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A Prospective Analysis of Port Site Complications in Laparoscopic Cholecystectomy

Pankaj Dugg [1,*]; Pankaj Shivhare [1]; Harnam Singh [2]; Sushil Mittal [2]; Ashwani Kumar [2]; Anand Munghate [2]

[1]Department of General Surgery, All India Institute of Medical Sciences (AIIMS), New Delhi, India
[2]Department of General Surgery, Government Medical College, Patiala, India

*Corresponding author: Pankaj Dugg, Department of General Surgery, All India Institute of Medical Sciences (AIIMS), Village and Post Office (VPO), Nussi, Jalandhar, Punjab-144004, New Delhi, India. Tel: +91-9417388800, E-mail: dr_dugg@rediffmail.com

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Background: Port site complications following elective surgery are rare and port site infections remain the most common short term complications.
Objectives: The study was conducted to analyze port site complications occurring in patients undergoing Laparoscopic Cholecystectomy for symptomatic cholelithiasis.
Patients and Methods: Ninety patients undergoing laparoscopic cholecystectomy were recruited to the study. Patients were followed for one year after surgery and port sites were examined for any complication.
Results: Out of ninety patients, only three developed port site infections. No case of port site bleeding, discharge and hernia were reported in follow-up period. The results were insignificant as complication was seen in only three patients.
Conclusions: Laparoscopic cholecystectomy is a safe and effective procedure with low complication rates.

Keywords: Laparoscopy; Cholecystectomy; Infections; Pneumoperitoneum.

1. Background

Cholecystectomy is the most common operation of the biliary tract and the second most common operative procedure performed nowadays. The technique of open cholecytectomy developed by Carl Johann August Langenbuch, has become the gold standard for the definitive management of symptomatic cholelithiasis (1).

Laparoscopic Cholecystectomy, introduced in 1980's, has revolutionized the management of gall bladder disease and the NIH consensus conference, held in September 1992 in Bethesda, have concluded that laparoscopic cholecystectomy was the choice treatment for cholelithiasis. The new procedure has been widely accepted and adopted by surgical community and has now become the new "Gold Standard" for management of cholelithiasis (2). The mortality rate in laparoscopic cholecystectomy is reported to be 0.04% versus 0.4% and the overall complication rate 9% versus 16% as compared to open cholecystectomy (3). Although it is a safe and effective procedure and offers several benefits compared to the open procedure, it also has its own set of complications that include those of laparoscopy (abdominal wall bleeding, omental bleeding, abdominal vessel injury, retroperitoneal vessel injury, gastrointestinal perforation, bladder perforation, solid visceral injury, and infection) and those of cholecystectomy (gallbladder fossa bleeding, bile duct injury, bile leakage, and infection).

Complications occurring at port site could be access-related complication (Visceral injuries, Vascular injuries) and Post operative complications (Infection, Hernia, Metastasis, Bleeding) (4).

2. Objectives

The study was conducted to analyze port site complications in laparoscopic cholecystectomy and to evaluate total requirement of hospital stay and overall morbidity in patients due to the complications.

3. Patients and Methods

This prospective study was conducted in a tertiary centre from Jan 2011 to Oct 2012. Ninety patients with symptomatic gall stones undergoing laparoscopic cholecystectomy were analyzed for any operative and post operative complications at the port site. The study was performed after obtaining approval from the local ethical committee, and informed consent was obtained from all patients

Implication for health policy/practice/research/medical education:
The manuscript provides information about the rare complications of laparoscopic cholecystectomy at port site and how they can be prevented to decrease morbidity.

Table 1. Demographic Profile

Age Group, y	Male	Female	Total	Port Site Complication
< 30	1	13	14	1
30-60	10	65	75	2
> 60	-	1	1	-

Table 2. BMI[a]

BMI	Male	Female	Total	Port Site Complications
< 25	1	12	13	1
25-30	10	57	67	2
> 30	-	10	10	-

[a] Abbreviation: BMI = Body Mass Index.

Table 3. Cases Developing Complications

Port site complications	Number of Cases
Bleeding	0
Infection	3
Discharge	0
Wound dehiscence	0
Hernia	0

Inclusion criteria were: age 16-70 years, symptomatic cholelithiasis, no evidence of common bile duct (CBD) stones, abdominal wall skin free from any infection. Exclusion criteria were: age < 16 years and > 70 years, acute cholecystitis, acute pancreatitis, pregnancy, history of peritonitis, bleeding disorders.

Patients were followed monthly for one year out patient department (OPD) and port sites were examined for any complications and further treatment was planned based on the results.

4. Results

Table 1 shows that 75 patients' age lies between 30-60 years. 79 patients were female. 2 patients in age group of 30-60 and one in age group of < 30 developed port site infection and all three complications occurred in female patients. Table 2 shows that patients with BMI > 25 have higher incidence of cholelithiasis. Port site complication was seen in two patients with BMI > 25. There was also one patient with BMI < 25 showing port site complication. The number of patients developing port site infections was only three. Other complications were not seen in any of the patients. (Table 3) The number is insignificant.as out of 90 patients only 3 patients develop complication at port site.

5. Discussion

No surgery is without complications, which is also true for Laparoscopic Cholecystectomy, but these are rare. The various port site complications which may occur are port site infection, port site discharge, port site bleeding, wound dehiscence, port site hernias.

In the present study only three patients out of 90 developed port site complications, which were all infection at epigastric port from where gall bladder was extracted. All cases were controlled byoral administration of Cefixime 200 mg bd dose for 1 week. There was no discharge or wound dehiscence.

Same results in the study conducted by Ahmed et al. (5) and Memon et al. (6) have reported the infection rate of 0.31% and 1.8% respectively. However, a study conducted by Voitk (7) and Hamzaoglu et al. (8) showed a bit higher rate of infections (9% and 8% respectively). The infection rate can be further controlled by taking appropriate sterile precautions and use of sterile bag for gall bladder extraction.

There was no case reporting port site bleeding in our survey. Similar results were shown by Khan (9), Ahmed et al. (5) and Shamiyeh (10). But a study (11) showed higher rate of port site bleeding. The reason may be that patients with bleeding disorders were not taken into the present study.

No case of port site hernia was seen in one year follow-up in any of the patients which is in accordance with study of Memon et al. (6). Swank et al. (12), Ahmad et al. (5) and (11) had also shown that < 1% of patients developed port site hernia.

Hence it is concluded that port site complications are rare in elective laparoscopic cholecystectomy and can

be further reduced by proper selection of patients, and strictly following basic principles of laparoscopic cholecystectomy.

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Authors' Contribution

Study, concept and design: Pankaj Dugg, Pankaj Shivhare; Acquisition of data: Pankaj Dugg; Analysis and interpretation of data: Harnam Singh, Sushil Mittal and Ashwani Kumar; Drafting of the manuscript: Pankaj Dugg and Pankaj Shivhare; Critical revision of the manuscript for important intellectual content: Harnam Singh and Sushil Mittal; Statistical analysis: Pankaj Shivhare and Ashwani Kumar; Administrative, technical, and material support: Pankaj Dugg, Pankaj Shivhare and Sushil Mittal; Study supervision: Sushil Mittal and Harnam Singh.

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