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Research Article

Laparoscopic port site complications: a study in a tertiary care centre

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ABSTRACT

Background: Minimally invasive surgeries such as laparoscopic surgeries have become the order of the day for many surgical diseases. Major complications are access related such as major vascular injury or inadvertent bowel injuries, which life is threatening, while other complications such as port site infections may occur which would need proper treatment. The main aim of this study was to assess the port site infection and its management.
Methods: 328 patients who underwent laparoscopic surgeries were included in the study and demographic details were noted for all the patients. All of them were given prophylactic antibiotics before the surgery and the surgeries were performed under general anesthesia.
Results: 6.4% patients had port site infections among the patients, of which 16 were females 7% and 5.1% were males. The most common site of infection was umbilical with 52.4% cases, followed by epigastric with 38.1% cases.
Conclusions: Laparoscopy offers advantage of rapid postop recovery. It is recommended to follow proper technique of sterilization of laparoscopic instruments to prevent PSI.

Keywords: Laparoscopic surgeries, Port site infections, Complications

INTRODUCTION

Minimally invasive surgeries such as laparoscopic surgeries have become the order of the day for many surgical diseases. Laparoscopic surgery became the standard care for many gynecological and surgical conditions with documented benefits and excellent outcome. The main reason for preference of laparoscopic surgeries to abdominal surgeries are the low cost, less pain and scarring, faster convalescence and lesser hospital stay. Major complications are access related such as major vascular injury or inadvertent bowel injuries, which are life threatening. These complications are by far very rare.[1,2] The rapid advancement in science in CCD cameras and the flexible light sources have made the laparoscopic surgery more affordable and widely available. As a result, the use of laparoscopy has expanded to more sophisticated surgeries as well as management of malignancies.[3]

The overall rate of major complications following a laparoscopic procedure is approximately 1.4 per 1,000 procedures.[4] However the incidence of port site complications following laparoscopic surgery is considered to be around 21 per 100,000 cases and it has shown a proportional rise with the increase in size of the port site incision and trocar.[5-7] The overall complications/injuries that occur following laparoscopic surgeries involve, gastrointestinal (0.06%), genitourinary (0.03%), vascular (0.01%) and omentum (0.04%).[8,9] However, other rare complications include pyoderma gangrenosum, metastasis at the port site following laparoscopic oncosurgery and port site infections (PSIs).[10-13]

The main aim of this study was to assess the port site infection and its management,

METHODS

This prospective study was conducted on by the department of surgery at Viswabharathi Medical college on the complications of port site of laparoscopic surgery. All the complications which were encountered while creating ports during laparoscopic surgeries conducted at our hospital during the period of two years were taken into account. Faulty techniques as well as human error were also considered.

Those who were converted to open surgeries and those where laparascopic surgery was contraindicated were excluded from the study.

328 patients who underwent laparoscopic surgeries were included in the study. Demographic details such as age, weight height, body mass index were noted for all the patients. Preoperative preparation was done by complete bath prior to surgery using antiseptic soap and the parts were prepared by shaving method. All of them were given prophylactic antibiotics before the surgery. The surgeries were performed under general anesthesia. For all the cases reusable ports were used after sterilization with ethylene oxide (ETO). Pneumoperitoneum was created using veress needle in supra or infra umbilical incision and a 10 mm safety trocar (primary trocar) introduced in to the abdominal cavity. The time of the troca entry was noted. All the instruments carefully after surgery and in cases where the ports were ≥ 10mm, the fascia was closed by sewn intermittent suture.

RESULTS

Among the 328 patients, 229 (69.8%) were females and 99 (30.2%) were males (Figure 1). 21 (6.4%) patients had port site infections among the patients. Of which 16 were females (7%) and 5 (5.1%) were males. Out of the procedures, the majority were cholecystectomy, followed by appendectomy. Other procedures were ovarian cystectomy, hernia and hysteresctomy (Figure 2).

