collected and entered in the proforma, tabulated and analyzed using software package for statistical analysis (SPSS2015). Seroma, hematoma, superficial skin necrosis, SSI, hospital stay, & return to normal activities was more in onlay than in sublay repair.

CONCLUSION: - Sublay mesh repair was found to be excellent in terms of short-term results with minimal morbidity. It resulted in fewer complications and no recurrence was noted. Seroma, hematoma, superficial skin necrosis, SSI, hospital stay, & return to normal activities was relatively more in onlay mesh repair than sublay mesh repair.

KEYWORDS: - Ventral hernia, Onlay, Sublay, Mesh, Seroma, Hematoma

INTRODUCTION

Ventral hernias involve abnormal protrusion of any intra-abdominal viscera or its part via an abdominal wall defect. It can be of two types, namely congenital or acquired. Abdominal wall hernias usually present at the site of potential weakness i.e., at places where aponeurosis and fascia are not covered by flat striated abdominal wall muscles namely inguinal, femoral, umbilical area, linea alba, a lower portion of the semilunar line, and incisional hernias (sites of previous incisions) [11]. Incisional and paraumbilical hernias make up about 85% of the total common ventral hernia [12]. Western literature quotes an incidence of 15-20% of ventral hernia and prosthetic mesh implantation remains the most preferred method of dealing with ventral hernia[10]. Surgical correction of ventral hernia is by far one of the commonest procedures performed internationally with an estimated 300,000 procedures done in Europe and 400,000 procedures done in the United States annually[1]. Multiple studies have reported prevalence rates ranging between 3.7%-28% in patients undergoing various abdominal surgeries[2,3]. Untreated the Ventral hernias may increase in size thereby leading to discomfort and pain or may even get complicated by incarceration, obstruction, or even strangulation. Such progressive natural history leaves surgery as the only mainstay of their treatment. Ventral hernia repair is a real surgical challenge. Ventral hernia surgery has been continuously evolving. To begin with, Bassini 1884 did the first inguinal hernia repair, first nylon prosthetic mesh was designed by Bourret in 1948, which was later replaced by proline by Usher in 1963. Later on, a great volume of work from Rives, Stoppa, and Wantz bettered the technique. Lichtenstein's tension-free Hernia repair in 1986 revolutionized the treatment[4]. Leblanc and Booth 1993 reported the first laparoscopic ventral hernia repair [5]. Since then, Laparoscopic hernia repair is in vogue internationally. However, in many resource-poor countries, open repair of ventral hernia is still regularly practised6. Multiple options for the placement of prolene mesh in the hernia repair result in the availability of varied surgical techniques. They include onlay repair where in the mesh is placed in the subcutaneous plane anterior to the anterior rectus sheath or external oblique; inlay repair is the one in which the is mesh is sutured to the edges of the defect at the hernial neck; sublay repair is the one in which mesh is placed in the retro muscular layer anterior to the posterior rectus sheath, preperitoneal repair is the one in which mesh is placed between the peritoneum and posterior rectus sheath whereas intraperitoneal repair is the one in which mesh is placed from inside the peritoneal cavity and fixed to anterior abdominal wall[7]. Out of these, onlay & sublay are routinely practiced. The preperitoneal (sublay) mesh hernia repair was initially mentioned by Rene Stoopa, Jean Rives, and George Wantz. Contemporary surgeons consider this technique to be the gold standard for the open repair of ventral hernias 8. Onlay repair is believed to be easily performed and takes less time of operation, but it is associated with a higher incidence of complications, whereas Sublay repair, is most efficient in terms of lower recurrence rate 10. However, it remains unclear

which technique is superior. This study aims to compare the outcome of the onlay versus sublay mesh repair for ventral hernia, in terms of post-operative pain, mean hospital stay, return to basic activity, complications including Seroma, Hematoma, SSI (surgical site infection), and recurrence. The results of this pilot study will help in guiding and establishing institutional evidence-based practices for our setup.

AIM AND OBJECTIVES

AIM

To compare onlay vs sublay mesh repair techniques for ventral hernias in patients coming to Sharda hospital

OBJECTIVES

PRIMARY OBJECTIVE

To compare onlay mesh repair with sublay mesh repair techniques in ventral hernias for postoperative pain (VAS score), duration of hospital stay, and complications related to the Hernia surgery (Seroma, Hematoma, Wound Infection) at Sharda hospital.

SECONDARY OBJECTIVES

Patients operated by both techniques were assessed for-

1. Time required to return to work

2. Recurrence.

MATERIALS AND METHODS

STUDY CENTRE:

School of Medical Sciences & Research, Sharda hospital, Greater Noida

DURATION OF STUDY:

December 2019 to April 2021

STUDY DESIGN:

A prospective analytical and randomized study comparing two groups of patients-. Group A patients (**Onlay mesh repair**, 30 patients) and Group **B** patients (**Sublay mesh repair**, 30 patients). 2 Groups A and B will be made, each having 30 patients. The outcomes were compared in terms of post-operative pain, hospital stay, return to work, and complications of surgery.

STUDY POPULATION: -

Adult Men and Women of all age groups with Ventral Hernias

SAMPLE SIZE: -

60 patients in two groups with 30 patients in each group: Group A (Onlay mesh repair) and Group B (Sublay mesh repair). From previous studies and literature reviews, the prevalence of ventral hernia was 3.7% -28%. Our institutional previous year's surgery records evaluation and assessment concurred with

an initial value of the range of prevalence. The prevalence was therefore 3.7% ~/= 4%. Absolute error was=5% as per universal statistical standards. The sample size was calculated by using the WHO sample size calculator with Power of test (1-β) =95%, Level of significance (α)=5%,

Sample size was calculated by the formula given below

$n = (Z_{\alpha/2}+Z_{\beta})^2 * (p_1(1-p_1)+p_2(1-p_2)) / (p_1-p_2)^2$,

where $Z_{\alpha/2}$ is the critical value of the Normal distribution at $\alpha/2$ (e.g. for a confidence level of 95%, α is 0.05 and the critical value is 1.96), Z_{β} is the critical value of the Normal distribution at β (e.g. for a power of 80%, β is 0.2 and the critical value is 0.84) and p_1 and p_2 are the expected sample proportions of the two groups. Where n is the sample size, Z=1.96 (constant), P= prevalence, e=error (precision).

The sample size was calculated as 30 ± 30 = 60 patients.

Method of recruitment: Inclusion and Exclusion Criteria

Inclusion Criteria:

- All patients with the ventral hernia came during the study period excluding the exclusion criteria patients.
- All Gender
- Age > 18yrs

Exclusion Criteria:

- Pregnancy
- Terminal Illness
- Malignancy
- Collagen Diseases
- H/O Anti Retroviral Therapy
- H/O Active / Open Pulmonary Tuberculosis
- H/O Anti Neoplastic Therapy
- Diffuse skin Disease
- Inguinal, femoral, obturator, parastomal, and lumbar hernias are not included in the study.
- Patients with peritonitis are not included in the study.
- Strangulated hernias are not included in the study.
- Recurrent ventral hernia
- Patient's refusal.

