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ORIGINAL ARTICLE

Port-site related Complications and their Management in Patients undergoing Laparoscopic Cholecystectomy

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ABSTRACT

Objective: To determine the port site complications associated with laparoscopic cholecystectomy.

Patients and Methods: This cross sectional study was carried in the Department of Surgery of Liaquat University Hospital (LUH) Jamshoro for 1-year duration. About 100 symptomatic cholelithiasis patients those underwent laparoscopic cholecystectomy were inducted in the study. Details of patients (history, investigations, and clinical examination) were recorded in proforma at the time of admission. Postoperative and operative port site associated complications were noted.

Results: The patients presented with mean age of 37.33±12.12 years. Out of total 100 cases, there were 82 females and 18 males with male to female ratio of 1:4.5. The inclusive Port site problems were noticed within 12 (12%) cases. The infection was the most common complication (6%) followed by bleeding (4%), hernia (1%) and hematoma (1%). No significant difference was found in port site complications according to age and gender; p-values are quite insignificant.

Conclusion: Laparoscopic cholecystectomy is the standard procedure with very lower rate of port-site complications

Key words: Complications, Laparoscopic cholecystectomy, Port sites,

Author`s Contribution
[1] Conception, synthesis, planning of research and manuscript writing Interpretation and discussion
[2-4] Data analysis, interpretation and manuscript writing, Active participation in data collection.

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Introduction

Minimally invasive procedures have become common in recent surgery and now laparoscopic surgery is a tool which is practiced in nearly all surgical fields.[1] Open cholecystectomy, traditionally, has long been established as benchmark treatment for gallstones.[2] In 1987, revolution in gallstones treatment instigated with the practice of an earliest laparoscopic cholecystectomy.[3] Today laparoscopic c cholecystectomy is believed to be a well-known technique due to minimal pain, shorter hospital stay, lower rate of morbidities and accelerated postoperative recoveries [3-5].

Although, Laparoscopic Cholecystectomy is better, contrast to open Cholecystectomy, however it does not exclude problems and is also accountable for several insignificant to significant complications. Port-site associated complications related to laparoscopic Cholecystectomy could be postoperative or intra operative bleeding, metastatic malignancy, painful scar, wound infection, hernia and haematoma. Port-site bleed can possibly present as much slow discharge or frank bleed in case of damage to a major vessel. It could be observed on overlapping dressing or can present as internal bleed

postoperatively.[7] Probably it is the commonest complication related to port site which affects 5-6.3% of patients as reported in literature.[8] Port site hernia (PSH) is an incisional hernia which takes place at trocar/port site following laparoscopic surgical procedure. It is generally noted at the port site of 10 mm within umbilical or epigastric and infra umbilical region. It is infrequently observed on cannula site of 5 mm. Prevalence of port-site hernia ranges between 1% and 6%[9]. The current study evaluates several complications related to port accompanied by their administration which will encounter throughout laparoscopic cholecystectomy.

Patients and Methods

This cross sectional study was held at Surgical Department Liaquat University Hospital Jamshoro. Duration of study was 1 year. After ethical approval, all the symptomatic gallstone patients who were offered laparoscopic cholecystectomy as well as subjects with age more than 16 years, who were easy to deal with laparoscopy were included in the study. All the subjects with blood coagulation abnormalities, Chronic hepatitis B and C, acute pancreatitis and severe co-morbidities were excluded. After getting written consent, complete medical history and clinical examination along with ultrasound and routine laboratory investigations were carried out. Postoperative and operative port site associated complications were noted in the subjects those underwent Laparoscopic cholecystectomy. All the data regarding demographic characteristics and complications was recorded in proforma at the time of admission and after surgery. Analysis was performed by SPSS-16.

