

# Comparative Study of Inlay Versus Sublay Mesh Repair in Paraumbilical Hernia

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## ABSTRACT

**Objective:** To compare the outcome of the sublay with inlay mesh repair of para-umbilical hernia in terms of postoperative complication including recurrence and Hospital stay at tertiary care Hospital.

**Material and methods:** This comparative study has been conducted at general surgery department of Liaquat University Hospital Jamshoro, from Feb 2016 to Feb 2017. This study included 50 patients of para-umbilical hernia admitted through the outpatient and emergency. Patients were categorized in two groups. Patients of Group A underwent for inlay Mesh Repair (IMR) and patients of group B underwent Sublay Mesh Repair (SMR) of para-umbilical hernia. Outcome was assessed in terms of in terms of postoperative complication including recurrence and Hospital stay. Data was analyzed through 16th version of SPSS software. Chi-square test was applied and a p-value  $\leq 0.05$  was considered as significant.

**Results:** In this study most of the patients were found with age groups of 20-30 years and 51-60 years in both groups, and out of 30 cases females were seen in majority in both groups as 18 and 19 in group A and group B respectively ( $p=0.933$ ). Seroma was 12% in patients of IMR V/S 4% in patients of SMR group, hematoma was 12% in group IMR and 4% was in SMR group, wound infection was seen 8% in patients of IMR group and 12% in patients of SMR group. However recurrence was observed 4% in group A only and prolonged Hospital stay was seen 16% of group A and 4% in group B. outcome was significant statistically;  $P=(<0.05)$ .

**Conclusion:** In the observation of this study, sublay pre-peritoneal meshplasty is effective and safe with lesser rate of complications and without recurrence as compared to inlay intra-peritoneal meshplasty.

**Key words:** Para-umbilical Hernia, IMR, SMR, Outcome

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## INTRODUCTION

Para-umbilical hernia (PUH) occurs because of a linea alba associated defect. It is a prevalent surgical issue that makes up 10% of all primary hernias.<sup>1,2</sup> These are further frequent among obese, parous, adult and elderly females.<sup>1,3</sup> Usually these hernias are slightly above or below the umbilicus and hence are referred to as paraumbilical hernias.<sup>4</sup> At local level studies confirmed obesity as a major public health problem. Incidence was observed with a frequency of 25% and a higher frequency of 42.8% (age 35-54) among females. Patients often experience swelling around umbilicus, skin changes or pain.<sup>5</sup> Hernias are usually asymptomatic but can cause symptoms when they get strangulated or incarcerated. Open anatomical repair, laparoscopic intraperitoneal inlay mesh repair (IPOM), open mesh repair with various mesh placement sites (inlay, sublay, and inlay), and open IPOM are the various surgical techniques used in the repair of PUH and umbilical hernia. For anatomical suturing, the relapse rate (19 to 54 %) is higher as compared to mesh repair.<sup>6-8</sup> There are benefits and drawbacks to the various sites of mesh deployment.<sup>6</sup> The rate of recurrence ranges between 1% and 43%, however there is little consensus in the literature regarding the factors that influence the recurrence and surgical complications.<sup>9</sup> To avoid recurrence, a variety of materials were tried to reinforce the repair via fascial autographs, prosthetic materials, a mesh of various types, and the technique of placements including inlay and sublay, but the best position for inserting the

mesh has not been conclusively established.<sup>10</sup> Repair of paraumbilical hernia by mesh Hernioplasty is a common surgical procedure done worldwide. The ideal site for mesh reinforcement is still debatable and many studies are in progress to show the equally effective outcomes of inlay and sublay mesh reinforcement.<sup>10</sup> In another recent study it was observed that the Open surgery mesh inlay repair can be extended to para umbilical hernia of all sizes, and has a lower rate of relapse, and also morbidity and relapse rates are equivalent to international standards.<sup>1</sup> However other recent studies concluded that Sublay mesh hernioplasty seems to be a better option for all types of ventral hernia patients than inlay mesh hernioplasty..<sup>5,12</sup> By taking above controversial findings this study has been conducted to compare the sublay mesh repair outcome and inlay mesh repair outcome of para-umbilical hernia in terms of postoperative complication including recurrence and Hospital stay at tertiary care Hospital.

## MATERIAL AND METHODS

This comparative study was undertaken at general surgery department of Liaquat University Hospital Jamshoro, from Feb 2016 to Feb 2017. This study involved 50 cases of para-umbilical hernia as per inclusion criteria, those who were admitted in general surgery department through the emergency and outpatient department of Liaquat University Hospital Jamshoro /Hyderabad. The patients with blood coagulation disorder, unfit for general anesthesia, and those having severe co-morbidities were excluded. Patients were categorized into two groups. Patients of Group A

underwent INLAY Mesh Repair and patients of group B underwent Sublay Mesh Repair of para-umbilical hernia. All of the patients with swelling around the umbilicus underwent the clinical examination, baseline investigations and complete medical history was taken. Systemic evaluation was also performed to assess comorbidity. A pre-defined proforma provided for this purpose was used to enter all the data. All these patients were followed up through the initial visit following the first week, the next visit following the 2nd week, the third visit following two months and the fourth visit following six months to evaluate any recurrence or complication. Data was analyzed through SPSS software version 16.0. Chi-square test was applied and a p-value  $\leq 0.05$  was considered as significant.

