

Study of Cases of Complications at Port Site

Deepak Sharma¹, Kavach Patel², M. M. Anchalia³

¹M.S. Gen. Surgery 3rdyr, Civil Hospital Ahmedabad, India

²M.S. Gen. Surgery, Senior Resident, Civil Hospital Ahmedabad, India

³M.S. Gen. Surgery, FIAGS, HOD, Department of Surgery, Civil Hospital Ahmedabad, India

Abstract: *Laparoscopic surgeries, just like open surgeries are not free of complications. The study aimed to identify various complications associated with laparoscopic surgeries and their magnitude. Planning for an effective management along with prevention, Study incorporated 851 subjects in our hospital operated for various laparoscopic procedures and patients with complications in any form were followed up for a mean duration of 12 months .Major complication associated with laparoscopy port site were discharge from the wound(1.41%),infections (1.02%), bleeding (0.70%) subcutaneous emphysema(0.58%)and incisional hernia (0.47%). vascular and visceral injuries are rare due to increasing expertise in trocar insertion techniques.*

Keywords: PSI- port-site infection, PIH- port-site incisional hernia, SSI surgical site infections

1. Introduction

Nowadays more and more surgeries are being performed laparoscopically as a result of advancement in medical science. However a rapid expansion in the 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 visceral injury, vascular injuries, air embolism, subcutaneous emphysema, port site infections, incisional hernia, metastasis occurred post operatively. This study is performed to see the prevalence of different complications occurred at port -site, associated risk factors and its management.

2. Aims and Objective

To study the cases of complications (wound infection, incisional hernia, bleeding, visceral and vascular injury) at

laparoscopic port site. Study of risk factors, prevention & management of complications.

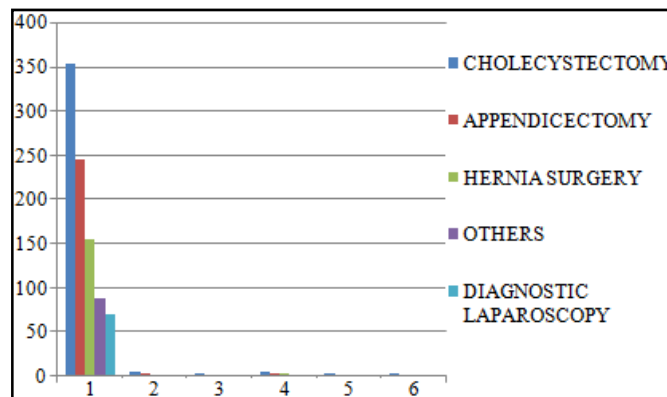
3. Material and Methods

This is a prospective study of patients who underwent laparoscopic procedure from Oct 2010 to march 2012 for different indication. Veress needle and open techniques both were used to create pneumoperitoneum using 5, 10 & 12 mm trocars depending upon type of operation. All patients given single dose of antibiotic just before induction and Post op antibiotic according to category of the surgery. Closure of the port was done after cleansing with povidone iodine and curved needle with vicrylsuture was used. Data analyzed for patients developing any kind of port site complications.

4. Observations

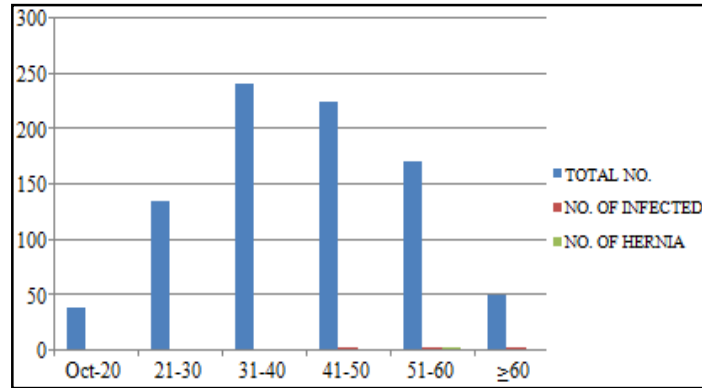
4.1 Port Site Complications

S. No	Type of Surgery	No. of Patients	PSI	PIH	Wound Discharge	Bleeding	Emphysema
1	Cholecystectomy	353	5	3	5	3	4
2	Appendicectomy	245	2	1	3	1	0
3	Hernia Surgery	155	1	0	2	1	1
4	Others	88	1	0	0	1	1
5	Diagnostic Laparoscopy	71	0	0	2	0	0
6	Total	851	9 (1.02%)	4 (0.47%)	12 (1.41%)	6 (0.70%)	5 (0.58%)