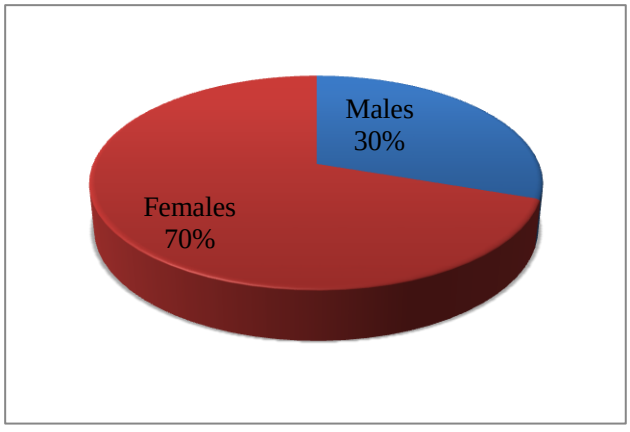

Figure 1: Gender wise distribution of the patients.

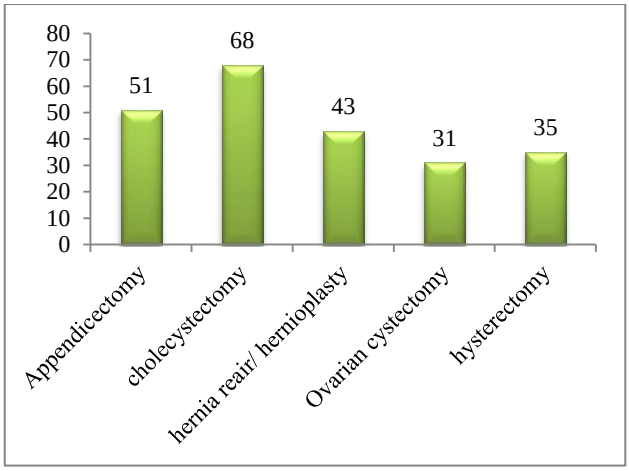

Figure 2: Surgical procedures performed.

The most common site of infection was umbilical with 11 (52.4%) cases, followed by epigastric with 8 (38.1%) cases (Figure 3).

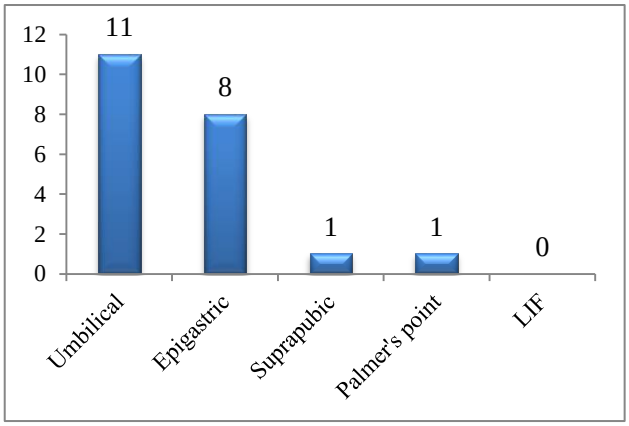

Figure 3: Site of port site infections.

DISCUSSION

There is no debate that laparoscopic surgery has had tremendous positive impact on patients and the healthcare system. Patients tend to have less pain, less morbidity and return to their daily activities more quickly. Thus, the number of laparoscopic procedures done each year continues to rise substantially.

For many surgical diseases, laparoscopic surgery is the gold standard. Nevertheless, this procedure needs to be performed by experienced surgeons to avoid major complications.

Just like the open surgeries, laparoscopic surgeries are also not without complications. Port site complications can be grouped into postoperative complications and access-related complications, and these have been reported in all age groups and in both genders. It has been reported that obesity is one of the risk factors for

increased morbidity related to port site due to various factors such as the need for longer trocars, thick abdominal wall, need for larger skin incision to expose fascia adequately, and limitation in mobility of the instrument due to increased subcutaneous tissue. Hence, care must be taken during placement of trocars to align their axes as needed for the procedure.[14]

In the present study, 6.4% of the patients had port site infections. This was in accordance to a study by Mir et al who observed a PSI of 6.7% in patients after elective cholecystectomy by laparoscopy. The cause of the incidence was accredited to the reusable trocars.[15] PSI was 5.7% in a study by Sujith Kumar et al 6.3% by Shindholimath et al, 5.3% by Den Hoed et al and 5.5% by Atul K et al in their studies.[16-19] Atul K et al pointed out that proper sterilization of instruments is the most crucial step in prevention of PSI.