Investigation Details

All Patients were subjected to baseline investigations. Written informed consent was taken from every patient included in the study.

Methodology

60 patients presenting to the School of Medical Sciences & Research, Sharda Hospital, Greater Noida between December 2019 to April 2021 with a ventral hernia and falling within the inclusion criteria were randomized into 2 groups namely A group for onlay and B group for sublay mesh repair equally in each. All patients were investigated as per the need and protocol. Patients falling within the selection criteria and giving consent were included in the study. Randomization was done by the closed envelope method. Pre-anesthetic check-up and surgical fitness were taken. Once PAC fitness was done patients were asked to pick up one of the sealed closed envelopes having the surgical technique of onlay or sublay mentioned on a piece of paper hidden inside the envelope. This consequently grouped them either in group A or group B. Patients of both groups received the same pre and postoperative antibiotics namely injection Ceftriaxone 1 gram intravenous twice daily. Both group patients were operated on in the identical set of conditions in operation theatre under strict asepsis viz. use of fresh sterile gloves prior to mesh handling.

Data collection methods:

This is a prospective, analytical randomized study in SMS&R, Sharda Hospital, Greater Noida.

Data were collected and compiled in windows EXCEL sheet format and updated with each patient at follow-up.

Written informed consent was obtained from all the patients with a detailed explanation of the procedure going to be performed on them, the risks and complications involved and the advantages and disadvantages of the same, and patients were chosen randomly for the procedure using the closed envelope lottery method.

A detailed history was taken & a clinical examination was performed and a complete diagnosis is made. Lab and radiological investigations were done for fitness / PAC along with specific tests as needed.

Patients were prepared for surgery. The assessment was made & data was collected for:

- Post-operative pain (Day 1, Day 3, Day 10) – Visual analog scale
- Duration of hospital stay
- Time required to return to work
- Complications (Seroma, Hematoma, wound infection, Recurrence)

OPERATIVE TECHNIQUE STEPS

Onlay repair:

Group A (onlay mesh repair)

Under strict aseptic precautions, parts were painted and draped. The skin incision was made according to the type of hernia. A skin incision will be made directly over the hernia defect for primary ventral hernia, but for secondary ventral hernia skin, the incision will be made by removing the old scar and just equal to the size of the defect. Dissection will be performed at the subcutaneous plane 4-6 cm around the defect or according to each type. The sac will be dissected, the contents will be reduced back into the abdomen, and the sac will be excised for anatomical repair. The anterior abdominal wall aponeurosis will be closed using continuous polypropylene with repeated interrupted sutures. The mesh will be stretched over the whole dissected abdominal aponeurosis until 5-7 cm around the defect and will be fixed to the anterior rectus sheath with a polypropylene 2/0 suture. The sutures will be taken with good bites of the aponeurosis and the mesh. Multiple scattered simple sutures will be used for the fixation of the mesh. A suction drain will be left in front of the mesh. The subcutaneous tissue will be closed with vicryl 3/0. The skin will be closed either with subcuticular polypropylene 3/0 or interrupted silk 3/0, and the drain will be removed when the amount of drainage reaches less than 30 ml/day

Sublay repair

Group B sublay 'retro muscular' mesh repair

(The Rives-Stoppa technique). The skin incision same as in onlay repair for ventral secondary hernias, but for primary ventral hernias longitudinal or transverse incision. The hernial sac will be opened during the excision of the overlying skin. The redundant hernial sac will be excised and the peritoneal defect will be closed without tension using continuous sutures of vicryl. If there will be insufficient tissue to close this layer, it will be buttressed from behind with the omentum to keep autogenous tissue between the posterior

surface of the mesh and the underlying bowel to prevent adherence and the risk of fistula. Once the hernial sac had been dealt with, the plane for eventual placement of the mesh will be entered by palpating and exposing the medial edge of the rectus muscle, making an anterior release through the anterior rectus sheath, exposing the medial edge of the rectus muscle. The preperitoneal space will be then developed by both blunt and sharp dissection laterally to the midclavicular line up to the lateral edge of the rectus muscle on one side and then on the other side for large hernial defects. The cranial and caudal extent of the dissection should extend 4-6 cm above and below the margin of the hernial defect. (Component separation).

The mesh will be then tailored in the required dimensions and placed in the space. The force of abdominal pressure holds the prosthesis against the deep surface of the muscle, thereby achieving a sort of 'suture by apposition'. Fixation of the mesh to the overlying muscle and fascia will be carried out with 2/0 polypropylene interrupted sutures. A suction drain will be placed in front of the mesh. An attempt will be made to close the anterior rectus sheath over the mesh, even if it required external tension at the suture line; this is done to place another layer of autogenous tissue between the anterior surface of the mesh and the subcutaneous tissue. Complete closure may not be possible in large hernias, but the defect eventually heals well. A second suction drain will be placed in the subcutaneous plane in all cases and will be removed when the drainage reaches less than 30 ml/day.

DISCHARGE CRITERIA AND FOLLOWUP

Post-operatively patients were discharged on the 5^{th}-7th postoperative day with removal of drain when the drainage reaches less than 30 ml/day.depending upon the patient's condition and they were followed in the outpatient department (surgery

OPD) on 14th and 28th & 120 postoperative days and clinically assessed for wound edge necrosis, wound infection (Development of postoperative fever, incision site redness and tenderness, wound discharge and the local abscess was labeled as surgical site infection SSI), seroma formation (Collection of the pocket of clear serous fluid formed post hernia repair) and hematoma formation (localized collection of blood outside the blood vessels, due to intraoperative surgical trauma to blood vessels). Complications were diagnosed clinically in all cases. All the patients will be followed on the $2^{nd,}$ 7^{th}, 14^{th}, and 28 th postoperative days for wound infection. Follow-up was ensured by taking mobile numbers of patients. Data were analyzed using a software package for statistical analysis (SPSS v 21 operating on windows 10.). Mean and SD was calculated for quantitative variables like age and operation time. Qualitative variables like wound infection, seroma formation, and hematoma formation were recorded in terms of frequency percentage. The Chi-square test was applied for qualitative variables. An Independent sample t-test was applied for quantitative variables. A *p*-value of ≤ 0.05 was considered significant.

STATISTICAL ANALYSIS

All the patient data are collected in proforma, entered in an excel sheet, and analyzed using SPSS v21 operating on windows 10. The patient's demographic data are presented as frequency, percentage, mean and standard deviations presented using

tables, pie charts, and bar diagrams. The mean difference between the continuous variables of the two groups is assessed using an unpaired independent t-test and the follow-up data within the group are analyzed using paired t-test. a p-value of <0.05 was considered statistically significant.