4.2 Age Group Wise Distribution

Age Group	Total No.	No. of Infected	No. of Hernia
10-20	37	0	0
21-30	133	1	0
31-40	239	1	0
41-50	223	3	1
51-60	170	2	2
≥60	4	2	1



4.3 Port Site Infection

Total No. of Patients (M/F)	No. of Infected Patients	Infection Rate
851 (345/506)	9(3/6)	1.02%

4.4 Incidence of Surgical Site Infection in Various Studies

Studies		Total Cases	SSI	Superficial	Deep	Organ Space	Dominant Microbe
M.jawien(2008)	SSI following lap cholecystectomy	3,056	33(1.08%)	22(68.5%)	8(23.9%)	3(7.6%)	E.COLI23.9%
Jasim d saud&mushtaq(2010)	SSI following lap cholecystectomy	369	11(2.4%)	5(45%)	2(18%)	4(36%)	Enterobacter36.8%
Mujeebrehmanabbassi(2011) ¹³	Port- site complications after cholecystectomy	450	4(0.88%)				
Iqbal saleemmir(2007)	Port- site complications after lap cholecystectomy	488	17(3.5%)				
Waqaralamjan(2008) ¹⁴	SSI after lap cholecystectomy	294	17(5.78%)	12(70.5%)	5(29.4%)		
Present study	Port -site complications in lap surgeries	851	9(1.02%)	8(87.5%)	1(12.5%)	-	e.coli (55.5%)

Various studies showed infection rates between 0.38-5.78%. We had an infection rate of 1.02% which is comparable to international standards.

4.5 Port Site Incisional Hernia

Total no. of patients (M/F)	No. of hernia	Percentage
851 (345/506)	4 (1/3)	0.47%

5. Results

We have studied different laparoscopic procedures performed in 851 patients. These included 245 appendectomy, 353 cholecystectomy, 71 diagnostic laparoscopy and 155 lap hernias. 4 incidences of port site hernias were observed out of which 3 developed after cholecystectomy, one hernia developed after appendectomy. 9 patients out of 851 developed port site infection. Major causative agent was found to be E. Coli. No major complications or mortality was reported in relation to port site complication. All patients attended first visit of follow up after 10 days of operation and a repeat follow up

after 12 months. Patients were advised to attend clinic in case of any problem regarding port site.

6. Discussion

Laparoscopic surgery is not without any complications just like open surgeries. Common complications include infection, incisional hernia, bleeding etc. Development and continuing improvement of the access techniques, instruments and better training is important to reduce these avoidable complications, especially the dangerous ones like vascular and intestinal injuries. The extent of laparoscopic access complications is found to correlate with the experience of the surgeon and learning curve. In study of 4857 laparoscopic operations by schmedt C-G et al¹² incidence of incisional hernias 0.5%, bleeding from abdominal vessels 0.2%, bowel injury 0.06%, and wound infections 0.6% was observed.

A port site incisional hernia is also an important complication of laparoscopic surgery, which carries a high risk of strangulation due to small size of defect involved.

Boughey et al have reported 4 cases of Richter's hernia that occurred at port site which required another surgery. Larger port size carries a higher risk of hernias.

Chiu et al¹⁵ in a series of 732 patients operated for laparoscopic bariatric surgeries noted that use of Surgical plug into muscular layer of trocar wound reduces incident of incisional hernia to 0.33%. Alternatively, tangential insertion of trocar through the abdominal wall is effective in reducing the size of fascial defect. In the present study, out of 851 patients, 4 patients reported incisional hernia at umbilical port during the study period, Incidence occurred between age group of 40-60yrs. Post-op wound infection (25%), obesity (50%) and spontaneously (25%) were noted as a causative factor for incisional hernia in our study.

Port-site infection after laparoscopic procedure is lower than that of open surgery because laparoscopic ports are smaller in length than incisions made for open surgeries. Incidence of Port-site observed in our study was 1.02%. Epigastric port-site infection was predominant in our study due to frequent retrieval of gall bladder from epigastric port. Port-site infection may occur due to contamination following spillage of gut or biliary contents, hematoma formation or breach in aseptic technique.

