**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 is life 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 is life threatening. These complications are by far very rare. 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.

The overall rate of major complications following a laparoscopic procedure is approximately 1.4 per 1,000 procedures. 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. The overall complications/injuries that occur following laparoscopic surgeries involve, gastrointestinal (0.06%), genitourinary (0.03%), vascular (0.01%) and omentum (0.04%).

However, other rare complications include pyoderma gangrenosum, metastasis at the port site following laparoscopic oncrosurgery and port site infections (PSIs). The main aim of this study was to assess the port site infection and its management,
METHODS

This prospective study was conducted on 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 laparoscopic 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 hysterectomy (Figure 2).

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.27 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
