ORIGINAL ARTICLE

Early Port Site Complication after Laparoscopic Cholecystectomy

USMAN ALI REHMAN, MUHAMMAD RIZWAN QADIR, TAHIR HAMID, KHALIL AHMED, AHMAD RAZA NASAR
Department of Surgery, Nawaz Sharif Social Security Hospital Multan Road, Lahore
Correspondence to Dr. Muhammad Rizwan Qadir, Email: rizwanqadir1239@gmail.com, Mobile 0346 0768025

ABSTRACT

Background: Port site complication though rare, shall be evaluated and studied so as to improve the quality of health care.
Aim: To find the frequency of early port site complication after laparoscopic cholecystectomy and factors causing port site complication.
Methods: A descriptive cross-sectional study was conducted at Gulab Devi Teaching Hospital Lahore in which 60 patients were recruited through non-probability sampling method. An adopted close ended questionnaire was applied. The data was interpreted and analyzed by SPSS version 23. The data was analyzed in the form of tables and graphs.
Results: Among 60 patients, 80% were females. The mean age of the patients was 42.80±11.540 years. Among these patients, 20.0% had hypertension, 11.7% hypertension & diabetes mellitus and 5% had hepatitis C. None of the patients developed port site infection and port site hernia.
Conclusion: Study concluded that no port site infectionand port site hernia were documented. Itwas due to proper fascial closure of port site wounds and sterilization of instruments which shows that by adopting these measures both port site infectionand port site hernia could be prevented.
Keywords: Laparoscopic, cholecystectomy, port-site hernia, port-site infection.

INTRODUCTION

The gallstones or calculi can develop in any part of biliary tract and onceit involves gallbladder is called cholelithiasis[1]. The gallstone diseases are most expensive and common public health issues[2,3]. However, the prevalence differs widely in different populaces. In America, the gallstone prevalence is around 10% among adults while its prevalence in Western Europe is between 5.9 to 21.9%. In Asia, 3.2 to 15% prevalence rates have been documented[4]. The gallstones incidence rises with increasing age and almost 20 percent adults aged above 40 years and 30 percent adults more than 70 years have gallstones. In Pakistan, cholelithiasis is rising and becoming an important health dilemma with some estimations demonstrating 10 to 15 percent prevalence[5]. The disease could be either symptomatic or symptom-free. Symptoms could be specific such as intermittent pains in abdomen right upper quadrant or could be nonspecific like nausea & vomiting[6].

Cholecystectomy is believed as the singleeffectual management regarding symptomatic gallstones[7]. It is most frequent surgical procedure for biliary tract while 2nd most frequent operation carried out these days[8]. The open cholecystectomy procedure developed by Carl Johann August Langenbuch was considered gold standard for symptomatic cholelithiasis definitive management[9] but laparoscopic technique has replaced this surgical procedure and has transformed the field of surgery[10]. Initially, the LC (laparoscopic cholecystectomy) was carried out in Boblingen (Germany) by Erich Mühe on 12 Sept. 1985[11]. Now the LC is gold standard surgical treatment for symptomatic gallstones[12,13]. The LC is preferred over conventional open surgical treatment due to obvious benefits it offers[14]. The advantages of LC comprise decreased pain after surgery, insignificant surgical incisions, less hospital stay, early return to job, less complications after surgery and better cosmetic outcomes[15]. These benefits have enhanced the acceptability and use of laparoscopy and certainly other types of minimally invasive surgical treatments over the past several decades[16].

However, the LC is better than open cholecystectomy but it does not preclude theissues and is also responsible for numerous unimportant to important complications as well as port-site complications[17,18]. Incidence of main complications after laparoscopic surgical treatment is almost 1.4/1,000 cases. Although, the port site complicationsincidence after laparoscopic surgical treatment is recorded to be about 21/100,000 cases[10].

The complications associated with port site due to LC could be intra- or post-operative hemorrhage, hematoma, hernia, painful scar, metastatic malignancy and wound infection. Port site blood loss can probably present as much slow secretion or frank hemorrhage in the case of damage to main vessel. It may be noticed on the overlapping dressing or present as internal hemorrhageafter surgery. It is probably the most common complication associated with port site that affects 5 to 6.3% patients. The PSH (port site hernia) is incisional hernia that occurs at port site/trocar afterthe laparoscopic surgery. Mostly it is noticed at 10mm port site within epigastric or umbilical and infra umbilical section. It is uncommonly noticed on 5mm cannula site. The prevalence PSH ranges between one and six percent[17].

The frequency of such complications differsgreatly in several series depending upon type, size and location of ports created in addition to material qualityutilized in creating them.[18] Port site complications are worrisome complications that undermine the advantages of minimal invasive surgical treatment, not only it add to morbidity of patient but also spoil the surgeonreputation[10].

