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Research Article

**OUTCOME OF PERITONITIS LAPAROTOMY AFTER  
PRIMARY CLOSURE VERSUS DELAYED PRIMARY  
CLOSURE**<sup>1</sup> Dr. Fida Hussain Shah, <sup>2</sup> Dr. Sohail Ahmed Memon, <sup>3</sup> Dr. Sohail Yousuf<sup>1</sup>FCPS Assistant Professor, General Surgery Department of LUMHS<sup>2</sup>FCPS Assistant Professor, General Surgery Department of LUMHS<sup>3</sup>MS Assistant Professor, Muhammad Medical College Mirpur khas**Abstract:****OBJECTIVE:** To compare the outcome of primary closure versus delayed primary closure among patients undergo laparotomy for peritonitis at tertiary care Hospital.**MATERIAL AND METHODS:** The present study was carried out at general surgery department of Liaquat University of Medical and health Sciences, over the period of one year from 2015 to 2016. Patients presented with peritonitis and underwent laparotomy either of gender were included. Patients were categorized in II groups "group A and group B". Cases of group-A underwent primary closer and patients of group B underwent delayed primary closer. All the data was recorded using self-made proforma and analyzed by using SPSS version 20.**RESULTS:** Total 60 patients were studied 30 in each group. 20-40 years age group was most common among both groups as 20(66.7%) and 18(60.0%) respectively. No significant difference was observed according to gender in both groups ( $p$ -value-0.136). In primary closure group, wound infection rate was high as compared to the group delayed primary closure ( $p=0.033$ ). Hospital stay remained higher in primary closure group  $8.01 \pm 1.41$  days and within delayed primary closure group  $5.05 \pm 1.61$  days ( $p=0.025$ ).**CONCLUSION:** It was concluded that delayed primary closure is favorable technique with very lower rate of wound infections and shorter Hospital stay as compare to primary closure.**KEY WORDS:** Peritonitis, laparotomy, Primary closure, delayed Primary closure**Corresponding author:****Dr. Fida Hussain Shah**

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**INTRODUCTION:**

Peritonitis, a widely known surgical emergency, is characterized by inflamed serosal membrane including parietal and visceral peritoneum. Peritonitis is a frequent surgical emergency globally because of ileal perforation<sup>1,2</sup>. Enteric fever has been the most leading cause for ileal perforation, after that non-specific inflammatory response, trauma, and tuberculosis. Ileal perforation presents a high mortality and morbidity<sup>3</sup>. Primary closure of perforation or exteriorization as ileostomy of it, measured as the optimum management for ileal perforation. Wound infection raises the prevalence of wound dehiscence as well as associated morbidity, dramatically influencing health care services and costs<sup>4</sup>. Risk factors that increase the occurrence of wound complications among ileal perforation patients are advanced age, anemia, malnutrition, hypoproteinemia, suture type used, uremia, drains usage, experience of the surgeon, use of steroids, abdominal distension, positive intraoperative culture and pulmonary disease<sup>5,6</sup>. For patients with such conditions, steps may be taken to minimize the risk of wound infections at wound closure. The skin closure procedure has been recommended as the significant influence affecting complications of postoperative wound.<sup>7</sup> The delayed primary and the primary closure are the two wound closure methods. While several studies support delayed primary closure, no definitive recommendation has been suggested for this method. In order to identify out the optimal skin closure procedure, this study contrasts delayed primary closure with primary closure of wound in subjects undergo peritonitis laparotomy.

**MATERIAL AND METHODS:**

The present study was conducted at general surgery department of LUMHS; over the period of one year from 2015 to 2016. Patient presented with peritonitis and underwent laparotomy were included. Patients having diabetes, having co-morbidities and on using steroid therapy were

excluded from study. Patients were categorized into two groups (A and B). Patients of group A underwent primary closer and patients of group B underwent delayed primary closer. Outcome with regard to postoperative complications specially wound infection and Hospital stay were recorded on predesigned proforma. 30 patients were included in group A, in whom wound was closed by primary closure while in another 30 patients of group B, wound was closed by delayed primary closure. Surgery of patients was carried out by senior surgeon having work experience minimum more than 5 years and wound was assessed on weekly basis. Postoperative outcome including infection rate and mean duration of hospital stay were observed. All the information was recorded on predesigned proforma and data was analyzed via SPSS version 20. Chi-square test was applied and p-value  $\leq 0.05$  was considered as significant.

