Original Article

Frequency of Port Site Infection after Laparoscopic Cholecystectomy

Muhammad Bilawal Khan¹, Ajmal Khan², Zakir Ahmad Khan³*, Kamran Khan⁴, Muhammad Waqas Khan⁵ and Karishma Rehman⁶

¹Department of Surgery, Police Services Hospital Peshawar, Pakistan
²Department of Surgery, Tehsil Headquarter Hospital, Matta Swat, Pakistan
³Department of Surgery, District Headquarter Hospital Alpurai Shangla, Pakistan
⁴Department of Pathology, Rehman Medical College Peshawar, Pakistan
⁵Training Medical Officer, Khyber Teaching Hospital, Peshawar, Pakistan

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*Corresponding Author:
Zakir Ahmad Khan
District Headquarter Hospital Alpurai Shangla, Pakistan
xakirahmad005@gmail.com

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ABSTRACT

Cholangitis is an inflammation of the biliary tree due to Gallstones. The port region is susceptible to postoperative infections when a patient has excessive wounding and a microorganisms isolated from spontaneously procured tissue or fluid inside the upper cut.

Objectives: To analyze the frequency of port site infection (PSI) and to assess variables influencing PSI following laparoscopic cholecystectomies.

Methods: This research was carried during 2022 in two hospitals in Peshawar Pakistan. Only 55 of the 907 patients who had PSI after going through LC surgeries were included and were kept under observations for six months. Data were collected by questionnaire, imported into the SPSS for statistical analysis. Descriptive statistics and Chi-square test were used for association between variables.

Results: 34 patients out of 55 had CC, whereas 21 patients underwent surgery following an AC and became infected. Following LC, PSI frequency were lower than after open cholecystectomy. Majority of patients were women. Only five patients, based on the PSI, got an infection at the lateral ports, whereas 11 patients and 39 patients respectively, developed infections at the umbilical and epigastric ports. PSI came from majority of the female patients showing a significant association in frequency of PSI in relation to gender.

Conclusion: Females tend to have high PSI rates and frequent epigastric port PSIs.

INTRODUCTION

The gallbladder is located on the visceral inferior side of liver [1]. The commonest typical biliary pathology is thought to be gallstones. Gallstones are thought to afflict 10-15% of people in developed civilizations [2]. Among the most frequently performed surgeries in the US, cholecystectomies are done over nearly 700,000 patients annually [3]. Cholelithiasis is now prevalent at rates of 3-4% in Asian populations and 10-15% in western nations [4]. Gallstones are discovered in 8% and 20% of patients in Pakistan who are older than 40 and 60 years old, respectively [5]. Gallstones are hard, stone-like fragments of bile waste. When scanning is done for other signs, more than 80% of gallstone patients are not aware that the gallbladder disease was also shown to be present [6]. Regarding gastrointestinal and liver illnesses, one of most frequent clinical indication in the United States is gallstone disease (GSD)[7]. Cholelithiasis is prevalent in 3-11% of the Chinese population, 7.1% in India, and 5% in Taiwan [8-10]. Although there is currently a lack of information in Pakistan, a prior study indicated that the surgical frequency in Pakistan's southern Sindh region was 9.03 percent [11]. In 1986, Eric Mühe conducted the first
laparoscopic cholecystectomy (LC), which quickly rose to the status of the "Gold Standard" for the selective management of chronic gallstone disease [12, 13]. Multiple surgical treatments frequently lead to problems. Infections at the surgery area are among these issues (SSI). As a diversity of parasites may survive inside the body and get contaminated as a consequence of surgical intervention, the infection may be internal or exterior. In certain situations, a patient's bacterial pathogens may be invasive and result in infection. On a single laparoscopic procedure, this can happen during both open and partial surgery [14]. LC coupled with SSIs is extra open than cholecystectomy [15]. Even though port core infection is common after cholecystectomy, they are becoming more common and have a significant influence on the overall results of the procedure, including delayed return to work, higher expenditures, and unfavorable aesthetic adverse effects. The port region is susceptible to three different forms of postoperative infections [16, 17]. The patient has discharge from excessive cutting and microbes isolated from spontaneously procured tissue or fluid inside the upper cut. The first surgical infection happens within one month of surgery, affects only the skin and subcutaneous tissue, affects the patient's skin and subcutaneous tissue. The second form, a severe surgery infection, affects deep tissue that attaches the fascia and deep muscles to the wound and may appear 30 days after surgery. The patient has at least two of the following conditions: abscess, reduction of deep incision, and purulent discharge from deep incision. The third form of surgical site infection (SSI) affects any organ or place other than the incision that was made or utilized during surgery [18, 19]. Therefore, the current research was designed to analyze the frequency of port site infection (PSI) and to evaluate factors that influence PSI after laparoscopic cholecystectomies.