Received on 06-10-2020
Accepted on 16-02-2021

The objectives of the study are to find the frequency of early port site complication after laparoscopic cholecystectomy and factors causing port site complication.

MATERIAL AND METHODS

A descriptive cross-sectional study was conducted at department of surgery Gulab Devi Teaching Hospital Lahore for two years from 07-01-2019 to 06-01-2021. A sample of n=60 was recruited through non-probability sampling method. Data were calculated after approval by institutional ethical review committee of the hospital. There was no harm to the patients. Patients fulfilling the inclusion criteria were recruited from hospital. Informed consent was taken. Both qualitative and quantitative data were collected from patients and recorded in a questionnaire.The collected data were analyzed by using SPSS version 23. The qualitative data like gender was presented in the form of pie chart and table with its percentage and quantitative data like age and port site hernia/infection was presented in the form of frequency distribution, mean, range and standard deviation.

RESULTS

Table 1 demonstrates that among 60 patients, only 12(20%) were males while most of them were female patients 48(80%). The mean age of the patients was 42.80±11.540 years (range 20-70 years) and the mean weight was 64.92±14.22 kg (range 40-101 kg.).

Among 60 patients, 55 (91.7%) were married and only 5(8.3%) were unmarried. Result shows that majority 36(60%) of patients were housewives while 4(6.6%), 12(20%), 4(6.7%) and 4(6.7%) were teachers, private company employees, labors and students, respectively.

Table-2 exhibits that among 60 patients, majority had hypertension 12(20%) followed by hypertension & diabetes mellitus 7(11.7%) and hepatitis-C 3(5%) while 38 (63.3%) patients had no any co-morbidity.

Table-3 depicts that out of 60 patients, 20(33.3%) were given antibiotics 10-20 minutes before surgery, 35(54.4%) patients 20-30 minutes before surgery and 5(8.3%) patients were given antibiotics more than 30 minutes before surgery.

Table-4 asserts that among 60 patients, only 5(8.3%) had localized pain and tenderness as port site complication which remained for average 10 days while none of the patients had early or late hernia or infection. All these patients underwent elective surgery. During surgery 4 ports were placed at different sites. One port at the umbilicus (10mm), one at xiphisternum (10mm), one at right upper quardent (5mm) and one was placed at right anterior axillary line (5mm).

Table-5 describes the association of various factors with localized pain & tenderness and found that among 12 patients who were males, 1(1.7%) had localized pain and tenderness and 11(18.3%) had no localized pain and tenderness. Likewise among 48 patients who were females, 4(6.7%) had localized pain and tenderness and 44(73.3%) had no localized pain and tenderness. The result was found statistically insignificant (P=1.000).

Among 55 patients who were married, 5 (8.3%) had localized pain and tenderness and majority 50(83.3%) had no localized pain and tenderness. All 5(8.3%) patients who were unmarried had no localized pain and tenderness. The result was found statistically insignificant (P=1.000).

Among 19 patients who were hypertensive, 3(5%) had localized pain and tenderness and 16(26.7%) had no localized pain and tenderness. Among 41 patients who were not hypertensive, 2(8.3%) had localized pain and tenderness and 39(65%) had no localized pain and tenderness. The result was found statistically insignificant (P=0.314).

Among 7 patients with diabetes mellitus, 2(3.3%) had localized pain and tenderness and 5(8.3%) had no localized pain and tenderness. Among 53 patients with no diabetes mellitus, 3(5%) had localized pain and tenderness and 50 (83.0%) had no localized pain and tenderness. The result was found statistically insignificant (P=0.099).

Among 3 patients with Hepatitis-C, all (50%) had no localized pain and tenderness. Among 57 patients with no Hepatitis-C, 5(8.3%) had localized pain and tenderness and majority 52(86.7%) had no localized pain and tenderness. The result was found statistically insignificant (P=1.000).

Figure 1: Gender of patients

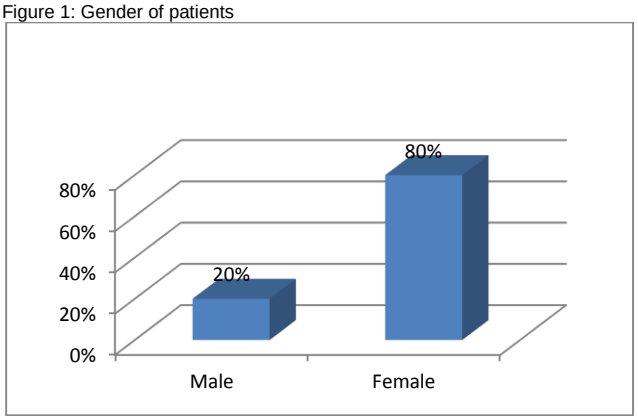

Table 1: Socio-demographic information

Age (years), mean±SD	42.80±11.540
Weight (kg), mean±SD	64.92±14.22
Gender	
Male	12 (20%)
Female	48 (80%)
Marital status	
Married	55 (91.7%)
Unmarried	5 (8.3%)
Occupation	
Housewife	36 (60%)
Teacher	4 (6.6%)
Private job	12 (20%)
Labour	4 (6.7%)
Student	4 (6.7%)

