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Original Research Article

Onlay and sublay mesh repair in incisional hernias: our experience from GSL medical college and hospital, Rajahmundry

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ABSTRACT

Background: The incidence of post-operative wound infection and wound-related complications due to mesh repair aimed at continuing research into the optimal method of treatment of these hernias. The two operative techniques most frequently used in case of ventral hernia are the onlay and sublay repair. However, it remains unclear which technique is superior. Objectives were to compare the morbidity and complications associated with onlay and sublay mesh repair in the management of incisional hernias.
Methods: The present descriptive observational study was carried out in patients admitted in surgical wards at GSL medical college and hospital, Rajahmundry who are clinically diagnosed to have incisional hernia. The study was carried out from January to November 2019. Data was analysed with SPSS 23.0.
Results: Seroma was seen in 12% and 8% respectively from onlay and sublay group and this proportion of seroma was more in onlay group as compared to sublay group (<0.05). Postoperative recurrence of hernia was seen in both groups equally. Number of days of hospitalization in sublay group was less as compared to onlay group. Deep surgical site infection (SSI) was seen in 8% and 4% respectively from onlay and sublay group.
Conclusions: Sublay mesh repair has a lower rate of post-operative complications than onlay mesh repair, deep SSI leading to infection of mesh is higher in on-lay mesh repair. Number of days of hospitalization in sublay group was less as compared to onlay group.

Keywords: Incisional hernia, Onlay, Sublay mesh repair, Outcome, Complications

INTRODUCTION

Ventral hernia such as para-umbilical and epigastric hernias are among the most common surgical problems as well as the most common surgical operations performed worldwide.[1] The incidence of post-operative wound infection and wound-related complications due to mesh repair aimed at continuing research into the optimal method of treatment of these hernias.[2,3] The two operative techniques most frequently used in case of ventral hernia are the onlay and sublay repair. However, it remains unclear which technique is superior.[4] According to some researchers, the sublay technique has proven much more effective than the onlay with low recurrence rates and minimum rates of complications.[5,6] Among its disadvantages is the complexity of the surgery, longer duration of surgery and likely persistence of chronic abdominal pain.[5]

Complications of hernia include irreducibility is frequent and partial obstruction, strangulation, spontaneous ulceration, rupture. Considering the significant recurrence rate noted after various techniques for incisional hernia repair, the task of repairing this defect can challenge the scientific and artistic talents of the most experienced surgeon. Various types of repairs have been described, both anatomical and prosthetic. But the results have been disappointing with a high incidence of recurrence

between (30-50%) after an anatomical repair[6] and in between (1.5%-10%) following prosthetic mesh repairs.[7]

So, the present study was conducted with the objective of this study was to compare the outcome of the onlay versus sublay mesh repair for incisional hernia.

Objective

The objectives of the study were to compare the morbidity and complications associated with onlay and sublay mesh repair in the management of incisional hernias.

METHODS

The present descriptive observational study was carried out in patients admitted in surgical wards at GSL medical college and hospital, Rajahmundry who are clinically diagnosed to have incisional hernia. The study was carried out from January to November 2019.

Inclusion criteria

Inclusion criteria included who had age between 18-70 years, clinically diagnosed as incisional hernia and those willing to participate in study after informed consent.

Exclusion criteria

Exclusion criteria excluded from the study were-all patients below the age of 18 years, laparoscopic mesh repair, transverse incisional hernias and those not willing to participate in the study

Total 50 cases were studied during the above said scheduled period. The patients were randomly divided into two groups. Group A (Onlay mesh) and Group B (sublay mesh) repair carried out.

A proforma for study of all consecutive patients of incisional hernia will be used. The presentation, clinical findings and the management will be documented. The patient related factors of sex, age, presence and absence of obesity, cough, constipation, prostatism, diabetes, mellitus, glucocorticoid therapy, smoking status and abdominal surgical history will be recorded. Factors related to the operation including the surgical technique and the presence or absence of haematoma dehiscence and infection will be analysed. Hb%, BT, CT, DC, blood urea, serum creatinine, RBS/PPBS, FBS, ECG in all leads, chest screening, urine (albumin, sugar, microscopy) was carried out preoperatively.