RESULTS

OBSERVATION AND ANALYSIS

In the current study 60 patients having ventral hernia were operated on after informed consent by random allocation of 30 patients to group A Onlay mesh repair and 30 patients to group B Sublay repair.

Out of total number of patients studied 32 (53.33%) were females and 28 (46.67 %) males.

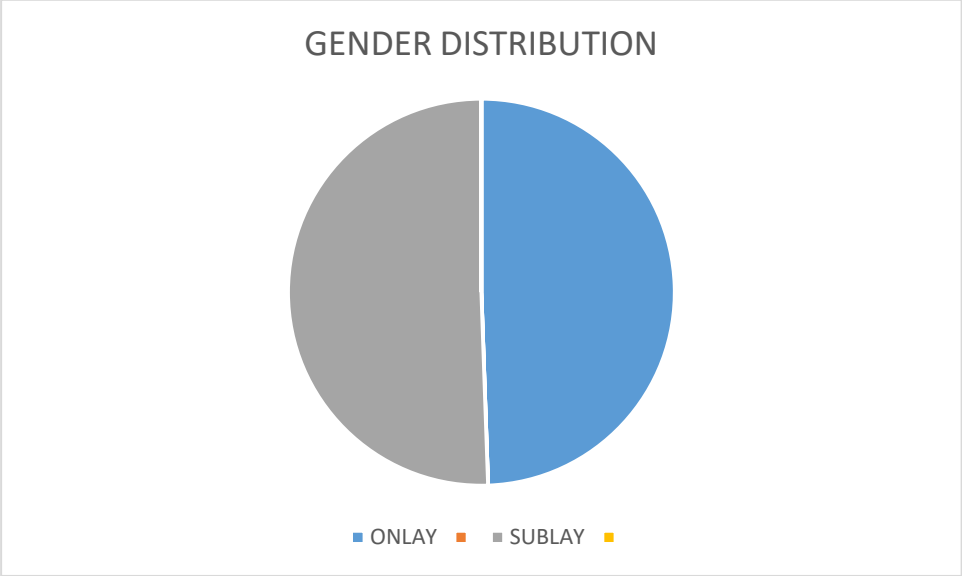

Fig.12- pie chart showing gender distribution in the study cases.

In this study out of the two treatment groups,the mean age for ventral mesh hernia repair was 43.43±14.63yrs, while the mean age in group A for ONLAY mesh hernia repair was 43.33±15.93yrs and in group B for SUBLAY mesh repair was 44.3±12.99yrs which was not statistically different.(p>0.05)

Table 1- Showing the age distribution of patients included in the study

Age group (in years)	No. of patients
20-30	12
31-40	18
41-50	15
51-60	8
>61	7

43

Table 2: Showing mean age of participants in the present study

	N	Minimum	Maximum	Mean	SD
Age	60	21.0	85.0	43.43	14.63

Table 3: Mean age difference between two groups using student t-test

	Surgery type				
	ONLAY		SUBLAY		t-test (p-value)
	Mean	SD	Mean	SD	
Age	43.33	15.93	44.3	12.99	0.04735 (0.48326)

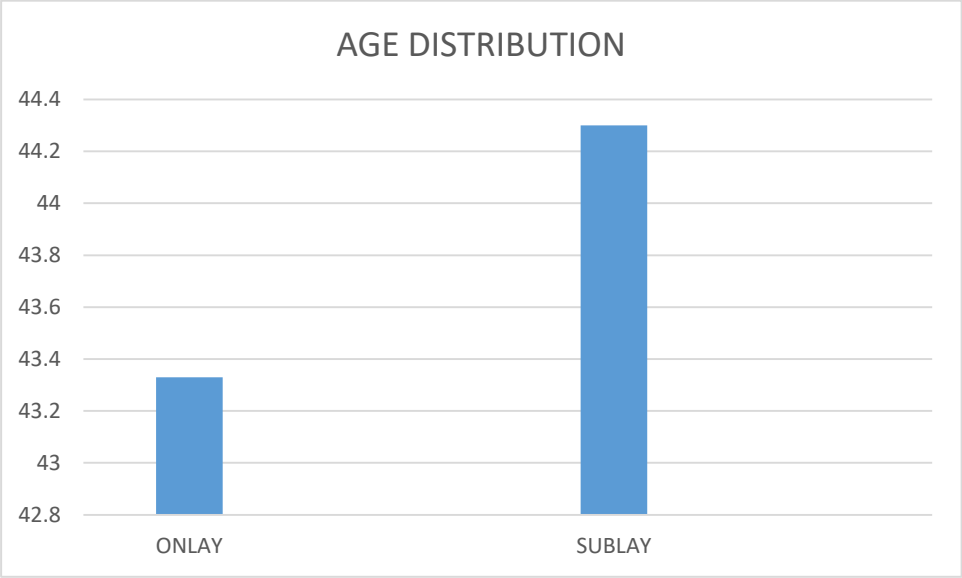

Figure 13: Mean age difference between two groups

DURATION OF HOSPITAL STAY

Onlay repair- Average stay was 11.6 days, the standard deviation was 6.46

Sublay repair- Average stay was 10.53 days , standard deviation was 7.14

Table 4: Showing the hospital stay of the patients in the two groups

DAYS	ONLAY	SUBLAY
MEAN	11.6	10.53
STANDARD	6.46	7.146

DEVIATION		
MAXIMUM	35	42
MINIMUM	3	5

Table 5: Showing the mean hospital stay of the patients

	N	Minimum	Maximum	Mean	SD
Hospital stay	60	3	42	11.065.	6.96.

