

## Prospective Study On Port Site Complications In Laparoscopic Surgeries

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**Abstract: Background And Objective:-** Laparoscopic techniques have revolutionized the field of surgery and offer several advantages over laparotomy including lower patient morbidity rates, reduced hospital length of stay and earlier return to normal activities. Although rare, several port site complications have been reported in the literature. Laparoscopic port site complications can be access-related or post-operative. Complications are related to port-site incision size, number of port sites, obesity, and umbilical ports. The objective of this study is to determine the morbidity associated with ports at the site of their insertion in laparoscopic surgery, to identify risk factors for complications and their management. **METHODS:-** All patients who underwent laparoscopic surgeries, between October 2016 and September 2017, at GRH, Madurai, in the Department of General Surgery, were included in the study after taking a written consent and port sites were monitored for complications. A total of 100 cases were operated upon. Out of 100 cases 45 undergo cholecystectomy, 20 had appendectomy, 10 had diagnostic laparoscopy, 6 had adhesiolysis, 6 had lap APR, and the remaining 3 cases did gastropexy, splenectomy and ligation of testicular vein for varicocele respectively. Wounds were assessed clinically after surgery and in case of infection, were treated with regular cleaning and dressing, with empirical oral antibiotics. PSI was studied in relation to frequency, type of surgery, and port position. Similarly, port site bleeding, was studied in relation to frequency, site, type of ports, and size of ports. Omentum related complications were studied in relation to frequency, type of surgery, number of ports, and the port site involved. Further port site complications were studied in relation to age, sex, body mass index (BMI), total number of ports used, technique of port closure, and procedure performed. Data collected and analysed by various statistical methods. **RESULT:-** Of the 100 patients undergoing laparoscopic surgery, 40% had developed complications specifically related to the port site during a minimum follow-up of one year period; port site discharge (PSD) was the most frequent (n = 14, 14%), followed by port site infection (n = 11, 11%), bleeding (n=5, 5%), PIH (n=6, 6%), PSM (n=4, 4%) omentum-related complications nil. **CONCLUSION:** Laparoscopic surgeries are associated with minimal port site complications. Complications are related to the increased number of ports. Umbilical port involvement is the commonest. Most complications are manageable with minimal morbidity, and can be further minimized with meticulous surgical technique during entry and exit.

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### I. Introduction

Minimally invasive surgeries such as laparoscopic surgeries has become the order of the day for many surgical diseases. Laparoscopic surgery is the standard care for many surgical and gynecological conditions with documented benefits and excellent outcome. The main reason for preference of laparoscopic surgeries to abdominal surgeries are the less pain and scarring, faster convalescence and lesser hospital stay. Also more and more surgeries are being performed laparoscopically as a result of advancement in medical science. However a rapid expansion in volume and complexities of laparoscopic surgeries has been accompanied by complications, many of which can be directly attributed to abdominal access with laparoscopic trocars including vascular injuries, visceral injury, air embolism, subcutaneous emphysema, port site infections, port site incisional hernia and metastasis at the port sites. These complications are by far very rare. 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%).<sup>8,9</sup> However, other rare complications include pyoderma gangrenosum, metastasis at the port site following laparoscopic oncology and port site infections (PSIs).

**Aim Of The Study**

1. The aim of this study is to determine the complications associated with the port site in laparoscopic surgeries
2. To identify the risk factors thereby anticipating complications and suggest timely preventive measures

**Inclusion Criteria**

- Patients who have undergone basic and advanced laparoscopic surgeries ,consented for inclusion in the study in GRH, Madurai
- Patients more than 13 years of age group in both sexes

**Exclusion Criteria**

- Patients converted to open surgeries
- Patients not consented for inclusion in the study.

**II. Materials And Methods**

STUDY DESIGN: Prospective study

PERIOD OF STUDY: 1 Year (October 2016-September 2017)