**RESULTS:**

Total 60 patients were studied, 30 in group A and 30 in group B. 20-40 years age group was most common among both groups as 20(66.7%) and 18(60.0%) respectively. 18(60.0%) patients of group A and 9(30.0%) patients of group B were found with age group of 41-60 years, while 2(6.7%) cases of group A and 3(10.0%) cases of group B were >60 years. There was no significant difference among both groups according to age (p=0.834). Males were most common among both groups as 66.7% in primary closure group and 83.3% in delayed primary closure group, there was no significant difference according to gender (p=0.136). Table. No.1

Rate of wound infection was high in primary closure group 9(30.0%), as compared to delayed primary closure 05(16.7%) (p= 0.033). Post-operative Hospital stay was greater in primary closure group 8.01 $\pm$ 1.41 days and in delayed primary closure group 5.05 $\pm$ 1.61 days (0.025). Table. No.1

**Table. No. 1. Age and gender of the patients n=60**

Variables	STUDY GROUPS		P-value
	Group A (PC)	Group B (DPC)	
<b>Age groups</b>			
20-40 years	20(66.7%)	18(60.0%)	0.834
41-60 years	18(60.0%)	9(30.0%)	
>60 years	2(6.7%)	3(10.0%)	
Total	30(100.0%)	30(100.0%)	
<b>Gender</b>			
Male	20(66.7%)	25(83.3%)	0.136
Female	10(33.3%)	05(16.7%)	
Total	30(100.0%)	30(100.0%)	

**Table. No. 2. Wound infection and hospital stay of both groups n=60**

Variables	STUDY GROUPS		P-value
	Group A (PC)	Group B (DPC)	
<b>Wound infection</b>			
Yes	9(30.0%)	05(16.7%)	0.033
No	18(60.0%)	25(83.3%)	
Total	30(100.0%)	30(100.0%)	
<b>Hospital stay</b>			
(Mean±SD)	8.01±1.41 days	5.05±1.61 days	0.025

**DISCUSSION:**

During emergency surgery, delayed primary closure of infected wounds has been practiced for a long time. Its practice in laparotomy wounds following peritonitis has been the topic of controversy. In this study majority of patients was aged between 20-30 years. Similarly other studies also found similar findings regarding age<sup>8,9</sup>. In this study males were more as compare to females, these findings were similar to other studies<sup>10,11</sup>. Male dominance has also been observed in several other studies<sup>12,13</sup>. Agarwal V et al<sup>14</sup> also showed that majority of the patients in their study were aged between 21–30 years and Male to female ratio was 3.2:1. Various surgeons recommended primary closure for wounds and others suggested to close wounds after three to four days of surgery.<sup>15,16</sup> Since primary closure resulted in higher wound infection and postoperative complications such as wound dehiscence. Patients have increased length of Hospital stay and cost on Hospital for managing such patients is more in delayed primary closure. The better method was delayed primary closure in contaminated cases.<sup>17</sup> Wound infection appears to be multifactorial and relies upon the patient's clinical condition and related co-morbidities, organism's virulence, host resistance, length of peritonitis, contamination level, aseptic techniques and hygiene variations.

In our study, 30 % patients had developed infection after primary wound closure, which was higher in contrast delayed primary closure 13.33% (P = 0.014). Mean Hospital stay in primary closure group was 8.01±1.41 days, while in secondary closure group was 5.05±1.61 days (P= 0.345). Dipesh D et al<sup>18</sup> showed that infection rate was significantly higher in PC group as compared to DPC (p=0.000375). There were also significantly more patients with abdominal dehiscence in PC group (p = 0.005). They concluded that Delayed primary closure seems to be a reasonable method for handling incisions and can be used for unclean abdominal incisions. This substantially decreases

the levels of both superficial SSI and fascial dehiscence and decreases hospitalization. Similar results were conducted by Gul Nasib et al,<sup>19</sup> whose results showed that DPC is better than PC procedure for surgical wounds because it reduces the incidence of wound infection all through the follow-up process without any significant change in length of Hospital stay. They reported that wound infection in primary closure group was (51.43%), whereas in secondary wound closure group (25.71%) (p=0.027), and mean hospital stay was 7.03±1.81 days in DPC group, and 6.34±4.14 days in PC group (p=0.372). Patients undergoing peritonitis surgical procedure have a substantially higher risk of SSI resulting in wound-healing failure. With the extent of infection, the occurrence of SSI rises and can occur also after extensive wound and peritoneal cleaning. Leaving such wounds open avoids contamination because frequent change of dressing ensures sufficient drainage. Therefore the infection level in Group-B cases is substantially reduced. A meta-analysis and systematic review of Bhangu et al,<sup>13</sup> that involved eight randomized controlled trials for the assessment of benefits of DPC over PC. Researchers claimed that DPC appears as a beneficial with regard to wound healing, no conclusive evidence are present to claim that DPC reduces the risk of infection at surgical site. Researchers attributed their inference to the inadequate trial design of those studies. Results of our study are also in favor of delayed wound closure. Alternatively, a comparable study of Ahmad et al, supports our findings. Duttaroy D et al<sup>20</sup> also observed that DPC is preferred technique of wound closure because it decreases the rate of wound dehiscence and infection at surgical site, as well as shorter Hospital stay.

**CONCLUSION:**

It was concluded that delayed primary closure is favorable technique with very lower rate of wound infection and shorter Hospital stay as compare to primary closure. This was a small ample size based

study, more large sample size studies are required for these findings.

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