Table 6: Comparison of mean hospital stay between the two groups using student t-test

	Surgery type				
	ONLAY		SUBLAY		t-test (p-value)
	Mean	SD	Mean	SD	
Hospital stay	11.6	6.46	10.53	7.146	0.0624(0.47796)

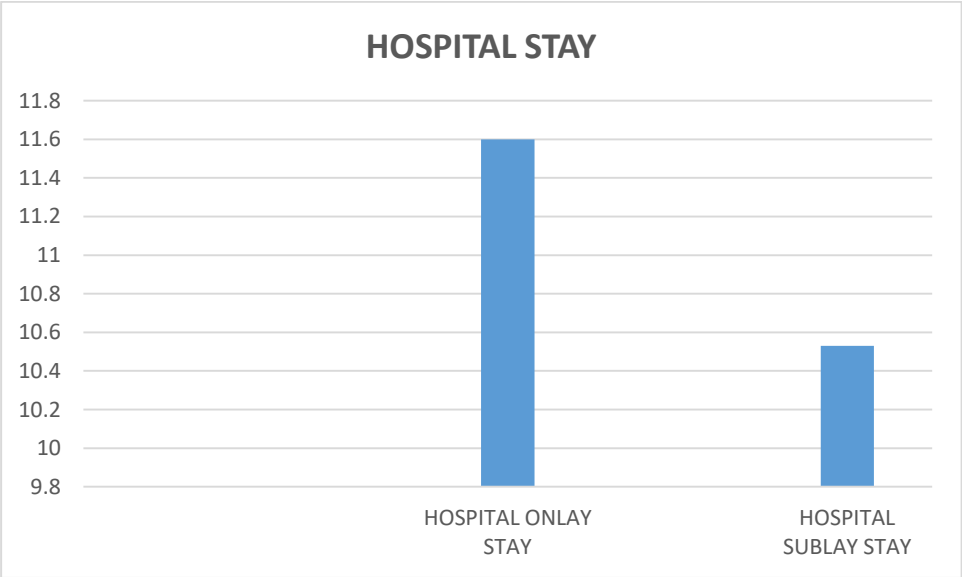

Figure 14: Comparison of mean hospital stay between the two groups

Table 7: Showing the change in mean VAS score of the patients post-operative period

	N	Minimum	Maximum	Mean	SD
Post OP pain day2	60	1.0	5.0	1.45	1.03
Post OP pain day7	60	0.0	4.0	0.86	0.49
Post OP pain day10	60	0.0	1.0	0.43	0.23

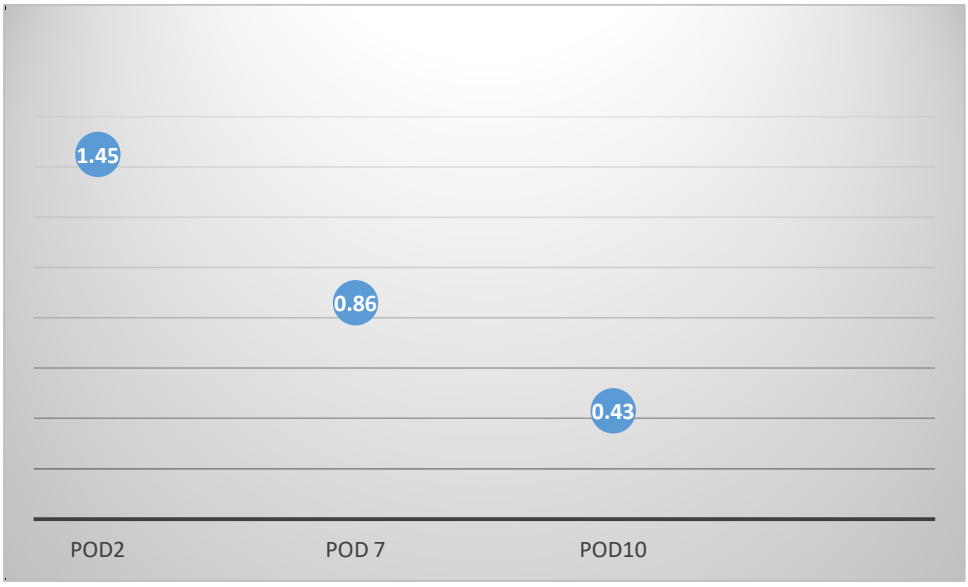

Figure 15: Showing the change in mean VAS score of the patients post-operative period 46

Table 8: Comparison of mean VAS score between two group patients using student t-test

	Surgery type				
	ONLAY		SUBLAY		t-test (p-value)
	Mean	SD	Mean	SD	
Post OP pain day2	2.30	.97	2.26	.88	0.01236(0.495)
Post OP pain day7	0.73	.78	0.9	.69	0.37059(0.3732)
Post OP pain day10	0.2	.01	0.30	.20	0.236(0.271)

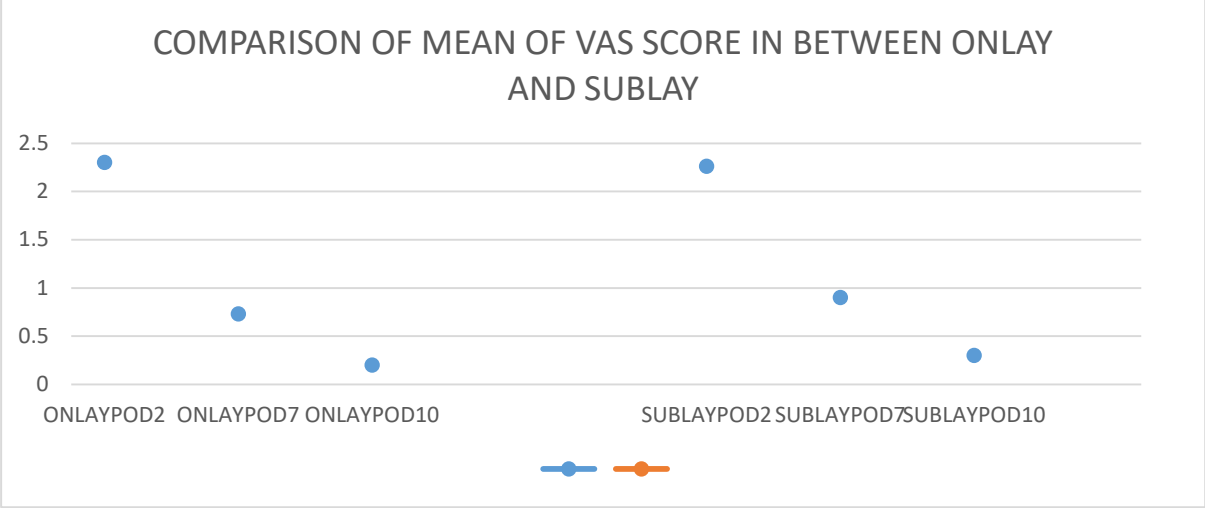

Figure 16: Comparison of mean VAS score between two group patients

POST OPERATIVE COMPLICATIONS

Regarding post operative complications

Pain VAS score 2 was in maximum (15) patients on 2nd post operative day ,0 score was in maximum (14) patients on 7th post operative day in onlay repair

VAS score 2 was in maximum (12) patients on 2ND post operative day,1 score was in maximum patients on 7th post operative day in sublay repair.

