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FREQUENCY OF FACTORS LEADING TO UMBILICAL PORT INFECTION IN PATIENTS UNDERGOING ELECTIVE LAPAROSCOPIC CHOLECYSTECTOMY.

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ABSTRACT

BACKGROUND: According in a significant way to laparoscopic surgery (LS), occasionally referred to as the least invasive treatment, modern attentive attention has undergone a paradigm shift. The goal of this study was to determine if any variables that contribute to umbilical port contamination in patients undergoing elective laparoscopic cholecystectomy procedures will reoccur. **MATERIAL AND METHODS:** From December 16, 2020, to June 15, 2021, descriptive cross-sectional research was conducted at the surgical department of the Khyber Teaching Hospital in Peshawar. A total of 233 individuals who met the criteria for cholecystectomy and showed signs of the condition underwent laparoscopic cholecystectomy. Umbilical port contamination-causing variables were noted and examined using SPSS Version 16. **RESULTS:** A total of 233 individuals who had cholecystectomy signs underwent treatment. With a range of 18 to 60, the normal age was 42.96 years + 12 SD. The ratio of women to men was 1.94:1. 167 patients (71.7%) were obese, 144 patients (61.8%) had a medical procedure performed on them, and 147 patients (63%) were being treated by less experienced experts. **CONCLUSIONS:** The junior laparoscopic surgeon, weight, and the length of time spent on a medical operation are the risk factors for umbilical portsite illness.

KEYWORDS: Cholecystectomy, cholelithiasis, pain, gall bladder.

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INTRODUCTION

Laparoscopic surgery, also known as minimal access surgery, has changed how we see and approach the cautious attention that is needed today. Its notoriety among experts and patients has been sparked by early surgical recovery, reduced pain, further developed aesthesis, and early re-visitation of work.¹ Infection from wounds continues to be a major concern in surgical practice worldwide. If aseptic techniques are ignored, the damage illness may often be horrifying in terms of severity and fatality. The average age in the review was 48

years old, with a standard deviation of 18.66. Patients were split between 74% female and 26% male. Ten percent of the patients—seventeen—had port site contamination; of these, fourteen (82%) had BMIs more than thirty, twelve (68%) had medical procedures lasting longer than two hours, seventy-seven percent were treated by junior specialists, and thirteen (75%) had severe cholecystitis.² Major problems after laparoscopic surgeries occur at a rate of around 1.4 per 1,000 procedures overall.³ Port site discomfort are annoying

complications that undermine the benefits of minimally intrusive medical procedures. They also worsen the patient's condition and damage the reputation of the physician.⁴ According to research, iatrogenic gallbladder perforation was more frequently linked to portsite infection (26/57.8%).⁵ Although it was not linked to problems, adding an incision in the umbilicus has been avoided due to concerns about a higher incidence of surgical site infection (SSI) and postoperative adhesion. There are several benefits, one of which is aesthetic. Transumbilical incisions can be readily craniocaudally expanded for anatomical reasons in order to minimize the incision length while accommodating the size of the removed organs.⁶

This study aims to determine whether risk factor evaluation for the improvement of port-site contaminations following laparoscopic cholecystectomy in patients who are generally safe has not been focused on as much as it has been focused on in cases of open cholecystectomy. As a result, it will be the first of its kind in our community and serve as our comprehensive methodology for resolving issues related to such diseases caused by elective laparoscopic surgery (LS). Finding out how frequently umbilical port infections occur in patients having elective laparoscopic cholecystectomy was the goal of this study.

MATERIALS AND METHOD

The study was a descriptive cross-sectional study done at the Khyber Teaching Hospital in Peshawar, in the Department of General Surgery, from June 15, 2021, until December 16, 2020. Non-probability sequential sampling was the method used for sampling. According to the WHO sample size calculation, the sample size was 233, and 68% of prolonged surgeries were kept as risk factors for umbilical port infection, with a 95% confidence interval and a 6% margin of error.

