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INCIDENCE OF PORT INFECTION IN LAPAROSCOPIC CHOLECYSTECTOMY

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ABSTRACT

Background: Laparoscopic cholecystectomy is one of the most widely performed surgical procedures. However, port site infection remains to be a rare complication that could negative impact the advantages of this surgery and increase the complications. **Patients and Methods:** This prospective study was carried out in ALKINDY TEACHING Hospital from July 2011 to February 2012. Over 8 months period, 54 low-risk patients undergoing elective laparoscopic cholecystectomy for symptomatic gall stone disease were included in this study. Data was collected on a forma designed to include demographic information, history, examination findings, risk factors, operative technique, complications and their management as well as follow up. **Results:** In this study 54 patients underwent laparoscopic cholecystectomy in the study period, 51 (94.44%) were females and 3 (5.56%) were males. The mean age was 38 years (age group was between 16-60 years). Intra peritoneal Spillage of bile from gall bladder occurred in 16 patients (29.63%). Out of the 54 patients, 3 (5.56%) patients developed surgical site infection which was managed with regular local wound toilet and antibiotics. Drain insertion was significantly associated with development of wound infection. **Conclusion:** LC is an effective and safe procedure that was associated with a low incidence of port site infection. Drain was associated with infection in all cases. Therefore, in patients who need drain insertion, further attention should be stressed upon sterilization and other precautionary measures.

INTRODUCTION

Laparoscopic cholecystectomy has emerged as the preferred approach for doing gallbladder surgery. Laparoscopic cholecystectomies are linked to reduced hospitalization time and recovery period, less discomfort and scarring, and fewer occurrences of postoperative surgical site infection (SSI).[1] [2] Regarding the management of cholelithiasis. Laparoscopic cholecystectomy (LC) is now widely regarded as the primary treatment and is considered the most effective method for managing non-cancerous gallbladder disease. Consequently, all individuals experiencing symptoms of cholelithiasis are eligible for LC.[3][4]

The impact of laparoscopic surgery on wound infection has been largely overlooked in the surgical literature, despite its potential to reduce the occurrence of infectious problems[5][6] and modify their characteristics.[7]

The objective of this research is to examine the influence of surgical variables on the occurrence of infectious complications and, based on our findings, provide strategies to enhance this area of patient care.

PATIENTS AND METHODS

This prospective study was carried out in ALKINDY TEACHING Hospital from July 2011 to February 2012. Data was collected on a proforma designed to include demographic information, history, examination findings, risk factors, operation technique and procedure, complications and their management as well as follow up.

Pre operative work up including complete blood count, renal and liver function tests, random blood sugar, general urine analysis, and abdominal ultrasonography for gallbladder, CBD, liver and pancreas.

Those with normal liver function test and negative HBs Ag selected for LC. Other investigations performed were ECG and chest X-ray for the purposes of anesthetic fitness as well as for any concomitant disease.

Risk factors for all patients were evaluated pre operatively (Diabetes mellitus, medication and high BMI, etc.).

All patients undergoing elective laparoscopic

cholecystectomy were included in this study; Preoperative prophylactic antibiotics were not given to patients.

An informed consents taken from the patients pre operatively, explaining the possibility of conversion to open operation.

Standard laparoscopic cholecystectomies generally employ the use of four ports. The10mm infra umbilical port is usually placed first and used for the camera. A10mm epigastric port is then placed just to the right of the falciform ligament under direct visualization. Two 5mm ports are then placed four fingers in the right sub costal region at midclavicular line and anterior axillary line. Carbon dioxide pneumoperitoneum pressure was 12mm Hg in all patients.

All Patients were positioned in supine position on the operating table. Preparation and scrubbing in a sterile fashion using povidone iodine 10%. Mainly classical 4-port approach was adopted while the three port entry procedure was also done in a few cases. Gallbladder was extracted from epigastric port and sent for histopathology in all cases, and bile swab for culture. Drain was inserted through the lowest right sided port where ooze was suspected in dissection area or in difficult cases. Silk suture used for skin suturing in all cases. Injectable antibiotics were given post operatively for one week duration, doses were 1 gm of ceftriaxone vial twice daily ±metronidazole vial 500 mg three times daily or ampiclox (ampicillin 250mg + cloxacillin 250mg) 500 mg four times daily. Patients were mobilized on the same evening and started oral fluid and liquid diet while they were discharged home the next morning with advice for follow for up to four weeks.

RESULTS

A total of 54 patients who had laparoscopic cholecystectomy were included in the study.

The mean age was 38 year (age group was between 16-60 years). Regarding gender, 51 (94.44%) patients were females and 3 (5.56%) were males. The male to female ratio was 1: 17. Concerning BMI, most patients were either overweight (44.46%) or obese (42.6%); as shown in table 1.

Table 1: Basic characteristic of the studied sample.

Variable	Frequency	Percentage
Age		
< 20	3	5.55%
21-29	14	25.95%
30-39	19	35.18%
Gender		
Male	3	5.56%
Female	51	94.44%
BMI (Kg/m^2)		
Normal weight (<25)	7	12.96%
Overweight (25-30)	24	44.46%
Obese (>30)	23	42.6%

Ports used in LC were classical 4 ports in most patients, while 3 ports used in rest of patients (table.2). No significant association was detected between the number of ports and the incidence of infection; as shown in table (2).