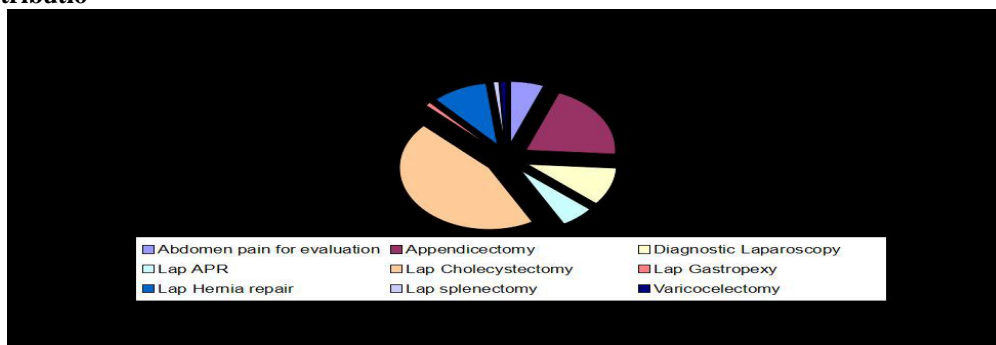
SAMPLE SIZE: 100 Patients

**Statistical Analysis:**

The data were analysed using statistical software like SPSS Ver.13.0, Microsoft Excel 2007. Chi Square test was used to analyse the incidence of complications. Also, individual complications were assessed and p-value for each of them was computed.

**III. Results**

**Case Distributio**



**Sex Distribution**

GENDER	NUMBER OF CASES
MALE	49
FEMALE	51
TOTAL	100

**Age Distribution**

AGE	NUMBER OF CASES
13-30	23
31-40	37
>40	40
TOTAL	100

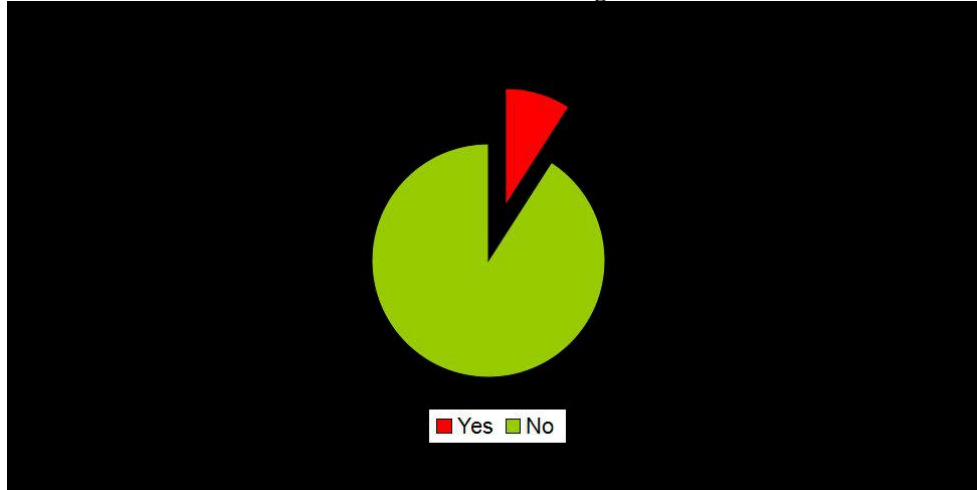
**Port Site Complications Distribution**

TYPES OF Cx	NO OF Cx
PSI	11
PSD	14
Bleeding	5
PIH	6
PSM	4
Omental entrapment	0
Subcutaneous emphysema	0

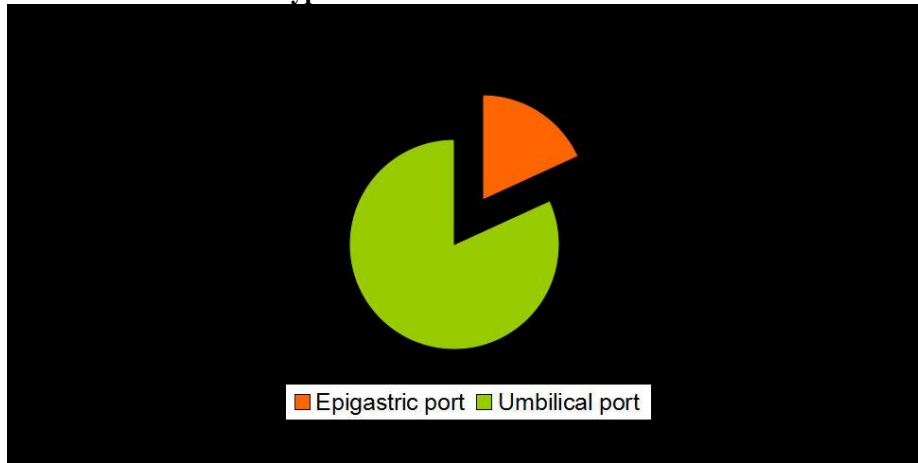
**Port site complications in different surgeries**