The study comprised patients of both genders between the ages of 18 and 60, patients with cholelithiasis for six months with ultrasound-identified echogenic foci in the gallbladder and scheduled for elective laparoscopic cholecystectomy, and patients in both ASA Class I and Class II. Patients with persistent diabetes mellitus for three years or more, as shown by medical records, patients on steroids verified by clinical history, and patients with a history of empyema gall bladder were not included in the research.

after clearance from CPSP Karachi's REU Department and the hospital's ethics committee. Patients who met the inclusion criteria and were admitted to the outpatient department were initially enrolled. After that, I gave the patient the rundown on the benefits and drawbacks of my research and got their informed written permission. Every patient who was hospitalized underwent a thorough history and clinical examination. Additionally, baseline investigations were conducted as part of the preoperative workup. At the time of admission, the patient's height, weight, and BMI (kg/m²) were assessed using a stadiometer and a digital weighing machine, respectively. Patients were instructed to cease oral consumption after midnight on the night of operation after they were admitted. All patients received Cefoperazone with sulbactam, a third-generation cephalosporin, at the time of anesthesia induction. Pyodine was used to scrub all patients for three minutes, paying special attention to the umbilicus. The inclination of the specialist was inserted in three or four ports. All of the system's specialized components were maintained uniformly across all patients, and a stop watch was used to record the duration of each treatment. Following the medical treatment, the patient's injury was monitored on day five, and they were asked to follow up after five days to have the fasteners removed and to have their damage evaluated for any signs of illness. Nevertheless, in the unlikely event that there were no contaminants, these patients were freed. This summary includes all of the information listed on a separate proforma, including age, orientation, hypertension, diabetes mellitus, financial situation, length of clinic stay, duration of medical treatment, smoking status, and factors causing umbilical port contaminations.

Version 24.0 of the statistical program for social sciences (SPSS) was used to examine the data. Frequencies and percentages were used to represent categorical variables such as gender, smoking status, diabetes mellitus, hypertension, and factors leading to umbilical port infection. The presentation of numerical data such as height, weight, age, BMI, length of hospital stay, operation time, and BMI was done using the mean + SD method. In order to determine the impact modifiers, factors that contribute to umbilical port infections were stratified according to age, gender, hypertension, diabetes mellitus, socioeconomic status, length of hospital stay, duration of operation, and smoking

status. A post-stratification chi square test was conducted, with a significance level of $P < 0.05$. Tables and graphs were used to display all of the results.

RESULTS

In this study, 233 patients—79 men and 154 women—who had been diagnosed with cholelithiasis for six months, had echogenic foci in their gallbladder on ultrasonography, and were scheduled for elective laparoscopic cholecystectomy were monitored. The ratio of women to men was 1.94:1 (Figure 1).

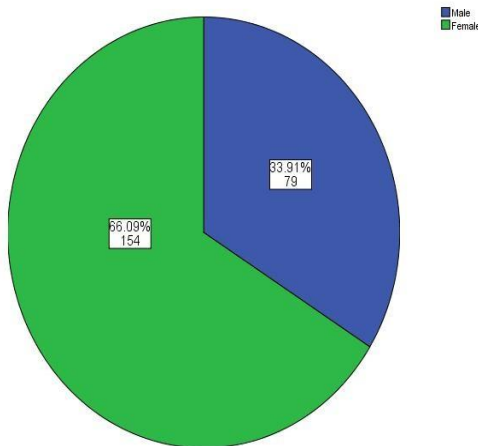


Figure 1: Gender distribution of the patients

The age range of the patients was split into three groups: 110 patients (47.2%) presented with an age range of 31 to 50 years, 58 patients (24.9%) had an age range of less than or equal to 30 years, and 65 patients (27.3%) had an age range of more than 50 years. Participants in the research varied in age from 18 to 60. 42.96 years + 12 SD was the average age. (Table 1)

Table 1: Age-wise distribution of patients

Age groups	Frequency	Percentage	Mean+SD
<= 30	58	24.9	42.96years+12
31 - 50	110	47.2	
51+	65	27.9	
Total	233	100.0	

The majority of obese patients with umbilical port infections required prolonged surgery, which was carried out by junior surgeons. Figure 2 shows that 167 patients (71.7%) were obese, 144 patients (61.8%) had prolonged surgery, and 147 patients (63%) had their operations performed by junior surgeons. (Figure 2)