Yet another complication has been attributed to the experience of the surgeons, especially in the case of common bile duct (CBD) injury during laparoscopic cholecystectomy. A study by Memon et al reports the incidence of CBD in two (0.9%) patients.[20] In both of these patients, CBD was clipped and problem was identified postoperatively. Patients were explored again, clips were removed and T-tube was placed after exploration of CBD. These injuries can be prevented by adequate surgical experience, careful dissection and proper case selection.[20] With more experience, these complications have decreased in CBD injuries.[21,22]

The visceral injury in another serious complication can occur during introduction of veress needle or trocar injuries as well as over judicious dissection of adhesions. Visceral damage may be evident peroperatively or remain unrecognized during operation and later manifest as peritonitis, abscesses or sepsis. The overall incidence of serious visceral injuries during LC is reported to be 0-5% in the published literature.[21,23,24]

In present study, all the port site infections were superficial or subcutaneous, with no serious complications. Similar was the case in a study by Adisa et al, where 75% of the cases had superficial infections. Similar cases were reported form other studies.[14,26,27]

The most common port site infection observed in present study was in the umbilical site followed by epigastric. Similar results were reported by the study by Karthik et al, where umbilical infections were more common followed by epigastric. This is because all gall bladder specimens in cholecystectomy were removed through the epigastric port. Wound infections are prevented by appropriate administration of antibiotic prophylaxis, sterile techniques, and the use of specimen bags during specimen extraction. But still if infections do occur, they are treated with drainage, packing, and antibiotics as appropriate.[14]

CONCLUSION

Laparoscopy offers advantage of rapid postop recovery. Moreover, the port site complications are rare in elective laparoscopic surgeries and can be further reduced by proper selection of patients, and strictly following basic principles of sterilization and prevention. After the surgery, all the instruments should be dismantled completely. Cleaning and washing the instruments should be done under running water. Glutaraldehyde or ethylene oxide solution should be regularly changed and the minimum immersion time should be above 20 minutes. Hence, it is recommended to follow proper technique of sterilisation of laparoscopic instruments to prevent PSI.

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REFERENCES

1. Anmad G, Duffy JM, Philips K, Watson A. Laparoscopic entry techniques. Cochrane Database Syst Rev. 2008;2:006583.
2. Jansen FW, Kolkman W, Bakkum EA, Dekroon CD, Trimbos TC, Trimbos JB. Complication of laparoscopy. An inquiry about closed versus open entry techniques. Am J Obstet Gynaecol. 2004;190:634-8.
3. Ghata S, Dugar D, Mishra RK, Khetri R, Tim HT. Study of port site complications in laparoscopic surgeries. J Pharm Biomed Sci. 2015;05(02):134-8.
4. Jansen FW, Kapiteyn K, Trimbos KT, Hermans J, Trimbos JB. Complications of laparoscopy a prospective multicentre observational study. Br J Obstet Gynaecol. 1997;104:595-600.
5. Aziz R. Advantages and disadvantages of operative endoscopy. In: Aziz R, Alvarez Murphy A, editors. Practical Manual of operative Laparoscopy. New York: Springer-Verlag;1992:1-8.
6. Kadar N, Reich H, Liu CY, Manko GF, Gimpelson R. Incisional hernias after major laparoscopic gynecologic procedures. Am J Obstet Gynecol. 1993;168:1493-5.
7. Chiu CC, Lee WJ, Wang W, Wei PL, Huang MT. Prevention of trocar-wound hernia in laparoscopic bariatric operations. Obes Surg. 2006;16:913-8.
8. Mcgurgan PP, Donovan P. Optical versus as an entry technique. Endose. 1999;8:379-92.
9. Mettler I, Schmidt EH, Frank V, Semm K. Laparoscopic entry and its complications. Gynaecol Endose. 1999;8:383-9.
10. Noblett SE, Woodcock S. Port-site pyoderma gangrenosum-a rare complication of surgical trauma. Ann R Coll Surg Engl. 2009;91:665-6.
11. Wexner SD, Cohen SM. Port site metastases after laparoscopic colorectal surgery for cure of malignancy. Br J Surg. 1995;82:295-8.