PSI vs Types of Surgery	No.of complications	Percentage
Adhesiolysis	2	18.2
Appendicectomy	1	9.1
Diagnostic Laparoscopy	1	9.1
Lap APR	1	9.1
Lap Cholecystectomy	6	54.5
Total	11	100

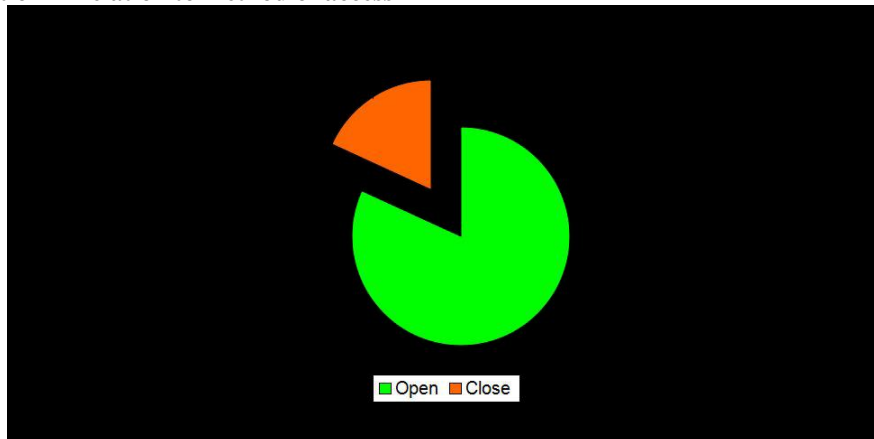
**Port site infection in relation to use or not used of retrieval bag**



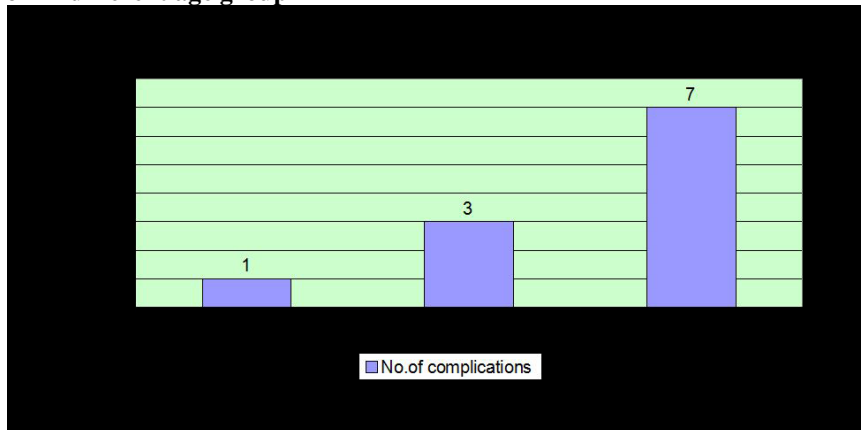
**Port site infection in relation to Port types**



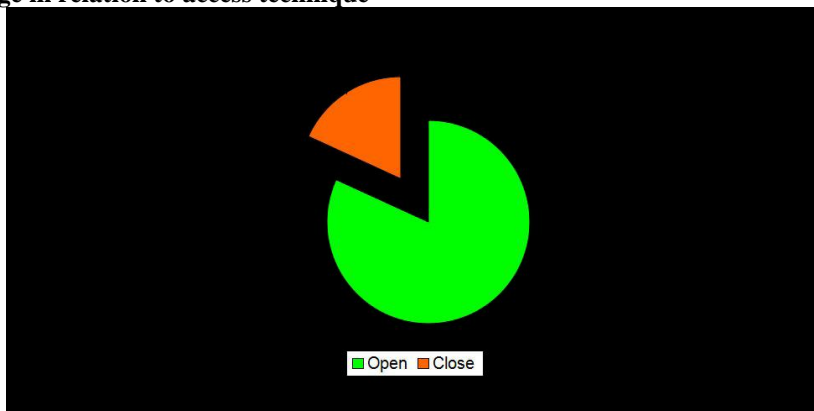
**Port site infection in relation to method of access**