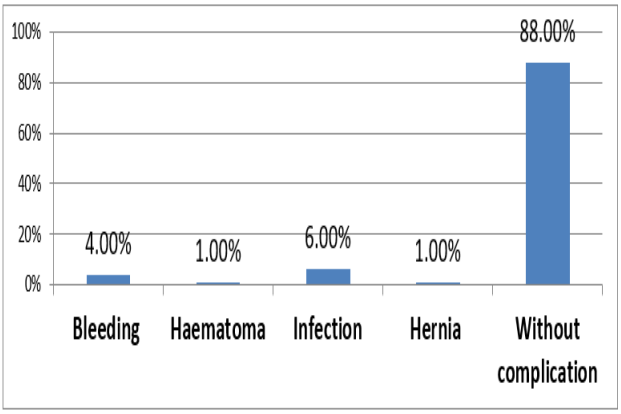

Figure:1. Post-operative complications after laparoscopic cholecystectomy n=100

Mean and standard deviation were computed for quantitative variables such as age. Percentage and frequencies were calculated for qualitative variables such as gender, socioeconomic status, clinical presentation and port site complications. After stratification of Effect modifier like age and gender, the chi-square test/Fischer exact test was applied. p-value <0.05 was considered as statistically significant.

Results

The mean age of total 100 patients was 37.33±12.12 years. Mean diastolic and systolic BP, respiratory rate and pulse rate are shown in table 1. Out of 100 patients, male to female ratio was 1:4.5. Right Hypochondrium pain was considered as most common clinical presentation (95.0%) followed by abdominal pain (85.0%) (Table 2). History of earlier hospitalization was noted within 24.0% patients and family history of gallstone was present in just 5% cases. Majority of patients (63%) belonged to middle socioeconomic class (Table 2). Most of the patients (70.0%) presented between 21 to 40 years and 30% were with age group of >40 years. Generally port site complications rate was 12.0%. The commonest complication was infection (6.0 %) followed by the bleeding (4%) (Figure 1). No significant difference was found in port site complications according to gender and age, p-values are quite insignificant (Table 3).

Discussion

All surgeries performed carry certain risks and complications. Infection of abdominal surgical site is a most frequent complication in admitted patient's and carries serious concerns for costs and outcomes. Advances in technology-related surgeries include a tendency towards a less invasive procedure, directed by potential advantages to patients. Laparoscopic cholecystectomy since its institution in 1987, rapidly achieved reputation so much that it is now being considered as a benchmark for the treatment of symptomatic gallstones disorders.[1,10] It is nowadays considered as a safe procedure for out-patients.[11]

Large series report a downgraded prevalence of infection of port site and further wound-associated complications after laparoscopic surgical procedure.[12] In current study, mean age of the 100 patients was 37.33±12.12 and

Table 1: Demographic characteristics of patients (n=100)			
Variables	Mean± SD	95% Confidence Interval	
		Lower Bound	Upper Bound
Age (Years)	37.33±12.124	34.86	39.80
Diabetic BP (mmHg)	76.32±13.919	73.48	79.15
Systolic BP (mmHg)	127.68±4.241	126.82	128.55
Pulse (beat/min)	78.63±2.241	78.18	79.09
Respiratory Rate	20.57±1.814	20.20	20.94

in majority 82% were females and 18% were males along with male to female ratio of 1:4.5. Comparable results were as well reported in study of Memon MR et al,[12] in which he mentioned that the 183 were females and 33 were males along with male to female ratio of 1:5.5 years, average age around 35 years ranging from 20 to 70 years. In the study of Brohi et al [5] reported that females were 79 (79%) and males 21(21%) with male to female ratio was 1:3.76 and average age was 46.28±7.20 years.

Table 2: Gender, socioeconomic status and presenting complaints of patients (n=100)		
Variables	Frequency	Percentage
Gender		
Female	82	82.0
Male	18	18.0
Socioeconomic status		
Upper	11	11.0
Middle	63	63.0
Poor	26	26.0
Presenting complaints		
Pain in right hypochondrium	95	95
Abdominal pain	85	85
Dyspepsia	79	79
Vomiting	31	31
Fever	23	23

In this series, pain right hypochondrium (95.0%) was the most common clinical presentation following by abdominal pain (85.0%), dyspepsia (79.0%), vomiting (31.0%) and fever (23.0%). Brohi et al [5] demonstrated symptoms of cases as right hypochondrium pain 87.0%, epigastrium pain 78.0%, Vomiting and Nausea 15.0%, elevated temprature10.0% and dyspepsia in 50.0% cases.