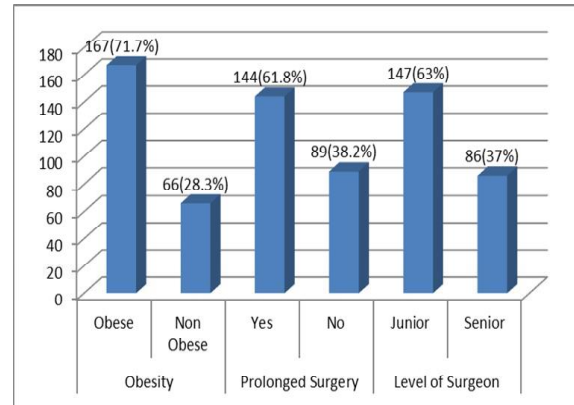


Figure 2: Distribution of risk factors.

DISCUSSION

The open procedure of cholecystectomy was used to treat gallstones, and it was the gold standard for treating the condition for over a century.^{5,7} In the current era of minimally invasive or keyhole surgery, however, laparoscopic cholecystectomy has transformed the treatment of GBS.^{8,9}

Cholelithiasis is a widespread illness that affects roughly 16% of people in Pakistan and 10.15% of people in the USA.^{1, 2} Most of the time, patients don't show any symptoms, but when complications arise, they do.³ Gallstone disease that presents with symptoms may develop problems if surgical intervention is delayed. Our study's female:male ratio is 1.94:1, which is in line with research by Suri et al. and Assaff et al. that found ratios of 3.11 and 1.32:1 for their respective studies.^{10,11} This might be related to the variance in the demographics. None of the male patients in our research experienced SSIs. However, there was no discernible correlation seen in our data between SSIs and gender. Likewise, no statistically significant correlation was discovered between the SSI and the gender of the participants by Chang et al. and Kumar et al.^{12,13}

Similar to the Suri et al. research, the majority of our patients were in their third or fourth decade of life.¹¹ Our research indicates a statistically significant correlation between age and surgical site infection. Older individuals get higher SSIs, most likely as a result of a weakened immune system. Infection of the wound, which typically affects the site of umbilical cannulation used to remove the gall bladder, happens in 0.3–1% of cases.^{14, 15, 16}

Our findings are in accordance with the 6.3% incidence reported by Shindholimath et al. (2017), whereas the 5.3% and 5.07% reported by

Den Hoed et al. (2018) and Jan et al. (19). Zitser et al. (20) and Colizza et al. (21) reported substantially lower occurrences, 2.3% and <2%, respectively, which is in contrast to our data. Given that neither the patient nor the hospital can afford to buy disposable ports for every instance, the greater prevalence of port site infections in our research may be related to the usage of reusable ports following sterilization. PSI was more common when a senior surgeon conducted a laparoscopic cholecystectomy (86; 37%) than to a rookie surgeon (147; 63%). According to our research, inexperienced laparoscopic surgeons frequently take more than an hour to do a laparoscopic cholecystectomy, which raises the PSI. Increased PSI during a laparoscopic cholecystectomy lasting more than an hour has been documented by Jan et al.(22) and Anielski et al. (23). Consequently, there are two reasons why the younger laparoscopic surgeon increases the risk of port-site infection: 1) a higher risk of gallbladder perforation and subsequent spillage¹⁵; and 2) a longer recovery period following the "laparoscopic cholecystectomy" surgery.²³ Bile spilling provides an explanation for the higher incidence of PSI in two-port elective laparoscopic cholecystectomy compared to three-port procedures.²⁴

CONCLUSION

Although uncommon, umbilical PSI can cause frustration for the patient and the operating physician during laparoscopic cholecystectomy. We came to the conclusion that iatrogenic gallbladder perforation resulting in bile leakage is the main risk factor for portsite infection following elective laparoscopic cholecystectomy in otherwise healthy individuals. The morbidity and mortality of patients after elective laparoscopic cholecystectomy resulting from port-site infection can be significantly reduced by taking the utmost precautions to prevent spills. Consequently, obesity and the junior laparoscopic surgeon are risk factors for umbilical portsite infection because of their prolonged surgical procedures.

ETHICS APPROVAL: The ERC gave ethical review approval.

CONSENT TO PARTICIPATE: written and verbal consent was taken from subjects and next of kin.

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CONFLICT OF INTEREST: No competing interest declared.

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