12. Cirocco WC, Schwartzman A, Golub RW. Abdominal wall recurrence after laparoscopic colectomy for colon cancer. Surgery. 1994;116:842-6.
13. Shindholimath VV, Seenu V, Parshad R, Chaudhry R, Kumar A. Factors influencing wound infection following laparoscopic cholecystectomy. Trop Gastro. 2003;24:90-2.
14. Karthik S, Augustine AJ, Shibumon MM, Pai MV. Analysis of laparoscopic port site complications:a descriptive study. J Min Access Surg. 2013;9:59-64.
15. Mir M, Khursheed U, Bali B. Frequency and risk factor assessment of port site infection after elective laparoscopic cholecystectomy in low risk patients at tertiary care hospital of Kashmir. Internet J Surg. 2012;28(2):1-5.
16. Kumar SS, Babu DK, Grace DR, Anpian JC, Bhaskar M. A study of port site infections in laparoscopic surgeries. Journal Dent Med Sci. 2015;14(4):20-2.
17. Shindholimeth VV, Seenu N, Parshed R, Chaudhry R, Kumar A. Factors influencing wound infection following laparoscopic cholecystectomy. Trop Gasteroentero. 2003;24:90-2.
18. Den HPT, Boelhouwer RU, Veen HF, Hop WC, Brikining HA. Infections and baecteriological data after laparoscopic and open gall bladder surgery. J Hosp Infect. 1998;39:27-37.
19. Sharma AK, Sharma R, Sharma S. Post site infection in laparoscopic surgeries-clinical study. Indian Med Gazette. 2013:224-9.
20. 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.
21. Nair RJ, Dunn DC, Fowler S, Mccloy RF. Progress with cholecystectomy: improving results in England and Wales. Br J Surg. 1997;84:1396-8.
22. Richardson MC, Bell J, Fullarton JM. Incidence and nature of bile duct injury following laparoscopic cholecystectomy, an audit of 5913 cases. west of Scotland laparoscopic cholecystectomy audit group. Br J Surg. 1996;83:1356-60.
23. Deziel DJ, Millikan KW, Economou SG, Doolas A, Ko ST, Airan MC. Complications of laparoscopic cholecystectomy: a national survey of 4292 hospitals and an analysis of 77604 cases. Am J Surg. 1993;165:9-14.
24. Jones DB, Soper NJ. Complications of laparoscopic cholecystectomy. Ann Rev Med. 1996;47:31.
25. Adewale OA, Olusegun IA, Elugwaraonu A A, David OA, Olusanya A. Wound complications following laparoscopic surgery in a Nigerian hospital. Nigerian J Surg. 2014;20(2):92-5.
26. Hamzaoglu I, Baca B, Boler DE, Polat E, Ozer Y. Is umbilical flora responsible for wound infection after laparoscopic surgery? Surg Laparosc Endosc Percutan Tech. 2004;14:263-7.
27. Weiss HG, Brunner W, Biebl MO, Schirnhofer J, Pimpl K, Mittermair C, et al. Wound complications in 1145 consecutive transumbilical single incision laparoscopic procedures. Ann Surg. 2014;259:89-95.
28. Richards C, Edwards J, Culver D, Emori TG, Tolson J, Gaynes R. The national nosocomial infections surveillance (NNIS) system, centers for disease control and prevention. Does using a laparoscopic approach to cholecystectomy decrease the risk of surgical site infection? Ann Surg. 2003;237:358-62.

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