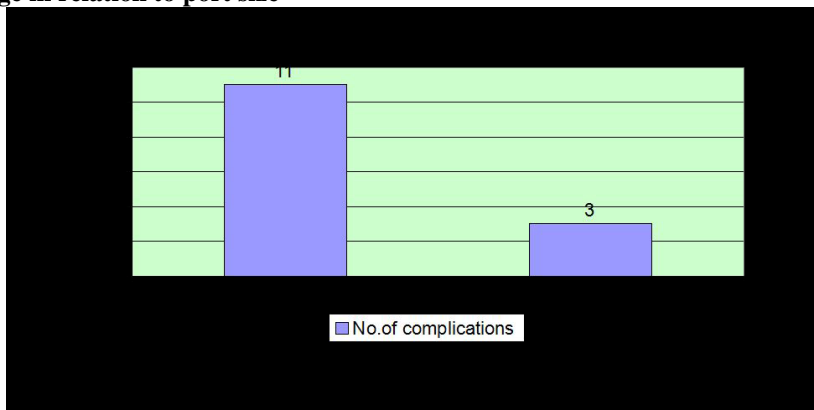
Port site infection in different age group



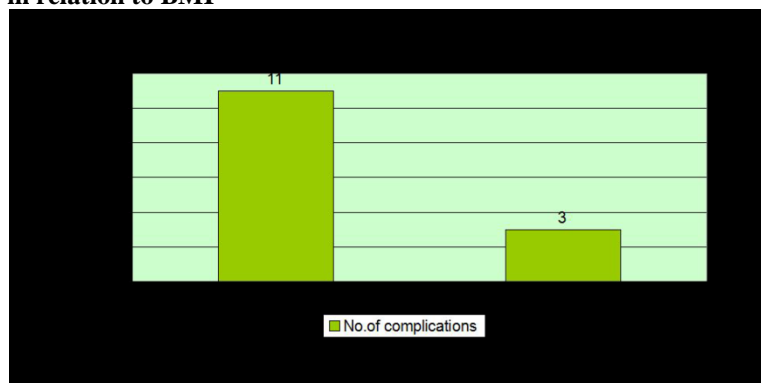
Port site discharge in relation to access technique



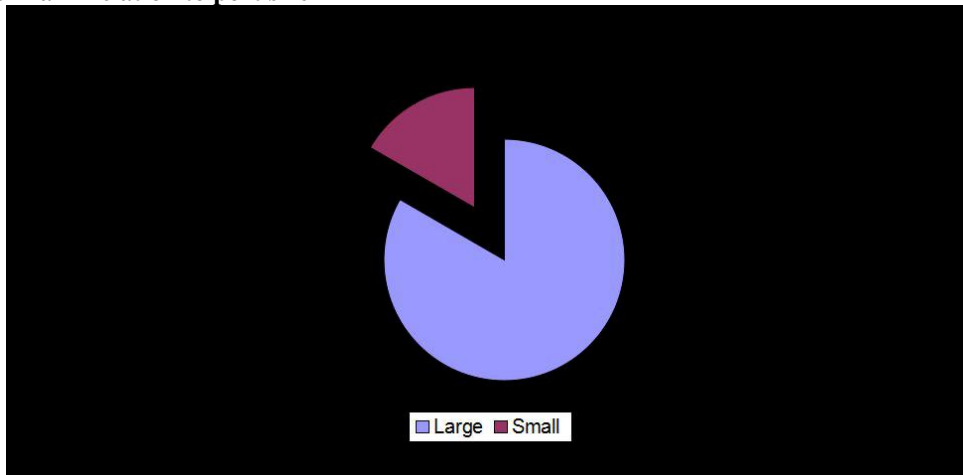
Port site discharge in relation to port size