Statistical analysis

Data was collected by using a structure proforma. Data entered in MS excel sheet and analysed by using SPSS 23.0 version IBM USA. Qualitative data was expressed in terms of proportions. Quantitative data was expressed in terms of mean and SD. Association between two qualitative variables was seen by using Chi square. Comparison of mean and SD between 2 groups was done by using unpaired t test to assess whether the mean difference between groups is significant or not. Descriptive statistics of each variable was presented in terms of mean, SD, standard error of mean.

RESULTS

Out of 25 subjects from onlay group, majority were from 31-40 years age group. i.e., 10 (40%) whereas in sublay group 13 i.e., 52% were from 31-40 years age group. In both group majority were from same age group (Table 1).

Proportion of males were 64% and 56% in onlay and sublay group respectively. Proportion of females were 36% and 44% in onlay and sublay group respectively (Table 2).

Postoperative complication like seroma was seen in 12% and 8% respectively from onlay and sublay group. This proportion of seroma was more in onlay group as compared to sublay group (<0.05) (Table 3).

Postoperative complication like deep SSI was seen in 8% and 4% respectively from onlay and sublay group. This proportion of deep SSI was almost equal in both the groups (p>0.05) (Table 4).

Postoperative recurrence of hernia was seen in both groups equally i.e., one case in each group (p>0.05) (Table 5).

Mean days of hospitalization in onlay group was 8.42±1.9 days whereas in sublay group it was 0.07±1.25 days. Difference in mean days of hospitalization between both groups was found to be highly significant (p<0.001). It means number of days of hospitalization in sublay group was less as compared to onlay group (Table 6).

Table 1: Distribution according to age in both groups.

Age (years)	Onlay		Sublay		Total
	Frequency	Percent (%)	Frequency	Percent (%)	
31-40	10	40	13	52	23
41-50	6	24	6	24	12
51-60	5	20	4	16	9
61-70	4	16	2	8	6
Total	25	100	25	100	50

Table 2: Distribution according to gender in both groups.

Gender	Onlay		Sublay		Total
	Frequency	Percentage	Frequency	Percentage	
Male	16	64.0	14	56.0	30
Female	9	36.0	11	44.0	20
Total	25	100.0	25	100.0	50

Table 3: Association of postoperative seroma with respect to procedure.

Seroma	Onlay		Sublay		Total	Chi square test	P	Inference
	Frequency	Percentage	Frequency	Percentage				
Present	3	12	2	8	5	4.01	0.048	Significant
Absent	22	88	23	92	45			
Total	25	100	25	100	50			

Table 4: Association of post-operative deep SSI with respect to procedure.

Deep SSI	Onlay		Sublay		Total	Chi square test	P	Inference
	Frequency	Percentage	Frequency	Percentage				
Present	2	8	1	4	3	2.03	0.54	Not significant
Absent	23	92	24	96	47			
Total	25	100	25	100	50			

Table 5: Association of post-operative recurrence with respect to procedure.

Recurrence	Onlay		Sublay		Total	Chi square test	P	Inference
	Frequency	Percentage	Frequency	Percentage				
Present	1	4	1	4	2	0.1	1 (>0.05)	Not significant
Absent	24	96	24	96	48			
Total	25	100	25	100	50			

Table 6: Comparison of mean hospitalization days between both groups.

Hospitalization days	Mean	SD	T	P	Inference
Onlay	8.42	1.9	-3.51	0.001 (≤0.001)	Highly significant
Sublay	7.01	1.25			

DISCUSSION

Surgical techniques for the repair of incisional hernias continue to evolve with advances in prosthetic materials and minimally invasive technology. However, the optimal technique for mesh placement has not been established and remains controversial. The main issue is increased risk of infection with the placement of a foreign body in the form of a mesh.

Age and sex wise distribution

Out of 50 subjects studied, majority were from 31-40 years age group i.e., 23 (46%). This is followed by 41-50 years age group i.e., 24%. Out of 25 subjects from onlay group, majority were from 31-40 years age group i.e., 10 (40%) whereas in sublay group 13 i.e., 52% were from 31-40 years age group. In both group majority were from same age group.

Proportion of males were 64% and 56% in onlay and sublay group respectively. Proportion of females were 36% and 44% in onlay and sublay group respectively. Mean age in onlay group was 51.8±12.6 whereas in sublay group it was 53.39±13.5 years. The difference in mean age between both groups was found to be non-significant (p>0.05).