In this study, the total complication rate for port site was 12%, particularly as infection was the commonest problem noted within 6% of the cases afterward 4% bleeding, 1% hernia and 1% haematoma. In the study conducted by Shindholimath VV et al., it was observed the prevalence of infection of port site infection 6.3%.[13] In 2006, a national study exhibited the rate of surgical site infection to be 2%, in association to 6% within open cholecystectomy.[15] According to Colizza et al[14] during 2004 the prevalence of port site infection was < 2%. In a fresh national review, a prevalence of 2.23% was documented of port site infection. A reason that could explain the prevalence to be greater in comparison to further studies possibly is the reuse of disposable ports following sterilization because of the cost of fresh ports, which are non- affordable for both the hospital and the patient. Jan WA et al[9] conducted study to see the port site infection and reported that out of 17 infected cases 12 had superficial infection and 5 had deep infection. Similarly, in the study of Usman J et al[16] reported that total 6% patients had superficial surgical site infection those underwent laparoscopic cholecystectomy. It involved the muscle layers and deeper fascia. The outcome of study revealing that infection of superficial skin is far more frequent in contrast to deeper ones has as well been supported by a review from the Disease Control and Preventive centers, Atlanta and Georgia in 2003.[17] Several factors could be concerned in direct contamination of port site and hence resulting in infection. Bleeding is a dangerous and commonly encountered problem of laparoscopic cholecystectomy.

Bleeding can possibly take place in the course of insertion of Veress needle, gall bladder dissection, and damage to cystic duct or slippage of clips from cystic artery. According to our study, 4 cases had bleeding. Just 2 cases required conversion to open procedure due to laparoscopically uncontrolled bleeding. Minor bleeding can be regulated by diathermy or suture and by inserting

Table 3: Port site complications according to age and gender (n=100)						
Variables	**Bleeding**	**Infection**	**Haematoma**	**Hernia**	**Without complications**	**p-value**
Gender						
Female	4	6	1	0	71	
Male	0	0	0	1	17	0.072
Total	4	6	1	1	88	
Age groups (years)						
>60	1	0	0	0	5	
51 to 60	0	2	0	1	07	
41 to 50	1	1	2	0	10	0.091
31 to 40	2	0	0	0	30	
21 to 30	0	2	0	0	36	
Total	3	6	2	1	88	

pressure. Factors playing role in bleeding of operative site can possibly include portal hypertension, acute inflammation, inadequate exposure, adhesion, rough technique and coagulopathy.[18] Local study of Arain Gm et al[19] has documented bleeding within around 3.18% of cases while one more study by Usal et al[20] documented damage to major vessel (inferior vena cava, portal vein and aorta) in around 0.11% of cases. Tocchi et al[21] also documented higher prevalence of port-site infection within acute cholecystitis cases. In present study we found insignificant association of port site complication according to gender and age. Similair results were found in the study of Maitra TK et al.[23] Many conditions contribute to make it technically problematic laparoscopic cholecystectomy procedures. These comprise empyema of gall bladder, acute cholecystitis, gallbladder gangrene, intrahepatic and porcelain gallbladder.[22] Additionally, there are several others factors which can be much problematic to laparoscopic cholecystectomy including earlier laparotomy and surgical adhesions, liver cirrhosis and portal hypertension.

Conclusion

Laparoscopic cholecystectomy is an acceptable and safe choice in empyema of gallbladder. Port site infections and bleeding were the most common complications. LC has a low risk of infection of port-site which is just superficial responding to local measures.