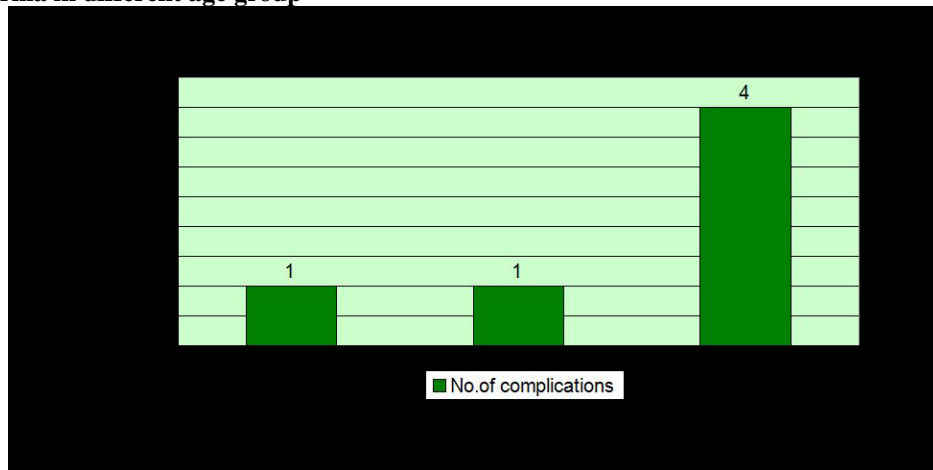
Port site discharge in relation to BMI



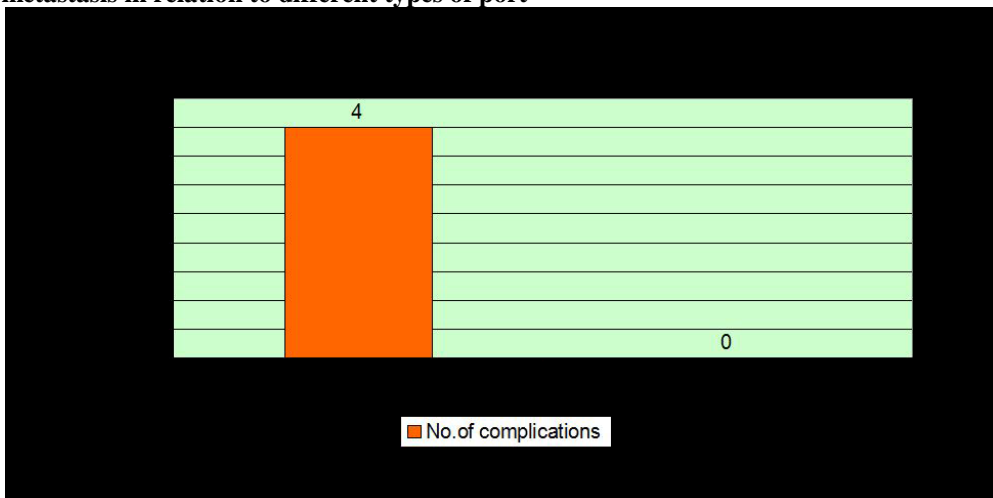
Port site hernia in relation to port size



Port site hernia in different age group



Port site metastasis in relation to different types of port



IV. Discussion

Port site complications can be grouped into access-related complications and postoperative complications, and have been reported in all age groups and in both genders. The literature shows that obesity is associated with increased morbidity related to port site due to various factors like 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. Care must be taken during placement of trocars to align their axes as needed for

the procedure. In my study, there was an increase in the frequency of morbidity related to port site and obesity. Patients with more BMI have more port site complications in relation to those with normal BMI.

In this study, laparoscopic cholecystectomy was the commonest procedure performed and more frequently associated with port site complications. This is comparable to observations made by Fuller et al. Neudecker et al. had shown that port site complications were increased with more number of ports. Fascial closure is recommended for ports  $\geq 10$  mm; the fascia are closed with sutures to reduce the risk of developing a port site hernia. Reapproximation of the fascia can be accomplished in a variety of ways. Ideally, the fascia is directly visualised with the aid of retractors. The fascial edges are grasped and the sutures closed with interrupted or continuous suture. A number of specialized instruments have been devised for fascial closure at the port site (e.g., Grice suture needle, Carter-Thomson needle-point suture passer, EndoClose instrument, Reverdin suture needle). The benefit of these devices is yet to be proven. The technique of closure of the rectus sheath had no influence on my study.

## V. Conclusion

This is a prospective study to analyse the morbidity associated with port site in laparoscopic surgeries (Basic and advanced) both elective and emergencies, to determine the risk factors of the complications and their management. The study population consisted of 100 and was carried out over one year of period. Complications encountered at port site were discharge, infection, bleeding, port site hernia and metastasis with discharge and infection being most common.

These complications were more in patient where following factors were present:

1. Open or Hasson's method of access
2. Larger port size
3. Old age group
4. Increased BMI
5. Not used of specimen retrieval bag.

The commonest intraoperative complications were seen in secondary ports, though overall complications were more at the umbilical port. Percentage wise, the incidence of these complications noted in the study is comparable with statistics worldwide. All complications were manageable with minimum morbidity. Consideration of meticulous surgical technique during entry and exit at all the port sites can minimize these complications further.

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