Seroma - 9 in onlay, 7 in sublay; Hematoma 1 in onlay , none in sublay ,SSI 5 in onlay ,2 in sublay

Table 9: Showing the overall presence of seroma among patients

		Frequency	Percent
Seroma	Absent	44	73.3
	Present	16	26.7
	Total	60	100.0

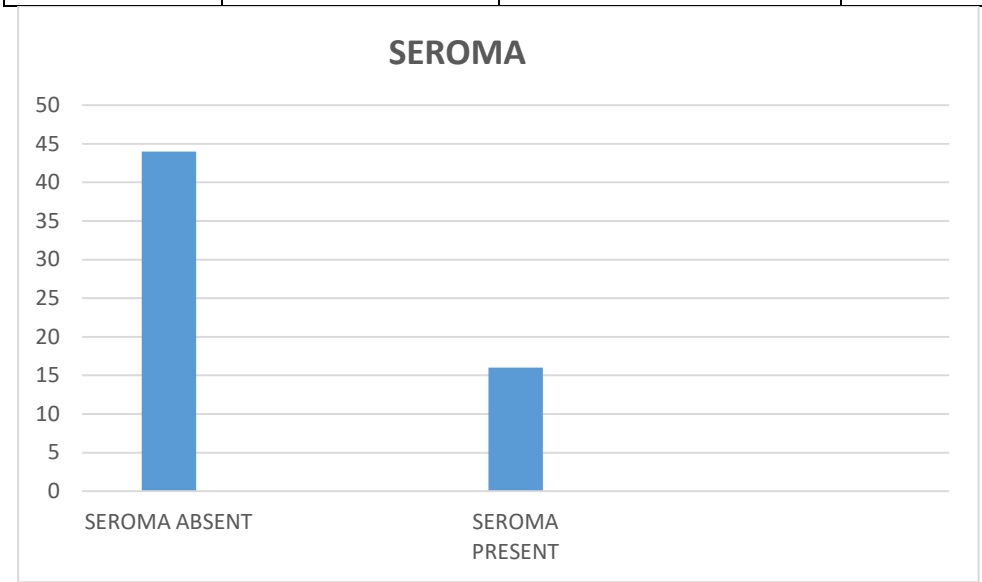

Figure 17: Showing the overall presence of seroma among patients

Table 10: Showing the overall presence of hematoma among patients

		Frequency	Percent
Hematoma	Absent	59	98.3
	Present	1	1.7
	Total	60	100.0

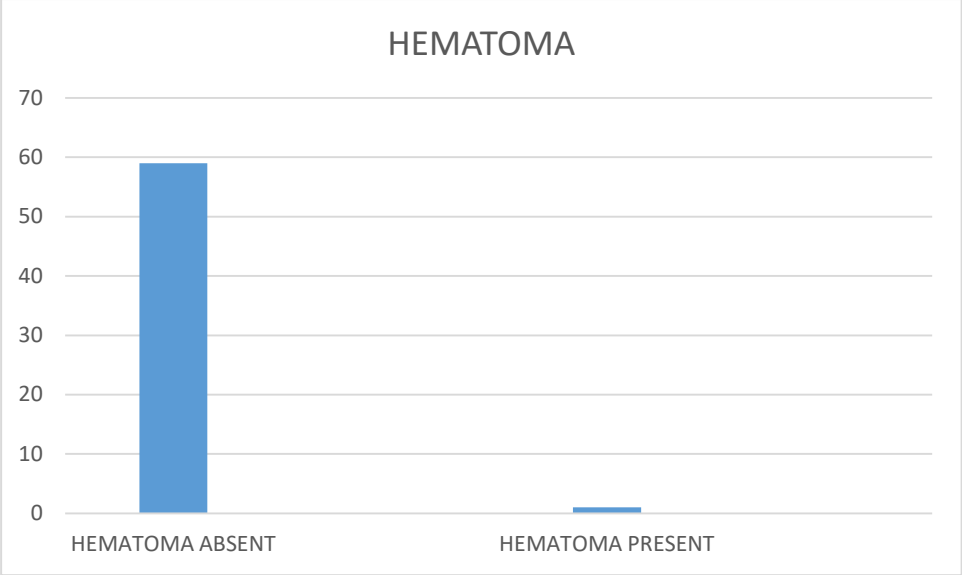

Figure 18: Showing the overall presence of hematoma among patients

Table11: Showing the overall presence of SSI among patients

		Frequency	Percent
SSI	Absent	53	88.3
	Present	7	11.7
	Total	60	100.0

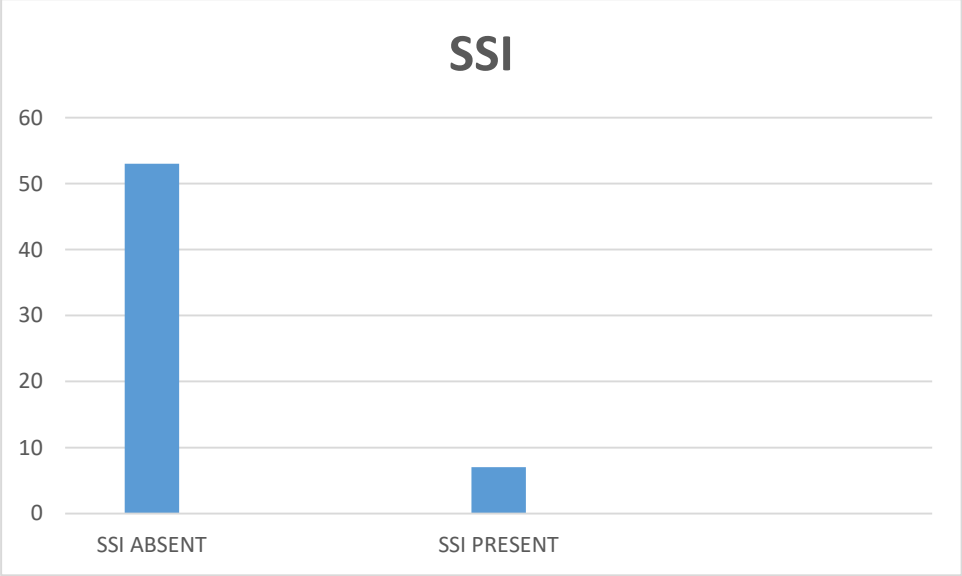

Figure 2: Showing the overall presence of SSI among patients

Table 12: Comparison of the presence of complications between two groups using the chi-square test

		Surgery type				
		ONLAY		SUBLAY		Chi-square (p-value)
		Count	Column N %	Count	Column N %	
Seroma	Absent	21	70.0%	23	76.7%	0.3409 (0.559305)
	Present	9	30.0%	7	23.3%	
Hematoma	Absent	29	96.7%	30	100.0%	0.3509 (0.553617)
	Present	1	3.3%	0	0.0%	
SSI	Absent	25	83.3%	28	93.3%	1.4555 (0.227643)
	Present	5	16.7%	2	6.7%	