Dharmendra et al in his study in patients undergoing onlay and sublay mesh repair for ventral hernias was compared.[8] The age group of patients undergoing onlay mesh repair (group A) ranged from 23 years to 75 years, with mean age being 43.56±11.30 years. Patients undergoing sublay mesh repair (group B) ranged from 28

years to 75 years, with mean age being 48.48±13.55 years. No statistically significant difference was found between the two groups with respect to age group.

Kharde et al conducted a study in incisional hernia patients having group A with 25 patients, who underwent traditional on-lay mesh repair of incisional hernia (6 males and 19 females).[9] The age of the patients ranged from 31 to 55 years old with a mean of 53.84±13.05 years. On the other hand, group B included 25 patients, who underwent retro-rectus mesh repair (9 males and 16 females). The age of the patients in this group ranged from 28 to 57 years old with a mean of 54.24±10.86 years. There was no statistically significant difference between both groups as regards age and gender (p>0.05).

Rajsiddharth et al in his study stated that the total number of cases studied was 60.[10] The study showed that the maximum number of patients were in the 4th decade of life (58.3%). There were no patients in the age groups 0-10 and 11-20. In 60 cases, 42 patients (70%) were females, and 18 patients (30%) were males.

Post-operative complications

Postoperative complications were observed in 28% and 16% respectively from onlay and sublay group. Proportion of post-operative complications (28%) were more in onlay group as compared to sublay group i.e., 16%. This difference was found to be statistically significant (p<0.05).

Kharde et al noted overall 40% prevalence of post-operative complications in his subjects after one or the other operative procedure.[9] Dhaigude et al found that the overall incidence of suture site infection in his study was 18.0%.[11] The incidence of suture site infection was seen more in group A (Onlay) (26%) when compared to group B (Sublay) (12%) which is comparable with our study findings.

Seroma

Postoperative complication like seroma was seen in 12% and 8% respectively from onlay and sublay group. This proportion of seroma was more in onlay group as compared to sublay group (<0.05).

Kharde et al reported in his study that postoperative complication like seroma was seen in 16% and 12% respectively from onlay and sublay group which is higher as compared to our findings.[9] Elsesy et al noted seroma in 12.5% of the cases managed by on-lay mesh repair and 0% by pre-peritoneal mesh repair.[11] However, Gleysteen et al found 10.7% seroma rate for on-lay and 16% for pre-peritoneal mesh repair which is comparable with our study findings.[13]

Dhaigude et al found that the number of patients who developed post-operative seroma was 5 out of which 2 % were seen in group B (Sublay) and 8 % were seen in group A (Onlay) which is comparable with our study findings.[11]

Deep SSI

In our study, postoperative complication like deep SSI was seen in 8% and 4% respectively from onlay and sublay group. This proportion of Deep SSI was almost equal in both the groups (<0.05).

Kharde et al reported that deep SSI was noted in only one case of group A (onlay), where the mesh got infected and had to be removed.[9] In group B (sublay), there was no incidence of mesh getting infected which is comparable with our study findings.

Gleysteen et al in their study also found that rate of infection was higher in patients treated with on-lay mesh repair than those treated with retro-rectus mesh repair.[13] Posto-operative complication like mesh removal was seen in 4% patients from onlay group (p>0.05) which is comparable with our study findings.

Post-operative recurrence

In our study, post-op recurrence of hernia was seen in both groups equally i.e., 1 case in each group. (p>0.05).

Kharde et al reported a recurrence rate of 4% in group A (onlay), whereas group B(sublay) showed 0% recurrence rate.[9] Gleysteen et al found 20% recurrence rate for on-lay and 4% for pre-peritoneal mesh repair.[13]

Elsesy et al in his study noted 3.1% recurrence rate for on-lay mesh repair of incisional hernias and 0% for pre-peritoneal mesh repair.[12] Dhaigude et al experienced recurrence in present study was 1% with recurrence seen in only in 1 patient of group A (Onlay) and none in group B (Sublay).[11]

Our study findings are comparable with the abovementioned authors and also quite comparable to international studies.

CONCLUSION

Sublay mesh repair has a lower rate of post-operative complications than onlay mesh repair, although larger studies are required to choose the better of the two procedures. Incidences of complications like superficial SSI are similar in both the groups, but deep SSI leading to infection of mesh is higher in on-lay mesh repair. Number of days of hospitalization in sublay group was less as compared to onlay group.

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