

Frequency of Port Site Wound Infection in Laparoscopic Surgery

JAVOID SAJJAD HASHMI¹, MUHAMMAD TARIQ KHAN², RAHEEL IMAM QURESHI³, ABDUL RASHEED ZAI⁴, MUHAMMAD HANIF MEMON⁵, KHUMAIR ASIF⁶

¹Associate Professor, Department of Surgery, Rahbar Medical & Dental College, Lahore

²Assistant Professor, Department of Surgery, CMH Lahore Medical College & Institute of Dentistry, Lahore

³Senior Registrar, Department of Surgery, Abu Umara Medical & Dental College/Ali Fatima Hospital, Lahore

⁴Assistant Professor, ⁵Associate Professor, Department of Surgery, Indus Medical College, Tando Muhammad Khan

⁶Associate Professor, Department of Surgery Akhter Saeed Medical and Dental College, Lahore

Correspondence to: Javid Sajjad Hashmi, Email: jhashmi292@gmail.com, Cell: 0300-9197419

ABSTRACT

Objective: To find the frequency of port site wound infection in laparoscopic surgery.

Study Design: Retrospective study

Place and Duration of Study: Department of Surgery, Rahbar Medical & Dental College, Lahore from 1st October 2020 to 30th September 2021.

Methodology: One hundred cases of laparoscopic cholecystectomy were investigated. A standard protocol of National-Nosocomial Infections-Surveillance system as provided by CDC; was applied for identifying port site infection. Weeks assessment was initially done post 7 days of surgery in majority of patients and then after every 7 days for 4 weeks in those having port site infection formation. The demographic information was also documented using a well-designed questionnaire.

Results: The age of the patients was between 25-63 years with a mean age of 35.4±2.5 years. There were 52% females and 48% males. Out of the total cases of port site infection 83% cases had epigastric port site infection.

Conclusion: Laparoscopic surgery is associated with low risk of port site infection.

Keywords: Laparoscopic surgery, Infection, Cholecystectomy, Frequency

INTRODUCTION

Laparoscopic surgery is a routine and widely applied procedure in surgery from last decades. It assists in preventing aggressive surgical bleeding hazards as connected with open wound surgery. Cholecystectomy is also performed through laparoscopic method, except in cases where complexity of condition required open surgery protocol.^{1,2} Despite of all the advantages of laparoscopic surgery the port site infection has been reported as major source of infection and complexity in cholecystectomy laparoscopic cases. Studies propose that 0.7 million cases of cholecystectomy have to cope with microorganisms of various types which invade the body through surgical site. The frequency of infections through laparoscopic port site have been reported to cause complexities in cases however the frequency of septicemia is still low in these cases.³

Laparoscopic surgeries are also gaining fame due to minimal hospital stay, less wound pain, cosmetic surgery as well as early return to work.⁴ Despite great advancement in laparoscopic surgeries the literature available in context to wound infection is still not as much sufficient as is available for open surgeries.⁵ The gold standard for cholecystectomy was considered as laparoscopic procedure by 1987.^{6,7} The reason being low rate of septicemia due to laparoscopic procedure.⁸

The surgical site infection (SSI) defined by CDC defines incisional as superficial while involving skin where as deep is termed as the one which involved muscle layers.^{9,10} The present study was designed for identifying the frequency of port site infections in laparoscopic surgery. The study would help in better understanding of the exact advantage of this process over open surgical means.

MATERIALS AND METHODS

This retrospective study design performed at Department of Surgery, Rahbar Medical & Dental College Lahore from 1st October 2020 to 30th September 2021. There were 100 cases of laparoscopic cholecystectomy investigated and enrolled after ethical approval of study and informed consent of each patient. All the enrolled patients were admitted around one day before the surgery and were administered ceftriaxone single short in 1 gram on admission as a pre-surgery protocol and two injectable as 12 hours apart. Majority of the patients were planned for discharge on day second of their surgery, however this depended upon the wound healing as in case of infection the hospital stay was prolonged in admitted patients. A standard protocol of National-

Nosocomial Infections-Surveillance system as provided by CDC; was applied for identifying port site infection. Weeks assessment was initially done post 7 days of surgery in majority of patients and then after every 7 days for 4 weeks in those having port site infection formation. The wounds were administered by local wash and antibiotics. The frequency presented of port site infection was documented in referral of duration of surgery, infection extent and findings of the operative site. The demographic information was also documented using a well-designed questionnaire. The data was entered and analyzed through SPSS-25.

