

# To Assess the Complications in Relation to Size of Umbilical Port in Patients Undergoing Laparoscopic Cholecystectomy

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## ABSTRACT

**Objective:** To determine the complications of modified laparoscopic cholecystectomy and its association with umbilical port diameter.

**Study Design:** Prospective study

**Place and Duration of Study:** This study was conducted at the Department of Surgery, Central Park Teaching Hospital Lahore from 1<sup>st</sup> July 2018 to 30<sup>th</sup> June 2019.

**Materials and Methods:** One hundred and fifteen patients of both genders with ages 20 to 60 years were included in this study. Patient's detailed demographics were recorded after written consent. Patients with history of abdominal surgery were excluded. All the patients underwent modified laparoscopic cholecystectomy for gall bladder diseases. Post-operative pain was analyzed by VAS. Wound infection was recorded at 3<sup>rd</sup> postoperative day and compared with size of umbilical incision.

**Results:** There were 26 (22.61%) male patients and 89 (77.39%) patients were females. Most of the patients 45 (39.13%) were in the age group 31 to 40 years followed by 38 (33.04%) patients in the age group 41 to 50 years. 68 (59.13%) patients had umbilical port incision 5mm and 40.87% patients had 10mm. Mean pain score was  $4.24 \pm 2.1$  and  $4.58 \pm 1.9$  in patients with 5mm and 10mm port diameter with no significant difference. Wound infection was found in 6 (8.82%) and 5 (10.64%) in patients with 5mm and 10mm port diameter. At 12 weeks 6 (8.82%) and 15 (31.91%) patients with 5mm and 10mm port size diameter had developed port site hernia.

**Conclusion:** Modified laparoscopic cholecystectomy is safe and effective treatment procedure with no major complications. No significant difference observed in term of pain score and wound infection according to port size diameter.

**Key Words:** Complication, Size of incision, Laparoscopic cholecystectomy.

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## INTRODUCTION

The standard laparoscopic cholecystectomy using 4 ports is performed as the regular treatment for symptomatic gallbladder stones nowadays. The recent evolution in cholecystectomy is the modified laparoscopic cholecystectomy using smaller umbilical port, which proves to be a minimally invasive technique for management and treatment of benign gallbladder disease by avoiding scarring as entry point is concealed in the umbilicus.<sup>1</sup> Patients undergoing modified laparoscopic cholecystectomy have the benefit of early

post-operative mobilization, decreased pain and early return to daily routine.<sup>2,3</sup>

Modified laparoscopic cholecystectomy indications have increased substantially to include patients of old age, cirrhosis and those with absolute contraindication to open surgery.<sup>4</sup> Modified laparoscopic cholecystectomy is becoming more of a standard procedure for most cases of cholecystitis and can be performed easily.<sup>5,6</sup> Observation at every step along the procedure with proper application of standardized surgical and medical measures along with adequate skills must be undertaken to decrease risk of complications during the procedure.<sup>7</sup> Sometimes it is difficult to visualize the Calot's triangle because of inflammation and adhesions, thus it is difficult to establish the "critical view of safety" (CVS) and the risk of complications increases.<sup>8</sup>

Risks of performing laparoscopic cholecystectomy must be evaluated against any possible benefits on a subjective basis although there is still chances of bleeding and bile leakage.<sup>9</sup> In addition the patient may develop continuous biliary drainage necessitating ERCP with stenting.<sup>10</sup> According to Tamura et al, modified laparoscopic cholecystectomy has decreased

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operating time, while post-operatively least complications have been reported.<sup>11</sup>

## MATERIALS AND METHODS

This study was conducted at Department of Surgery, Central Park Teaching Hospital Lahore from 1<sup>st</sup> July 2018 to 30<sup>th</sup> June 2019. A total of 115 patients of both genders with ages 20 to 60 years were included in this study. Patients detailed demographics including age and sex were recorded after written consent. Patients with history of major abdominal surgery, patients with jaundice, patients with acute cholecystitis, patients needing conversion to open and those with no written consent were excluded. All patients underwent modified laparoscopic cholecystectomy for gall bladder diseases. Post-operative pain was analyzed by visual analogue scale (VAS). Wound infection was recorded at 3<sup>rd</sup> postoperative day and compared with size of umbilical incision. Final follow-up was taken at post-operative 12 weeks to examine the incidence of port-site hernia. Data was analyzed by SPSS 24. Chi-square test was applied to compare the complications with p-value set at <0.05 as statistically significant.