References

1. Chowbey PK. Laparoscopic cholecystectomy: emerging horizons. 2003;2 :36-40.
2. Chok KS, Fan ST, Yuen WK, Lau H, Lee F. Outpatient laparoscopic cholecystectomy in Hong Kong Chinese–an outcome analysis. Asian journal of surgery. 2004; 27(4):313-6.
3. Targarona EM, Balague C, Knook MM, Trias M. Laparoscopic surgery and surgical infection. British Journal of surgery. 2000; 87(5):536-44.
4. Memon W, Khanzada TW, Samad A, Laghari MH. Complications of laparoscopic cholecystectomy at Isra University hospital, Hyderabad. Pak J Med Sci. 2009; 25(1):69-73.
5. Brohi S, Laiq-uz-Zaman Khan M, Shaikh U, Shaikh SU. Laparoscopic cholecystectomy; To assess various intra operative predictive factors which are responsible for difficulty in performing laparoscopic cholecystectomy. Professional Medical Journal. 2014;21(4).
6. Al-Mulhim AS, Amin TT. Outcome of laparoscopic cholecystectomy at a secondary level of care in Saudi Arabia. Saudi journal of gastroenterology: official journal of the Saudi Gastroenterology Association. 2011; 17(1):47.
7. Osborne DA, Alexander G, Boe B, Zervos EE. Laparoscopic cholecystectomy: past, present, and future. Surgical technology international. 2006; 15:81-5.
8. Al-Mulhim AA. Male gender is not a risk factor for the outcome of laparoscopic cholecystectomy: A single surgeon experience. Saudi journal of gastroenterology: official journal of the Saudi Gastroenterology Association. 2008; 14(2):73.
9. Jan WA, Ali IS, Shah NA, Ghani A, Khan M, Khan AS. The frequency of port-site infection in laparoscopic cholecystectomies. Journal of Postgraduate Medical Institute (Peshawar-Pakistan). 2011 Aug 15;22(1)
10. Chok KS, Yuen WK, Lau H, Lee F, Fan ST. Outpatient laparoscopic cholecystectomy in Hong Kong Chinese -- an outcome analysis. Asian J Surg 2004:27: 313.
11. Targarona EM, Balague C, Knook MM, Trias M. Lapa ros copi c surge ry and surgi c a l infections. Br J Surg 2000;87:536.
12. Memon MR, Muhammad G, Arshad S, Jat MA, Bozdar AG, Shah SQA. Study of open conversion in laparoscopic cholecystectomy. Gomal J Med Scie 2011;9(1):51-54.

13. Shindholimath VV, Seenu V, Parshad R, Chaudhry R, Kumar A. Factors influencing wound infection following laparoscopic cholecystectomy. Trop Gastroenterol. 2003;24:90-2..
14. Colizza S, Rossi S, Picardi B, Carnuccio P, Pollicita S, Rodio F, et al. Surgical infections after laparoscopic cholecystectomy: Ceftriaxone vs ceftazidime antibiotic prophylaxis. A prospective study. Chir Ital 2004;56:397-402
15. Siddiqui K, Khan AF. Comparison of frequency of wound infection: open vs laparoscopic cholecystectomy. J Ayub Med Coll Abbottabad. 2006;18(3):21-4.
16. Usman J, Janjua A, Ahmed K. The Frequency of Port-Site Infection in Laparoscopic Cholecystectomies. Pak J Med Health Sci. 2016 Oct 1;10(4):1324-6
17. Richards C, Edwards J, Culver D, Emori TG, Tolson J, Gaynes R, National Nosocomial Infections Surveillance (NNIS) System. Does using a laparoscopic approach to cholecystectomy decrease the risk of surgical site infection?. Annals of surgery. 2003 Mar;237(3): 358.
18. Vagenas K, Karamanakos SN, Spyropoulos C, Panagiotopoulos S, Karanikolas M, Stavropoulos M. Laparoscopic cholecystectomy: a report from a single center. WJG. 2006 Jun 28;12(24):3887.
19. Arain Gm, Hasan A, Randhawa MH, Malik SA. Laparoscopic cholecystectomy and its comlications. A study of 1100 cases. Pak J Gastroenterol 1998;12:1-2
20. Usal H, Sayad P, Hayek N, Hallak A, Huie F, Ferzli G. Major vasclar injuries during laproscopic cholecystectomy. An institutional review of experience with 2589 procedures and literature review. Surg Endosc 1998;12(7):960-2
21. Tocchi A, Lepre L, Costa G, Liotta G, Mazzoni G, Maggiolini F. The need for antibiotic prohylaxis in elective laparoscopic cholecystectomy: a prospective randomized study. Archives of surgery. 2000 Jan 1;135(1):67-70.
22. Malik A, Laghari AA, Talpur KA, Memon A, Mallah Q, Memon JM. Laparoscopic cholecystctomy in empyema of gall bladder: An experience at Liaquat University Hospital, Jamshoro, Pakistan. Journal of minimal access surgery. 2007 Apr;3(2):52.
23. Maitra TK, Ullah ME, Mondol SK. Operative and Postoperative Complications of Laparoscopic Cholecystectomy: Experience from a Tertiary Care Hospital of Bangladesh. Bangladesh Critical Care Journal.;5(1):11-6.