RESULTS

This study was conducted on hundred patients who underwent laparoscopic cholecystectomy. The age of the patients was between 25-63 years with a mean age of 35.4±2.5 years. There were 52% females and 48% males (Table 1).

Out of the total enrolled cases the port site infection was noticed in 6% of the total cases which was diagnosed within 7 days of their surgery. The hospital duration was limited to three days where two days were post-surgery in 92% cases. Whereas there were 8 such cases which stayed in hospital greater than 3 days. Out of these 8 cases two were those which had cardio vascular complicated therefore required longer hospital stay (Table 2).

Table 1: Age and gender distribution of cases (n=100)

Variable	No.	%
Gender		
Males	48	48.0
Females	52	52.0
Age in years		
25-40	53	53.0
41-55	35	35.0
>55	12	12.0

Table 2: Port site infection incidence and duration of hospital in cases (n=100)

Variable	No.	%
Port site infection		
Yes	6	6.0
No	94	94.0
Hospital Duration (days)		
1-3	92	92.0
>3	8	8.0
Comorbidities	25	25.0

Out of the total cases of port site infection 83% cases had epigastric port site infection while 17% suffered from umbilical port infection (Fig. 1). Four cases within these 6 have superficial infection such as 66.6% while 33.3% had deep surgical site infection (Table 3).

Table 3: Severity of port site infection (n=6)

Port site infection severity	No.	%
Superficial infection	4	66.6
Deep SSI	2	33.3

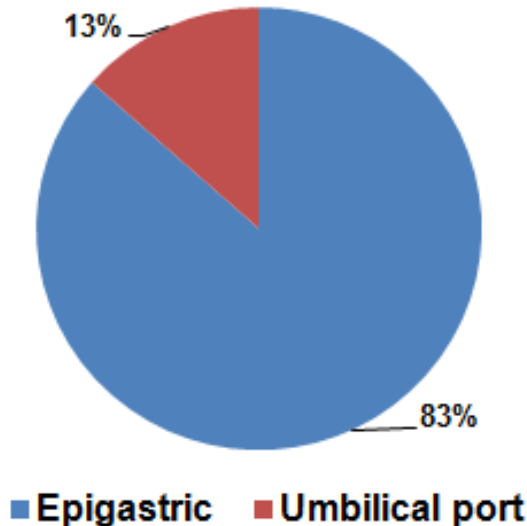


Fig 1: Frequency of various port site infections

DISCUSSION

Surgical techniques require skill and advancement in procedure. Any surgical procedure has the chance of infection especially at the site of the wound. Laparoscopic surgeries as uses reusable as well as usable instruments have risk of port site infection. If these infections are not looked into they can lead into serious consequences of lethal infections which can be life threatening in many cases.^{11,12} However laparoscopic procedure is considered as a safe outpatient procedure.¹³ As various literature has documented that the port site infection chance is much reduced in laparoscopic surgeries.¹⁴ The similar was also reported in the current study findings as well.

Various studies have shared their findings where laparoscopic surgeries have caused a port site infection around 2-6% only.¹⁵⁻¹⁸ While some suggested less than two or equal percent cases who developed port site infection post laparoscopic surgical procedure.^{19,20}

In the current study the ports which are used are reusable after sterilization of them in every surgical procedure. The reason for this re usage is high cost of ports which are not affordable in a developing country health budget.²¹ This might be a justifiable reason for the higher frequency of port site infection in this part of the world in comparison to the other aforementioned studies.