**METHODS**

This research was carried out from January, 2022 to October, 2022 in Hayatabad Medical Complex Hospital and Khyber Teaching Hospital, Medical Teaching Institute Peshawar, Pakistan. In this research, patients who had port site infections (PSI) following LC were included. Patients with coexisting pancreatitis, cholangitis, or incomplete data were excluded from this research. Only 55 of the 907 patients who had LC surgeries were included in our research because they had PSI. An interventional radiologist performed ultrasound (US)-guided trans-hepatic PC under local anesthesia with a pigtail catheter. In all groups, oral food intake was regulated on the basis of patient's medical condition, and the decision to discharge was evaluated based on food tolerance. In all operations, the gallbladder is retrieved from epigastric port without the use of a retrieval bag by skilled surgeons employing four-port methods and reusable equipment. Most patients had the sub-hepatic tube drain placed, and they were released the day following surgery. On the seventh day following surgery, the sutures were removed without any signs of infection. All PSI-affected patients had sensitive swabs that were fermented. Patients who have chronic, incurable illnesses have tests with general anaesthesia, have their persisting sinuses removed, have their sinuses dissected, and then have the incision left open to recover for another reason. Chronic sinus excisional biopsies were made, sent to the histological evaluations, and samples were examined using PCR (PCR). Participants with tuberculosis (TB) received oral anti-TB treatment for 9 months. After six months of follow-up, all patients showed good responses. To reduce bias in the study, patients whose functions were changed to open procedures and those who had a record of persistent co-morbid diseases were excluded from the study. We gather information from seasoned surgeons who have adequate documentation and postoperative follow-up in the same purpose and to prevent iatrogenic issues for beginning surgeons. The level of experience is determined by how long they have been performing laparoscopic operations (at least ten years), how many surgeries they have had, and how long each surgery lasted (20-90 minutes). In our research, variables such gender, the site of the infected port, the kind of microorganisms, the degree of infection, and the presence of bile stones, or redness in the procedure were examined. The sample's sterilizing procedure involved washing the equipment with ENZYM (50cc), rinsing with water, and then removing CIDEX® OPA solution for 30 minutes. A pre-designed questionnaire was used to collect all the information, and statistical analysis was carried out. SPSS (v.25) was used to examine the data. Descriptive statistics were used for demographic and clinical features. The results were presented as percentages for continuous variables and the number/percentage for categorical variables. The Chi-square test was used to assess the importance of the association such as gender-wise comparison, PSI occurrence in several port locations and relationship between the prevalence of PSI and the preoperative clinical diagnosis of gallbladder. P<0.05 was regarded as the significant value. The Helsinki Declaration's guiding principles guided the conduct of this study. Each and every patient who participated gave their written informed permission.

**RESULTS**

907 individuals who undergone LC are included in this study. They were between the ages of 20 and 65. Out of 907 patients, PSI was discovered in 55 (6.06%). In respect to gender, the PSI percentage was 4.74% for 43 female
patients and 1.32% for 12 male patients (Figure 1).

Figure 1: Frequency of male and female patients

Regarding the condition of the gallbladder before surgery, 34 patients (3.5%) had chronic cholecystitis (CC), whereas 21 patients (2.31%) underwent surgery following acute cholecystitis (AC) (Table 1).

Table 1: Relationship between the prevalence of PSI and the preoperative clinical diagnosis of gallbladder

<table>
<thead>
<tr>
<th>Condition</th>
<th>Infected (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACC</td>
<td>21 (2.31%)</td>
</tr>
<tr>
<td>Total</td>
<td>34 (3.74%), 65</td>
</tr>
</tbody>
</table>

Only five patients (0.55%), based on the PSI, got an infection at the lateral ports, whereas 11 patients (1.21%) and 39 patients (4.29%) respectively, developed infections at the umbilical and epigastric ports (Table 2).

Table 2: PSI occurrence in several port locations

<table>
<thead>
<tr>
<th>PSI</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Umbilical</td>
<td>11 (1.21%)</td>
</tr>
<tr>
<td>Epigastric</td>
<td>39 (4.29%)</td>
</tr>
<tr>
<td>Lateral</td>
<td>5 (0.55%)</td>
</tr>
<tr>
<td>Total</td>
<td>55</td>
</tr>
</tbody>
</table>

Figure 1: Frequency of male and female patients

was found in the frequency of PSI in relation to gender. All the patients were diagnosed negatively with COVID-19. Almost similar findings were observed in a recent research [22, 23]. Patients were more likely to get the infections during the critical period compared to the chronic phase [26]. The current results were almost similar with the statement of Dai et al and findings of Opal et al as only five patients, based on the PSI, got an infection at the lateral ports, whereas 11 patients and 39 patients respectively, developed infections at the umbilical and epigastric ports [26, 27]. P-value was 0.002, which is quite significant, and the location of the gallbladder removal may have contributed to PSI. These findings are in line with the Tevis et al [28]. This is because having a firm, flexible gallbladder with a thick wall of edema increases the likelihood of the gallbladder perforating and dislocating, developing stones, or becoming red.

Conclusions

Mostly in initial management of AC, PC was suggested and chosen to surgery, particularly in high-risk, chronically sick patients. Females tend to have high PSI rates and frequent epigastric port PSIs. The length of the procedure and AC may be factors in the development of a port-site infection. It is essential to pay close attention to the infection caused by persistent deep surgeries. It is essential to pay close attention to the infection caused by persistent deep surgeries.

Conflicts of Interest

The authors declare no conflict of interest.

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References