Table 2: Co-morbidities

	Frequency	%age
Hypertension	12	20
Hypertensive and Diabetes Mellitus	7	11.7
Hepatitis-C	3	5
No any co-morbidity	38	63.3

Table 3: Antibiotics given before surgery

	Frequency	%age
10-20 minutes	20	33.3
20-30 minutes	35	58.4
>30 minutes	5	8.3

Table 4: Port site complication

	Yes	No
Localized pain and tenderness	5 (8.3%)	55 (91.7%)
Hernia	0 (0.0%)	60 (100%)
Infection	0 (0.0%)	60 (100%)

Table 5: Association of various factors with localized pain & tenderness

Factors	Localized pain & tenderness		P-value
	Yes	No	
Gender			
Male	1 (1.7%)	11 (18.3%)	1.000
Female	4 (6.7%)	44 (73.3%)	
Marital status			
Married	5 (8.3%)	50 (83.3%)	1.000
Unmarried	0 (0.0%)	5 (8.3%)	
Hypertension			
Yes	3 (5.0%)	16 (26.7%)	0.314
No	2 (8.3%)	39 (65.0%)	
Diabetes			
Yes	2 (3.3%)	5 (8.3%)	0.099
No	3 (5.0%)	50 (83.0%)	
Hepatitis C			
Yes	0 (0.0%)	3 (5.0%)	1.000
No	5 (8.3%)	52 (86.7%)	

DISCUSSION

Laparoscopic cholecystectomy is an effective, safe and innovative surgical procedure that has transformed the field of surgery but there are some associated complications including port site infection. Therefore, current study “Early Port Site Complication after Laparoscopic Cholecystectomy” was carried out at Gulab Devi Teaching Hospital Lahore. To acquire appropriate outcomes, a group of 60 patients was included in the study and found that mean age of the patients was 42.80±11.540 years. The findings of our study are comparable with a study conducted by Raja and teammates (2018) who reported that mean age of the patients was 42.68 years[19]. But the results of studies carried out by Taj et al (2012)[12] and Memon et al. (2018)[17] elucidated that mean age of the patients was 46.5±21.20 and 37.33±12.12 years, respectively. In our study mean weight of the patients was 64.92±14.22kg while Adisa and fellows (2014) asserted in their study that mean weight of the patients was 56.2 kg[16]. It is observed that gallstones are more prevalent among females than males. Similar results were also reported in our study that most of the patients (80.0%) were females. The findings of another study carried out by Usman and comrades (2016) confirmed that 83.0% patients were females[8].

The co-morbidities such as hypertension, DM and HCV enhance the risk of port site infection. Study revealed that 20% patients had hypertension and 11.7% hypertension & DM while 5.0% patients had hepatitis-C. The findings of a similar study performed by Taj and coworkers (2012) indicated that majority of the patients (44%) had DM, followed by hypothyroidism (14%), obesity (14%), liver cirrhosis (11.1%), bronchial asthma (7.4%) and hypertension (3.7%)[12].

It was found during study that localized pain and tenderness was prevalent among 8.3% patients while no port site infection was documented in our study. However, results of a study conducted by Usman and comrades (2016) elucidated that port site infection was found among 6.0% patients[8]. Some other studies conducted by Karthik et al. (2013)[20], Taj et al (2012)[12], Panigrahi et al (2018)[14] and Mudgal et al. (2018)[10] confirmed that port site infection was prevalent in 1.8%, 5.5%, 53.8% and 2.6% patients, respectively. This difference could be owing to small sample size. Likewise in our study port site hernia was not documented as well. Dugg and associates (2014) also asserted in their study that no case of port site hernia was reported[9]. But the results of studies performed by Kabir and Haq (2011)[21], Panigrahi et al. (2018)[14], Nofal et al. (2020)[11] and Mudgal et al. (2018)[10] demonstrated that port site hernia was documented in 2.8%, 3.8%, 0.2% and 1.3% patients, respectively.

When the association between localized pain & tenderness with several other factors was assessed, study showed no significant association (P>0.05) with gender, marital status, hypertension, diabetes mellitus and hepatitis C.