The present study also used antibiotic as prophylaxis against wound infection. Some studies support the use of these antibiotics

for reducing the chance of wound infections however other studies do not promote such usage.^{20,21}

CONCLUSION

Laparoscopic surgery is associated with low risk of port site infection. The cases where there port site infections occur are majorly having special infection rather than deep surgical site infection.

REFERENCES

1. McSherry CK. Cholecystectomy: the gold standard. *Am J Surg* 1989;158:174-8.
2. Brockmann JG, Kocher T, Senninger NJ, Schurmann GM. Complications due to gall stones lost during Laparoscopic Cholecystectomy: An analysis of incidence, clinical course and management. *Surg Endosc* 2002;16:1226-32
3. Sathesh Kumar T, Saklani AP, Vinayagam R, Blackett RL. Spilled gallstones during laparoscopic cholecystectomy: a review of literature. *Postgard Med J* 2004;80:77-9.
4. Iqbal MZ. Incidence of postsurgical infections in orthopaedics (disseration) Karachi: College of Physicians and Surgeons of Pakistan; 1997.
5. Targarona EM, Balague C, Knook MM, Trias M. Laparoscopic surgery and surgical infections. *Br J Surg* 2000;87:536-44.
6. Russell RCG, Williams NS, Bulstrode CJK. Wound infections. Bailey and Love's Short Practice of Surgery. 24th ed. London: Arnold; 2004; 129.
7. Muhe E. Die erste colecystektomie durch das Iparoskop. *Langenbecks Arch Klin Chir* 1986; 369:804.
8. Hackan DJ, Rotstein OD. Host response to laparoscopic surgery: mechanisms and clinical correlates. *Can J Surg* 1998;41:103-11.
9. Mir IS, Ahmad M, Ahad B. Establishing pneumoperitoneum safely for laparoscopic surgeries. *JK-Practitioner* 2005;12(4):224-6.
10. Läufer JM, Krahenbuhl L, Baer HU, Mettler M, Buchler MW. Clinical manifestations of lost gallstones after laparoscopic cholecystectomy: a case report with review of the literature. *Surg Laparosc Endosc* 1997;7:103-12.
11. Raj PK, Katris F, Linderman CG, Remine SG. An inexpensive Laparoscopic Specimen Retrieval Bag. *Surg Endosc* 1998;12:83.
12. Sasmal PK, Mishra TS, Rath S, Meher S, Mohapatra D. Port site infection in laparoscopic surgery: a review of its management. *World J Clin Cases* 2015; 3(10), 864-871.
13. Zabaglo M, Sharman T. Postoperative wound infection. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing 2022.
14. Neri V, Fersini A, Ambrosi A, Tartaglia N, Valentino TP. Umbilical port-site complications in laparoscopic cholecystectomy: role of topical antibiotic therapy. *JLS* 2008; 12(2): 126-32.
15. Al-Naser MK. Port site infections after laparoscopic cholecystectomy. *Int J Med Res Health Sci* 2017; 6(6), 132-7.
16. Alam MR, Nuruzzaman M, Begum M, Alim MA, Rahman MM, Karim MR, Alam MI. The frequency of port-site infection in laparoscopic cholecystectomies. *Med Today* 2021; 33(1): 22-6.
17. Usman J, Janjua A, Ahmed K. The frequency of port-site infection in laparoscopic cholecystectomies. *Pak J Med Health Sci* 2016; 10(4): 1324-6.
18. 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.
19. Mehta Y, Gupta A, Todi S, Myatra S, Samaddar DP, Patil V, Bhattacharya PK, Ramasubban S. Guidelines for prevention of hospital acquired infections. *Indian J Crit Care Med* 2014; 18(3): 149-63.
20. Norman G, Dumville JC, Mohapatra DP, Owens GL, Crosbie EJ. Antibiotics and antiseptics for surgical wounds healing by secondary intention. *Cochrane Database Syst Rev* 2016; 3(3): CD011712.
21. Misganaw D, Linger B, Abesha A. Surgical antibiotic prophylaxis use and surgical site infection pattern in Dessie Referral Hospital, Dessie, Northeast of Ethiopia. *Biomed Res Int* 2020.