Table 2: Relationship between no. of ports and the incidence of infection. (p value = 0.303)

Ports number	Infection	No infection	Total
Four ports	2	46	48
	4.2%	95.8%	100.0%
Three ports	1	5	6
	16.7%	83.3%	100.0%
Total	3	51	54
	5.6%	94.4%	100.0%

Spillage of bile and or gallstones into the peritoneal cavity during LC occurs due to gallbladder perforation. Ppillage of bile occurred in 16 case (29.63%). No significant association was detected between the spillage of bile and the incidence of infection; as shown in table (3).

Table 3: Relationship between no. of ports and the incidence of infection. (p value = 0.206).

Spillage of bile	Infection	No infection	Total
Yes	2	14	16
	12.5%	87.5%	100.0%
No	1	37	38
	2.6%	97.4%	100.0%
Total	3	51	54
	5.6%	94.4%	100.0%

The incidence of wound infection was significantly associated with drain insertion; as shown in table (4).

Table 4: Relationship between drain insertion and the incidence of infection. (p value = 0.039).

Drain used	Infection	No infection	Total
Yes	3	16	19
	15.8%	84.2%	100.0%
No	0	35	35
	0.0%	100.0%	100.0%
Total	3	51	54
	5.6%	94.4%	100.0%

Antibiotics used in post operative period for about 7 days and mostly third generation cephalosporin (ceftriaxone) and metronidazole, while rest of patients received either ceftriaxone alone or ampiclox (ampicillin 250mg.+cloxacillin 250mg.) alone; as shown in table (5):

Table 5: Shows used antibiotics in LC.

Antibiotics	Number of cases	%
ceftriaxone and metronidazole	39	72.23%
Ceftriaxone	11	20.37%
Ampiclox	4	7.4%

All cases discharged home next day and drain was removed for patients with drain also on discharge day.

Bile swab sent for culture shows no growth of bacteria in all cases.

Histopathological study of gall bladder after LC shows chronic cholecystitis in all cases except for 2 cases of mucocele.

Port infection reported in 3 cases (5.56%), The organisms grown were all skin commensals (coagulase-negative Staphylococcus spp.) and confined to epigastric port where gall bladder extracted, which was reported one week after LC.

DISCUSSION

Port site infection (PSI) is an infrequent occurrence during laparoscopic surgery that might diminish the advantages of this less invasive procedure and heighten postoperative difficulties. The documented prevalence of (PSI) rates after LC is within the range of 1.4–6.8. The presence of PSI has a substantial negative impact on the overall results of LC, as they may cause discomfort, slow down the healing of wounds, result in deformity, and raise healthcare expenses, hence nullifying the advantages of a minimally invasive method in that specific patient.[8]

In the present study, port site infection occurred in 3 cases (5.56%) cases and were class II treated with antibiotics and daily dressings only and were divided into two groups:

First group, Two of cases with Port site infection had Spillage of gallstones into the peritoneal cavity during LC, tube drain used in both case and ceftriaxone + metronidazole were given for both patients, while the other group one case with no Spillage of gallstones into the peritoneal cavity during LC, drain was also used and ampiclox only given to patient.

All cases with port site infection were females of different age group, patients were overweight in two cases and one case was obese.

The bacteriological data from the study does not provide evidence to establish the gallbladder as the origin of wound infection, since all microorganisms found in the wound sites of patients who had postoperative infections were normal skin bacteria. This is corroborated by the discovery that wound infection was substantially more prevalent in the group that used drains. This aligns with the meta-analysis conducted by Cirocchi et al., which showed a statistically significant decrease in the incidence of postoperative wound infection in the group without drainage.[9] Nevertheless, Bawahab et al. found no significant correlation between drain insertion and an increased incidence of wound complications.[10]

In previous studies,[6-8] similar results were obtained with no correlation between infected bile and septic complications, suggesting that postoperative wound infections in laparoscopic cholecystectomy are independent of gallbladder organisms.

The disadvantages of antibiotic use include cost, encouraging the emergence of resistant strains of bacteria and side-effects.

The present study suggests that there may be no advantage to be gained from antibiotic treatment in elective laparoscopic cholecystectomy where the source of infection appears to be skin commensals rather than the colonized diseased gallbladder.

Understanding the mechanisms by which illness may be conveyed via equipment is a crucial element in preventing its spread. Open surgery allows for the straightforward sterilisation of tools using traditional techniques such as autoclave. Nevertheless, the laparoscopic kit poses a greater mechanical complexity, making it difficult to achieve thorough sterilisation. Consequently, disposable tools are the preferable option. However, due to their cost, reusable instruments continue to be used. Thankfully, the occurrence of infection after surgery, even with repeated usage, is still quite rare. Multiple investigations have shown that, despite the challenges in cleaning, such equipment is resistant to infection.[11][12][13]

CONCLUSION

LC is an effective and safe procedure that was associated with a low incidence of port site infection. Drain was associated with infection in all cases. Therefore, in patients who need drain insertion, further attention should be stressed upon sterilization and other precautionary measures.

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