CONCLUSION

Study concluded that no port site infectionand port site hernia were documented. Itwas due to proper fascial closure of port site wounds and sterilization of instruments which shows that by adopting these measures both port site infectionand port site hernia could be prevented. Further studies are needed on large scale to evaluate the early port site complications after laparoscopic cholecystectomy.

REFERENCES

1. Naeem M, Rahimnajjad NA, Rahimnajjad MK, Khurshid M, Ahmed QJ, Shahid SM, et al. Assessment of characteristics of patients with cholelithiasis from economically deprived rural Karachi, Pakistan. BMC Res Notes. 2012; 5: 334.
2. Bhatti A, Bilal A, Zia SA, Hussain N, Zulfiqar T. A cross sectional study on the risk factors of gallbladder stone. Int J Res Med Sci. 2016; 4: 5041-6.
3. Alexander HC, Bartlett AS, Wells CI, Hannam JA, Moore MR, Poole GH, et al. Reporting of complications after laparoscopic cholecystectomy: a systematic review. HPB. 2018; 20: 786-94.
4. Nimanya S, Ocen W, Makobore P, Bua E, Ssekitooleko B, Oyania F. Prevalence and risk factors of gallstone disease in patients undergoing ultrasonography at Mulago Hospital, Uganda. Afr Health Sci. 2020; 20(1): 383-91.
5. Shahzad F, Waqar SH, Siraj MU, Mirza TI, Shah SA, Ahsan MF. Relationship of BMI and age with gallstone disease. Ann Pak Inst Med Sci. 2020; 16(2): 69-72.
6. Amir D, Amin N. Frequency of complications due to laparoscopic cholecystectomy in Hamedan Hospitals. JPMA. 2012; 62(1): 13-5.
7. Yaqub U, Zohra S, Hussain SM, Ehsan A, Imran A, Ilyas S. Conversion of laparoscopic cholecystectomy to open cholecystectomy: preoperative risk factors and intraoperative reasons. Pak Armed Forces Med J. 2020; 70(5): 1288-93.

8. Usman J, Janjua A, Ahmed K. The frequency of port-site infection in laparoscopic cholecystectomies. PJMHS. 2016; 10(4): 1324-6.
9. Dugg P, Shivhare P, Singh H, Mittal S, Kumar A, Munghate A. A prospective analysis of port site complications in laparoscopic cholecystectomy. J Minim Invasive Surg Sci. 2014; 3(2): e17634.
10. Mudgal MM, Kothiya PK, Kushwah N, Singh R. Port site complications following laparoscopic surgeries: a prospective study. IntSurg J. 2018; 5: 598-601.
11. Nofal MN, Yousef AJ, Hamdan FF, Oudat AH. Characteristics of trocar site hernia after laparoscopic cholecystectomy. Sci Rep. 2020; 10: 2868.
12. Taj MN, Iqbal Y, Akbar Z. Frequency and prevention of laparoscopic port site infection. J Ayub Med Coll Abbottabad. 2012; 24(3-4): 197-9.
13. Hassan SM, Baloch S, Memon F, Ali J, Quraishy SM. Frequency and type of organisms in gallstone culture. J Dow Uni Health Sci. 2015; 9(1): 89-93.
14. Panigrahi SK, Behera CR, Pujari PS, Mishra A, Kanungo A. Analysis of port site complications in laparoscopic surgeries in a tertiary care centre. Int J Sci Res. 2018; 7(1): 241-3.
15. Al-Naser MKH. Port site infections after laparoscopic cholecystectomy. Int J Med Res Health Sci. 2017; 6(6): 132-7.
16. Adisa AO, Alatise OI, Agbakwuru EA, Akinola DO, Adejuyigbe O. Wound complications following laparoscopic surgery in a Nigerian hospital. Niger J Surg. 2014; 20(2): 92-5.
17. Memon RJ, Qureshi ZZ, Shah FH, Laghari M. Port Site related complication and their management in patients undergoing laparoscopic cholecystectomy. JIMDC. 2018; 7(3): 208-12.
18. Yadav H, Verma S, Goel VK, Kala S. Laparoscopic port site complications: a multicentre prospective descriptive study from North India. World J Mini Access Surg. 2018; 8: 1.
19. Raj PS, Vikram GN, Bahadur AD, Arjun A, Santosh S, Amar G, et al. Incidence of superficial port site infection in laparoscopic cholecystectomy in relation to spilt stone and bile spillage. Med J PokharaAcad Health Sci. 2018; 1(1): 41-4.
20. Karthik S, Augustine AS, Shibumon MM, Pai MV. Analysis of laparoscopic port site complications: a descriptive study. J Minim Access Surg. 2013; 9(2): 59-64.
21. Kabir SF, Haque MA. Incidence of Trocar (port) site hernias after laparoscopic cholecystectomy-study of 100 cases. Bangl J Anat. 2011; 9(2): 110-2.