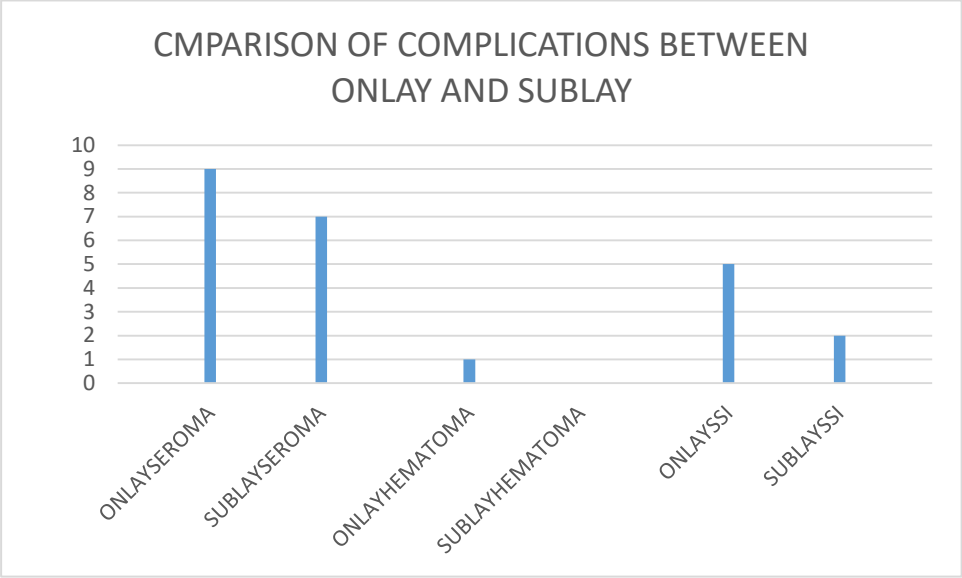

Figure 20: Comparison of complications between ONLAY and SUBLAY

Table 13: Comparison of the presence of complications between two groups

COMPLICATIONS	ONLAY	SUBLAY
SEROMA	9	7

HEMATOMA	1	0
SSI	5	2
RECURRENCE	0	0

50

OTHER COMPARISONS BETWEEN THE TWO GROUPS

Table 14: Gender distribution between two groups

GENDER	**ONLAY**	**SUBLAY**
FEMALE	**16**	**16**
MALE	**14**	**14**
TOTAL	**30**	**30**

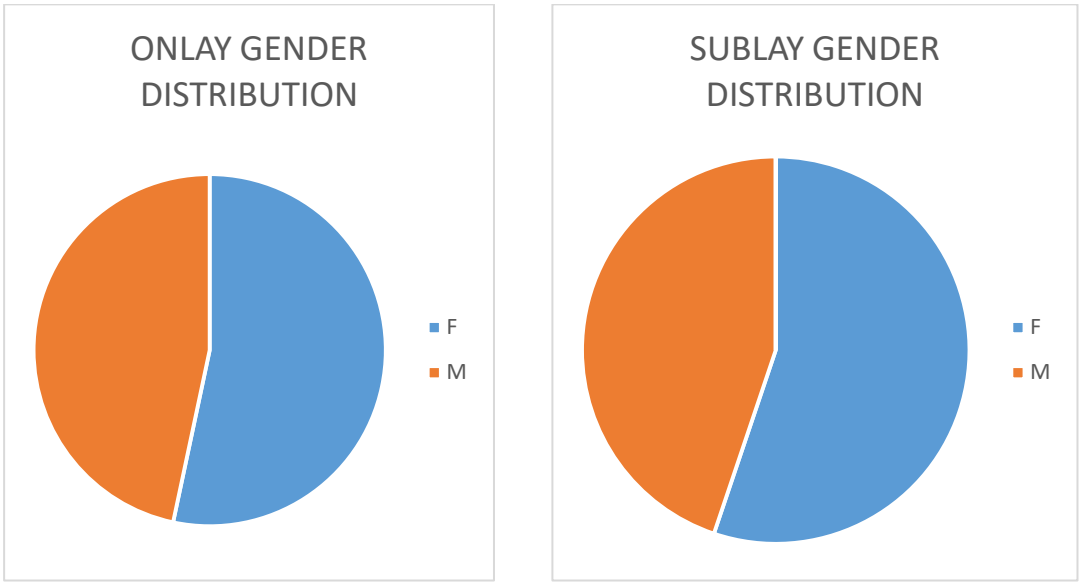

Figure 22a,b: Showing the gender distribution in both groups

Table 15: Different types of hernia distribution between two groups

HERNIA TYPES	**ONLAY**	**SUBLAY**
INCISIONAL	**16**	**12**
PARAUMBILICAL	**12**	**14**
EPIGASTRIC	**2**	**4**
TOTAL	**30**	**30**