## RESULTS

Twenty six (22.61%) were male patients and 89 (77.39%) were female patients. Fifteen (13.04%) patients were ages between 20 to 30 years, 45 (39.13%) were in the age group 31 to 40 years, 38 (33.04%) patients in the age group 41 to 50 years and 17 (14.78%) patients were ages above 50 years. Sixty eight (59.13%) patients had umbilical port incision of 5mm and 40.87% patients had 10mm (Table 1).

**Table No.1: Baseline characteristics of all the patients**

Variable	No.	%
<b>Sex</b>		
Male	26	22.61
Female	89	77.39
<b>Age (years)</b>		
20 – 30	15	13.04
31 – 40	45	39.13
41 – 50	38	33.04
> 50	17	14.78
<b>Umbilical port site diameter (mm)</b>		
5	68	59.13
10	47	40.87

Mean pain score was  $4.24 \pm 2.1$  and  $4.58 \pm 1.9$  in patients with 5mm and 10mm port diameter respectively with no significant difference. Wound infection was found in 6 (8.82%) and 5 (10.64%) in patients with 5mm and 10mm port diameter (Table 2). We found that 6 (8.82%) and 15 (31.91%) patients with 5mm and 10mm port size diameter had developed port site hernia at 12 weeks follow-up (Table 3).

**Table No.2: Pain score and wound infection according to umbilical port site diameter**

Variables	5mm (n=68)	10mm (n=47)	P-value
Mean Pain score	$4.24 \pm 2.1$	$4.58 \pm 1.9$	>0.05
<b>Wound infection</b>			
Yes	6 (8.82)	5 (10.64)	>0.05
No	62 (91.18)	42 (89.36)	

**Table No.3: Postoperative follow-up at 12<sup>th</sup> week**

Port site hernia	5mm (n=68)	10mm (n=47)	P-value
Yes	6 (8.82%)	15 (31.91%)	0.028
No	62 (91.18)	32 (68.09%)	

## DISCUSSION

Globally laparoscopic procedures are considered as a procedure of choice in patients requiring surgical treatment for gall bladder disease and many abdominal diseases.<sup>12,13</sup> Modified laparoscopic cholecystectomy is reported safe and effective treatment modality for gall bladder diseases with fewer rates of complications.<sup>14</sup> Many of studies demonstrated modified laparoscopic cholecystectomy as a procedure of choice for gall bladder diseases.<sup>15</sup> The present study was conducted to examine the complications associated with umbilical port site diameter in patients undergoing modified laparoscopic cholecystectomy. In our study total 115 patients received modified laparoscopic cholecystectomy, in which 77.39% patients were females while 22.61% patients were males. Most of the patients 45 (39.13%) were in the age group 31 to 40 years followed by 38 (33.04%) patients in the age group 41 to 50 years. These results showed similarity to several previous studies in which female patients were high in numbers 70 to 88% as compared to males and majority of patients were in the ages between 35 to 60 years.<sup>16,17</sup> In present study mean pain score was  $4.24 \pm 2.1$  and  $4.58 \pm 1.9$  in patients with 5mm and 10mm port diameter with no significant difference was found. Wound infection was found in 6 (8.82%) and 5 (10.64%) in patients with 5mm and 10mm port diameter. A study conducted by Usmani et al<sup>18</sup> reported the mean pain score after modified laparoscopic cholecystectomy was  $4.7 \pm 2.62$ . Some other studies showed similarity regarding postoperative wound infection in which wound infection rate varies 5 to 20%.<sup>19,20</sup>

In this study we found significant difference in term of postoperative port site hernia between patients with 5mm port diameter and 10mm port diameter with values 8.82% and 31.91% (p value 0.028). These results showed similarity to previous studies in which patients with surgical site incision size above 5mm were on high risk in developing port site hernia.<sup>21,22</sup>

## CONCLUSION

Modified laparoscopic cholecystectomy is a commonly performed surgical procedure where feasible due to its effectiveness and safety. We concluded that modifying laparoscopic cholecystectomy in terms of decreasing

the umbilical port size is safe and effective with low complication rate.

#### Author's Contribution:

Concept & Design of Study: Muhammad Aqil Razzaq  
Drafting: Muhammad Akram

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Data Analysis: Amna Shahab

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Revisiting Critically: Muhammad Aqil Razzaq  
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**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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