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Port Site Hernia after Laparoscopic Cholecystectomy



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ABSTRACT

Background Laparoscopic cholecystectomy now practiced all over the world instead of open surgery. Port site complication is rare but significant and serious. The aim of this study is to evaluate the closure technique, risk factor & frequency. **Method** Between January 2010 – January 2015, (1762) laparoscopic cholecystectomy done by two different surgeons, both 10 mm port sites were closed by Vicryl no. 0 in the classical method. Frequency of port site hernia & risk factors were evaluated. **Result** During the period of study 1762 lap cholecystectomy were done, thirteen case (0.73) got the port site hernia at 10 mm port during a mean follow up of 3 years. **Conclusion** All hernias were occurring in 10 mm port & still within the acceptable incidence of port site hernia, modification of closure method is required.

INTRODUCTION

Incisional hernias on trocar sites can occur even with incisions small as 3mm.⁽¹⁾ There are many different methods for closure beside the classical hand sutured technique to avoid serious complications of closure. Closure of port site is necessary.⁽²⁾ When large Trocars are used or when dilatation done to extract gallbladder it is really difficult to achieve perfect closure in obese patients. Classical method widely employed because it is simple & cost-effective. Most studies of PSIH have rated 1%-6% & because of this variable range & the horrible complications, the surgeons have to assess their work & to decrease complications. This work assesses the classical method of closure & to discuss the risk factors.

MATERIALS AND METHODS

This is a retrospective study of 1762 patients who underwent laparoscopic cholecystectomy done by two different surgeons between January 2010- January 2015, open & closed method used to perform pneumoperitoneum, we used 4 ports in all cases, 10 mm epigastric & umbilical & 2 ports of 5 mm laterally on right side. The data were refined for patients who developed the port site incisional hernia follow up & management of these complications is reported.

Selection criteria

All patients who underwent laparoscopic cholecystectomy & the classical technique of port closure under the care of two surgeons were included in this study, regardless of ASA grading, BMI, age, sex & procedure.

Patients who had their ports closed using techniques other than classical method were excluded from the study.

Technique of closure

At the end of procedure, closure of port site performed by using Vicryl no. 0 for both epigastric & umbilical ports while both 5 mm ports not closed.

The skin of both 10 mm port sites closed by 3/0 PDS suture material while skin of both 5mm not closed but only dressing down.

RESULTS

Laparoscopic cholecystectomy was performed in 1762 patients. The mean age of cases 41.27 years, only 13 (0.73%) patients develop port-site incisional hernia, 7 were male & 6 were female.

Table 1: The relationship between risk factors and port site hernia development.

Parameter	Total no. of Port site hernia = 13	Percentage
Port size 5 mm	0	
10 mm	13	100%
Midline epigastric	02	15.38%
infraumbilical	11	84.61%
Offline	0	
Wound infection	07	53.8%
Obesity	06	46.15%
Chronic cough	03	23%
Ascites	0	
Age under 40 y	08	61.5%
Above 40 y	05	38.64%
Sex male	04	30.76%
Female	09	69.2%
Pre-existing fascial defect	01	7.69%
Medical comorbidity RF	0	0
COPD	01	7.69
DM	02	15.38

In 11 cases port site hernia occur through umbilical port & 2 through the epigastric port site.

No major complications or mortality reported in relation to PSIH.

The mean follow up period was 36 months.

All these 13 Port site hernias developed in adults and repaired as elective cases.

Table 1 showing the relationship between risk factors and development of PSIH after laparoscopic cholecystectomy, in which female gender and adult cases less than 40 year old have the highest incidence of PSIH development while wound infection and obesity were the main causative factors than others like chronic cough and co-morbidity risk factors.

DISCUSSION

This study assesses PSIH following laparoscopic cholecystectomy, it also evaluates the safety & effectiveness of the port site closure. Laparoscopic surgery like any other Interventional procedures as it might have complications which may be serious & fatal ⁽³⁾. One of the preventable complications is PSIH & it is frequently found in the midline possibly because of the absence of supporting muscles ⁽⁴⁾.