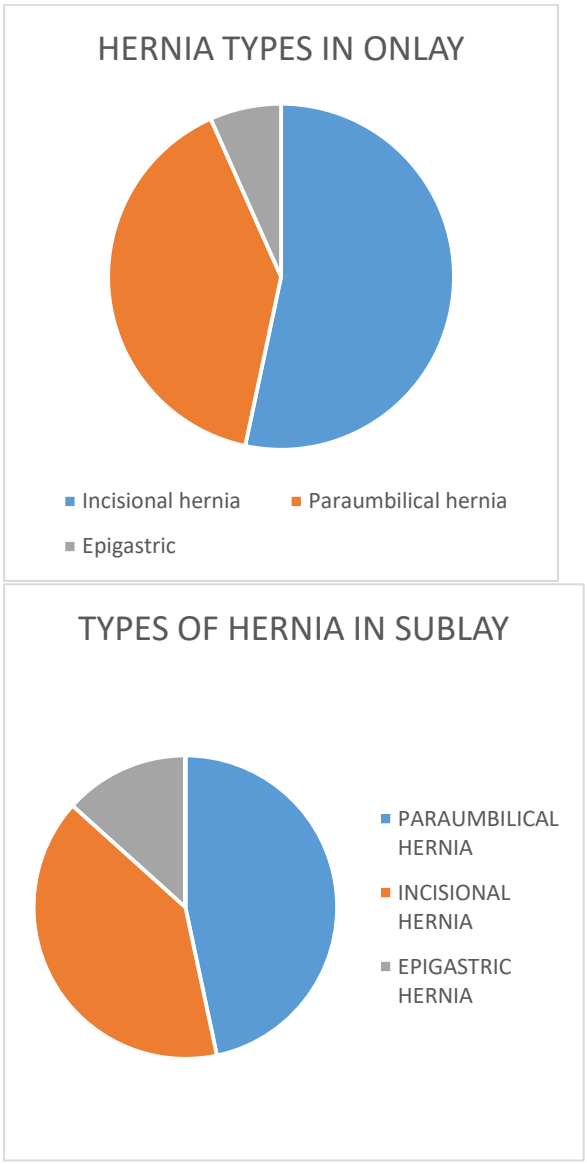

Figure 23 a,b: Showing the types of hernia distribution in both groups

Regarding return-to-work post-surgery

Onlay repair- average duration was 5.13 weeks, standard deviation was 2.31

Sublay repair-average duration was 5.3 weeks ,standard deviation was 2.79

Table 16: comparison of return to normal activities between two groups

	ONLAY	**SUBLAY**
MEAN (WEEKS)	**5.133**	**5.3**
SD	**2.315366**	**2.79655**

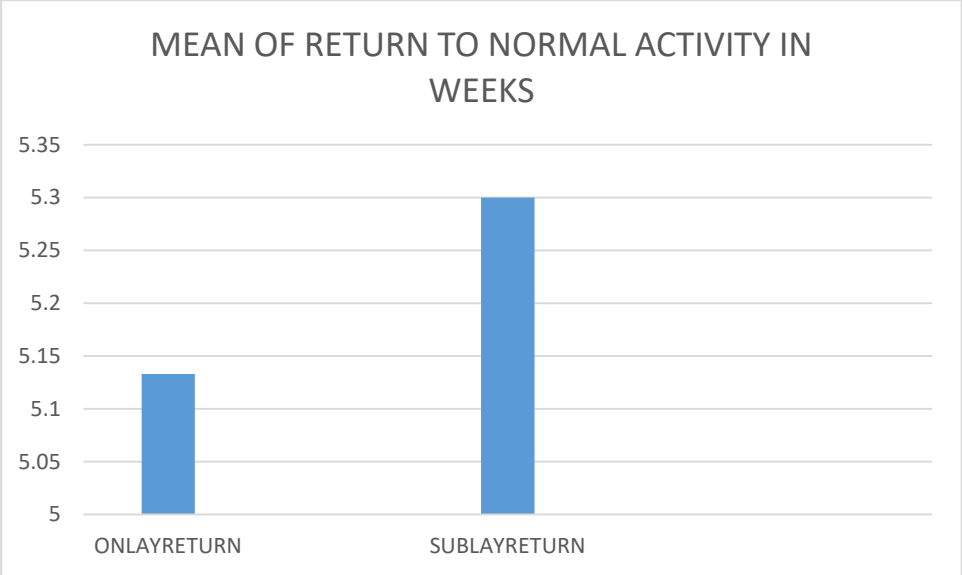

Figure 24: Showing comparison of the mean of return to normal activity in two groups

DISCUSSION

In the current study 60 patients having ventral hernia patients studied 32 (53.33%) were females and 28 (46.67 %) males. Incidence of ventral hernia greater in females 32 (53.33%) Incidence greater in age group of 31-40. The majority of our patients were females because of the previous gynecological surgeries like Caesarean section or hysterectomy or ectopic pregnancy precipitating the incisional hernias. In our randomized controlled trial, 32 (53.33%) out of 60 patients were female. The mean age of patients was 43.33 years and the standard deviation was 15.93 years for onlay while it was 44.3 years and the standard deviation was 12.99 years for sublay mesh repair A similar study by Gondal et al of Lahore, Pakistan in 2012 reported "a mean age of 40.07 ± 10.71 while another study by Bessa et al in 2013 in Egypt found that the age was 38.2 ± 7.8 in patients presenting match fixes. with ventral abdominal wall hernias" [9,10]. "Introduction to westerners late with a study from the United States by Shahan et al reporting 57.3 years of age" [11]. In our study, the youngest patient in onlay was 21 years and oldest was 85 years whereas in sublay youngest patient was24 years while the eldest patient was 75 years old.

Time duration, cost of surgery, and technical expertise is more in sublay mesh repair than in onlay mesh repair

"Regarding the duration of hospital stay- Duration of hospital stay was measured in both the groups. Onlay repair- Average stay was 11.6 days, the standard deviation was 6.46 while in Sublay repair- Average stay was 10.53 days , standard deviation was 7.14. The duration of postoperative hospital stay is an important component for comparing efficacy of procedures as it is a strong indicator of the morbidity on part of the patient and an indirect evidence of the presence or absence of postoperative complications. The duration of hospital stay post ventral hernia mesh repair has also been a matter of contention in the preceding years. Conflicting reports have arisen in the existing surgical literature, with regard to the period of stay in hospital, as a tool for comparison of sublay and onlay mesh repair techniques. Jat MA et al and Leithy et al, amongst other international authors, have found the period of post-operative

hospital stay to be lower in the sublay group than in the onlay group.7,8 However, Godara et al claim the contrary, with the duration of hospital stay, in their study being 6.8±1.5 days for the sublay group and 4.6±1.30 for the onlay group".[6]

Regarding return-to-work post-surgery-Onlay repair- average duration was 5.13 weeks, standard deviation was 2.31 while in Sublay repair-average duration was 5.3 weeks, standard deviation was 2.79.

Post operative Pain - VAS 2 was in maximum (15) patients on 2nd post operative day ,0 score was in maximum (14) patients on 7th post operative day in onlay repair whereas VAS 2 was in maximum (12) patients on 2ND post operative day,1 score was in maximum patients on 7th post operative day in sublay repair.

About Postoperative complications- Wound problems are a common problem in the repair of ventral hernia prosthetic. Some authors prefer the development of these problems to be more of an onlay technique compared to the retromuscular approach. The books available also have discussions that do not show any significant differences. Seroma and ulcer infections are major complications that are encountered after the correction of the ventral hernias mesh. According to several scientific literature, seroma is a much more common complication of the onlay process than the retromuscular process. Frequent serum growth in the onlay mesh correction may be due to two reasons - an increase in the disintegration of the subcutaneous tissue during surgery and a strong external contact (mesh) on the subcutaneous tissue.

Surgery for ventral hernias using prosthetics involves a lot of separation to create appropriate anatomical planes for mesh placement. This involves the possibility of serous or haematogenous accumulation after surgery, thus suggesting, although not necessarily, that it is diluted for some time after surgery. We tend to include drains in all of our situations under research. Complications were reported in 18 patients (60.00%) in onlay group and 13 patients (41.00%) in sublay group, the difference being statistically significant. Seroma was found 9 in onlay, 7 in sublay, Hematoma was 1 in onlay , none in sublay,SSI was 5 in onlay ,2 in sublay.