**RESULTS**

In this study most of the patients were found with age groups of 51-60 years and 31-40 years in both groups, results were statistically insignificant in both groups according to age (p=0.933). In INLAY Mash Repair (IMR) group, males were 28% (n=7) and females were 72% (n=18), and male to female ratio was 1:2.5, whereas in Sublay Mash Repair (SMR) group, males were 24% (n=6) and females were 76% (n=19), and male to female ratio was 1:3.1. (Table 1).

In this study, the observed complications were: seroma in 12% (n=3) of cases in IMR group V/S 4% (n=1) of cases in SMR group; haematoma in 12% (n=3) of cases in IMR group V/S 4% (n=1) of cases in SMR group; wound infection in 8% (n=2) of cases in IMR group V/S 12% (n=3) of cases in SMR group. However, in SMR group, 4% (n=1) cases were found to have wound dehiscence. while in IMR group, recurrence was observed in 8% (n=2) of cases and chronic pain was observed in 4% (n=1) of cases. (Table No.2)

Table 1: Age and gender statistics of both groups n=50

Variables	Study groups		p-value
	Group A	Group B	
Age groups (years)			
20-30	04(16.0%)	03(12.0%)	0.933
31-40	06(24.0%)	06(24.0%)	
41-50	05(20.0%)	04(16.0%)	
51-60	10(40.0%)	12(48.0%)	
Gender			
Male	7(28.0%)	6(24.0%)	0.747
Female	18(72.0%)	19(76.%)	

Group A= inlay Mash Repair (IMR)  
Group B = Sublay Mash Repair (SMR)

Table 3: Post-operative complication and recurrences in both groups (n=50)

Variables	Study groups		p-value
	Group A	Group B	
Post-operative complications			
Seroma	03(12.0%)	01(04.0%)	<0.05
Heamotoma	03(12.0%)	01(04.0%)	
Wound infection	02(08.0%)	03(12.0%)	
Wound deshiscence	00	01(04.0%)	
Recurrences			
Yes	01(04.0%)	00	<0.05
No	24(96.0%)	15(100.0%)	
Prolonged Hospital stay			
Yes	04(16.0%)	02(08.0%)	<0.05
No	21(84.0%)	23(92.0%)	

Group A= inlay Mash Repair (IMR)  
Group B = Sublay Mash Repair (SMR)

**DISCUSSION**

Para-umbilical hernia (PUH) is among the most prevalent surgical issues with an annual raise in repair rate and also 3-times further prevalent in females than in males.<sup>12</sup> Similarly, in this study females were predominant in both groups (group A=72% and group B= 76%). On other hand Prasanna Gambhir Jawale et al<sup>13</sup> also reported that the para umbilical hernias found to be more prevalent in Females i.e. 63.49% than Male 36.51%. In this study 51-60 years age group was commonest in both groups. Similarly Prasanna Gambhir Jawale et al<sup>13</sup> also reported that the prevalence was highest in Age >50. Consistently Sallam RM et al<sup>12</sup> reported in their study an age ranging from 32 to 65 years with 46.80±8.26 of mean and standard deviation; females were 27 (54%) and males were 23 (46%).

In this study according to the complications seroma was seen 3(12 %) patients in IMR groups and 4% in patients of SMR group, haematoma was 12% patients of IMR group and 4% in patients of SMR group. Consistently Ali Hussein Al-Tai et al<sup>14</sup> reported that in sublay group Seroma formation was found in two patients (3.33%) while 12(20%) in onlay group. SHAIKH B et al<sup>15</sup> found most frequent complication as seroma in 10.6% of cases, followed by superficial wound infection (6.2%), haematoma (3.07%), mesh infection (2.7%) and recurrence (1.8%), however they observed that Sublay mesh repair is the ideal technique with less postoperative complications.

In this study wound infection was found in 08% patients of IMR group and 12% in patients of SMR group. Similarly Ali Hussein Al-Tai et al<sup>14</sup> reported that wound infection was seen in one patient (1.66%) in sublay technique group while in onlay group was (6) patients (10%). MAAZ-UL-HASSAN MA et al<sup>16</sup> reported that the wound infection was found significant difference between Group A and Group B (10% and 3%) (p<0.05).

In this study recurrences and prolonged Hospital stay was higher in IMR group as compare to SMR group. However Ali Hussein Al-Tai et al<sup>14</sup> reported that there was no recurrence of hernia was noticed in sublay mesh repair in our study where as in the onlay group recurrence occurred in 4 (6.66%) cases (P < 0.05). On other ahnd some other studies also found similar findings as Saber A et al<sup>17</sup> found a recurrence rate to be 8% in onlay group and 3% in sublay mesh repair group. MAAZ-UL-HASSAN MA et al<sup>16</sup> reported that recurrence rate was also high in Group A 12% Vs 1% in Group B. Raghuv eer MN et al<sup>18</sup> also reported that in sublay group versus onlay group, recurrence was 4.35% versus 8.51% respectively, which was statistically insignificant (p>0.05). Hernia recurrence is a discomforting experience for patients and humiliating for surgeons, and tension-free mesh repair is an appropriate procedure that has minimized the frequency of relapse, The origin of the reinforcement tends to affect outcomes.<sup>12</sup> Inlay repair is practically simpler and is not susceptible to complications of superficial wounds. Sublay repair is also deemed more complicated and difficult to perform.

**CONCLUSION**

The sublay preperitoneal meshplasty is effective and safe procedure with lesser rate of complications and without recurrence as compared to inlay intraperitoneal

meshplasty. Currently, sublay is a benchmark procedure for the repair of Para-umbilical hernias.

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