The incidence & spectrum of laparoscopic complications are greater than previously perceived. ⁽⁵⁾Improvement of access technique, instruments & training are important to reduce these preventable complications like hernias. ⁽⁶⁾The proportion of laparoscopic access complications is found to correlate with the experience & the learning curve of the surgeons.

In our study, incidence of PSIH was 0.73%, while it has ranged from 1-6% ⁽⁷⁾ & to as low as 0.08% in another large series ⁽⁸⁾. We found that all PSIH in our study were formed in the midline & all of them occur in 10 mm port site.

Gadazz regarded that large port trocar size considered as a predisposing factor of PSIH. ⁽⁹⁾

The risk factors for developing of PSIH are the trocar diameter, design, pre-existing defect of fascia & type of operations & patient related factors, direction of port & its site as well as port site infection may have a significant effect on leading to PSIH.

Obesity & difficulty to close the defect of port site are recognized predisposing factors possibly because of larger preperitoneal space & increased intra-abdominal pressure.

The use of drain placed through a port site has been suggested as a risk factor, in our cases usually the drain placed through 5 mm port site while all of PSIH in our study were occurring in 10 mm port site.

Some authors advise closure of all facial defect >5mm. ⁽¹⁰⁾

Although PSIH were reported in children, even for 3 mm ports ⁽¹¹⁾, that's why most of the authors in their series have the opinion that facial defect 10 mm & more should be closed while 5 mm port site defect still controversy.

Many authors believe that inserting 10 mm lateral trocar in an oblique or Z tract will decrease hernia formation ⁽¹²⁾.

Tarnay et al ⁽¹³⁾ found that blunt conical trocar resulted in smaller defect in the fascia than pyramidal & two cutting – dilating Trocars.

In our survey, we found that most of PSIH were equal in both open & closed access techniques, besides most of hernia occurs at the umbilical port site & only 2 hernias in the epigastric port site, all of them in the midline.

Plaus mentioned that port site off the midline associated with less incidence of hernia due to overlapping of muscles & fascia ⁽¹⁴⁾.

Prolonged manipulations & reinsertion of ports are associated with greater risks ⁽¹⁵⁾, increased duration of surgery was associated with an increase incidence of PSIH ⁽¹⁶⁾.

Extension of port incision to extract GB regarded as a risk factor for PSIH ⁽¹⁷⁾.

In our study usually we extract the GB through the epigastric port site & some time we extend this wound when needed, but only 2 PSIH occur on this site while others (11) PSIH occur in the umbilical port site.

Female gender, older age, high BMI has been found to increase risk of PSIH formation. ⁽¹⁸⁾

Modification of standard technique of replacing 10mm port to 5mm epigastric port has the advantage of eliminating PSIH at the epigastrium & improve cosmesis. ⁽¹⁹⁾

The number of complications in our study is low and this confirms that closure of all portsites >10mm is very important as it is confirmed by tonouchi et al. ⁽²⁰⁾

Asymptomatic hernia may develop later on and lead to increase PSIH incidence, thirteen clinical hernias from a total number (1762) cases were under laparoscopic cholecystectomy is an acceptable rate.

Particular care should be withdrawn in patients with obesity, extension of port site, aggressive manipulation and prolonged operations.

CONCLUSION

Port-site hernia is a serious sequelae after the laparoscopic surgical procedure. Cautious port-site wound closure is prescribed particularly for patients with risk factors, for example, obese patients and extensive handling of trocar during prolong surgery. The careful closure of the port-site wound is vital to avoid the port-site incisional hernia. In spite of the fact that the established closure technique with a bent or J-molded needle has been related with a satisfactory rate of port-site hernia, advancement of another procedure of closure is proposed to additionally prevent or decrease these complications.

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