Demetrashvili et al reported "a complication rate of 50.0% versus 22.1% in onlay versus sublay groups respectively with $p<0.001$" [8]. "The seroma formation in the two groups was statistically insignificant in our study with 9 in onlay and 7 in sublay.

our results were similar to the study by Bessa et al who reported that the seroma formation in both groups was statistically insignificant with p=0.494" [10]. "Hematoma formation in both groups in our study was 1in onlay and none in sublay between the two groups which was statistically insignificant (p<0.553). Similarly Demetrashvili et al and Timmermans et al reported no significant difference between the two groups with p=1.0 and p=0.19 in the two studies respectively" [8,16]. "Finally, the wound infection in our study was statistically insignificant between the two groups with 5 in onlay and 3 in sublay". Similar results were reported by Afzal et al (p=0.167), Demetrashvili et al (p=0.44) and Dhaigude et al (p=0.307)6,8,10. Contrary to these studies by Ibrahim et al (p=0.010), Timmermans et al (p=0.05) and Naz et al (p=0.04) have reported "a statistically significant difference between the two groups in terms of frequency of wound infection with sublay repair reported to be superior technique" [15-17]. Saeed et al reported "that wound infection was more frequent in the sublay group with a statistically significant difference (p=0.019)" [14]. Serious complications after ventral hernia repair are uncommon. It is imperative to inquire about a detailed surgical and medical history of the presence of chronic cough due to COPD, asthmatic bronchitis, chronic constipation, and urinary retention especially in the elderly due to BPH. . Laparoscopic hernia repair has also gained widespread acceptance in modern times but in a poor country with resources like ours, the necessary armamentarium is not available everywhere. Although the duration of the operation is long in sublay correction, it has been found to be the best method in our study and may be a viable alternative to the onlay routine for correcting ventral hernias of the abdomen. Recurrence of Hernia In our study mainly involves observing patients following transient recurrence, if any, which occurs within a month and 3 months after correction of ventral hernia. In our study, there was no recurrence, but the follow-up time was variable and shorter to comment. Usher [12] reported "a zero-fold recurrence in 48 patients treated with polypropylene mesh correction". Jacobus WA et al [42] reported "a 10-year recurrence of 63% in anatomical correction and 32% in mesh correction". Therefore the repetition rate varies in different subjects but all subjects prefer match adjustments to reduce the repetition rate.

More work is needed on this topic with a larger sample size for the longer follow-up to predict recurrence rates, chronic illnesses, and problems related to ventral hernia repair. Scientific data show a higher rate of recurrence of a hernia after suture

correction compared to match correction. Therefore, match fixation requires specialized treatment in the treatment of ventral hernia. Either way - retromuscular or better onlay, considering the recurrence of a hernia, is a question that can be discussed. A ventral hernia is still one of the most common complications after abdominal surgery.

Hernias are associated with reduced health quality and higher social and economic costs. Appropriately the treatment of this disease is often one of the major problems of current surgery. Despite the fact that various surgical techniques to correct ventral hernia are available, the best way to provide a permanent repair for such hernias has not been determined. The techniques used to correct ventral hernias are usually developed in a realistic, experienced way. In ventral hernias repair techniques where sutures are used, the ends of the feature are integrated, which may lead to excessive stress and subsequent degeneration of the wound or incisional herniation due to tissue ischemia and suture cutting through tissue. . With an artificial mesh, defects of any size can be fixed without inconsistencies. Numerous clinical studies observe that mesh strengthening during correction of ventral hernia has been shown to improve long-term outcomes and a high degree of recurrence (12 to 54%), which is associated with suture correction. Due to this current treatment option mesh adjustment. The mesh correction can be performed in both methods, open and laparoscopic methods. With the use of mesh the most common open methods are: retromuscular sublay adjustment and onlay adjustment. Today no agreement has been reached as to which method is best. Types of mesh adjustments, as well as potential areas of mesh placement address the uncertainty and lack of evidence to support any adjustment.

The anatomic shape of the mesh position contributes to the muscle response, muscle mass, and strength of the abdominal wall. The factors mentioned above are important during hernia recurrence and development of postoperative complications The purpose of the current clinical study was to evaluate the results of two surgical procedures (retro muscular mesh correction and onlay methods) and to compare them with the results of comparable international studies. The most common ventral pain studied in this exercise was an incisional hernia, umbilical hernia, and epigastric hernia. The distribution of ventral hernia patients in each study group in our work showed a focus on women. However, there were no statistically significant differences between the two study groups regarding age or gender.

The most common clinical presentation for patients with ventral hernias is abdominal pain, swelling of the abdomen, or the first presentation being one of the problems of ventral hernia- obstruction, constipation, or choking. The latter was not considered in my study as major complications often produce very different results from what is seen in the correction of elective ventral hernia. All of our patients have experienced abdominal pain or bloating. Working time is an important factor in any surgical procedure. Indirect diagnostic tests are performed on a patient, as long-term surgery in any surgery has its own set of problems, including anesthesia-related or surgical-related complications. Numerous studies comparing onlay fixation and sublay prosthetic ventral hernia repair have shown significant results with respect to the duration of operation of any of these techniques. Venclauscas et al, Demetrashvili et al, Godara et al have all shown, in their separate studies, that the normal working time to repair a sublay mesh is greater than that in the case of an onlay mesh repair. These authors have found significant differences between the two. [3-6].

CONCLUSION

Ventral hernias are a common occurrence in surgery. Via ventral hernia the mesh repair has taken a toll on common tissue and other historical remedies, in modern surgery. Laparoscopy is becoming an important tool in repairing ventral hernias, although open hernia repair did not completely replace the back seat. The net repair technique is important in relation to the success of ventral hernias surgery. The adjustment of the sublay mesh has the upper hand of fixing the onlay net as there is a shorter drain time after surgery thus reducing the patient's illness. The operation time, however, is short in the case of onlay mesh adjustment. Sublay mesh fixes have a lower rate of post-operative problems than onlay mesh fixes, although more research is needed to choose the best of these two processes. The sublay mesh hernioplasty is on the edge over the onlay mesh hernioplasty to repair the ventral abdominal hernia in terms of efficiency, safety, and reliability. The proportion of lessor frequency of postoperative complications in sublay mesh hernioplasty certainly outweighs the disadvantages of long-term operation.

The present study showed that sublay mesh repair is equally effective if not superior to onlay mesh repair in terms of the lesser hospital stay, early return to normal activity and the lower postoperative pain score. Also there was lower incidence of the post-operative complication, seroma, hematoma and SSI among the sublay mesh repair technique compared to the onlay mesh technique repair. No significant difference in the complications between the two groups and no recurrence was documented in the present study.

Ethical consideration and informed consent:

All the surgical procedures followed were in accordance with the ethical standards as per the guidelines laid down by the Central Ethical Committee of SMS&R, Sharda hospital IEC, and also the ICMR. The anonymity of human subjects has been maintained throughout. Written informed consent will be obtained from all the patients with a detailed explanation of the procedure going to be performed on them,

the risks and complications involved, and the advantages and disadvantages of the same Both groups' patients were monitored for post-operative pain, complications like seroma, hematoma, SSI, duration of hospital stay and followed up for a return to normal activities. Data were tabulated and analyzed.

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