Vascular injury and visceral injuries are rare, but mandates early recognition and consideration of prompt exploratory laparotomy. In a study by Hashizume M and Sugimachi K¹⁶. out of 15422 patients, 22(0.14%) had visceral injuries, 10 major vascular injuries, 11 GI tract injuries and 1 liver injury was noted. In our study, we did not have any case of vascular or visceral injuries.

Zivanovic O, Sonoda Y and colleagues studied 2251 women with underlying malignant disease. Port-site metastases were documented in 20 (1.18%) cases. In our present study, we did not observe any single case of port-site metastases which can be attributed to the fact that out of 851 cases, none was operated for malignant etiology.

7. Conclusion & Summary

Laparoscopy offers advantage of rapid postop recovery. The study was conducted to define potential complications associated with port sites and their magnitude including wound infection, incisional hernia, visceral injury, vascular injury and port site metastasis as well as associated risk factors and their management. Study incorporated 851 subjects operated for different indications laparoscopically and patients developing any kind of complications were recorded and analyzed. The results showed 4(0.47%) port site hernias, 9(1.02%) port site infections, 12(1.41%) discharge from wound, 6 (0.70%) minor bleeding from port site, 5(0.58%) subcutaneous emphysema. No port site metastasis was detected. The results are comparable to various other previous studies showing PIH 0.2%-3.6%, PSI 0.1%-2%, ports site metastasis 0.2%-2.6%.

8. Future Scope

It can be concluded that laparoscopy is associated with fewer port site complications which can be reduced by

improvement of access technique, instruments and surgical expertise. The major complications i.e. infection can be reduced by proper aseptic techniques and use of prophylactic antibiotics. Meticulous technique of closure of the port site reduces chances of future incisional hernia. perioperative asepsis and wound care further decreases chances of incisional hernias.

9. Abbreviations

PSI – Port Site Infection

PIH – Port Site Incisional Hernia

SSI– Surgical Site Infections

Reference

- [1] Watters R C basic technique of laparoscopic cholecystectomy in atlas of laparoscopic surgery eds pappas T N, Schwartz LB, Eubanks S. , Current medicine, Philadelphia, 1996 page 62
- [2] Mahajan N N, Gaikwad NL. Direct trocar insertion: A safe laparoscopic access. *The internet of gynaecology and obstetrics*. 2007; vol8, No.2; 211-213
- [3] Wind j, Cremers j, Van bergehengouwen M, Gouma D, Jansen F, Bemelman W. Medical liability insurance claims on entry related complications in laparoscopy. *Surgical endoscopy*. 2007; 21: 2094-2099
- [4] Vilos G A, Ternamian A, Dempster J, Laberge p y. Laparoscopic entry: A review of technique, technologies, and complications. *J obstetrics gynaecology can*. 2007; 29(5): 433-447.
- [5] Palmer R. Safety in laparoscopy. *J reprod med*. 1974; 13: 1-5 (pub-med).
- [6] Wolfe W M, Pasic R transuterine insertion of veress needle in laparoscopy. *Obstetgynaecol*. 1990mar; 75(3.1): 456-7 (pubmed)
- [7] Sanders RR, Filshie GM. Transfundal induction of pneumoperitoneum prior to laparoscopy. *Jobstetgynaecr common w*. 1994; 107: 316-7.
- [8] Lam KW, Pun TC left upper quadrant approach in gynaecologic laparoscopic surgery using reusable instruments. *J Am assoc gynaec laparoscopy*. 2002 may; 9(2): 199-203 (pubmed).
- [9] Hurd WW, Bude R O, DeLancey J O, Pearl M L. The relationship of the umbilicus to the aortic bifurcation: complications for laparoscopic technique. *Obstet gynaec*. 1992; 80: 48-51 (pubmed).
- [10] Khan M N, Fayyad T, Cecil T D, Moran B J. Laparoscopic versus open appendectomy: the risk of post operative infectious complications. *jsls*. 2007; 11: 363-367.
- [11] Maio A, Ruchman R B, CT diagnosis of post laparoscopic hernia. *jcomput assist tomography*. 2001; 15: 1054-1055.
- [12] Schmedt C-G, Leibel B J, Daubler P, Bittener R. access related complications an analysis of 4857 consecutive laparoscopic surgeries. *Minimal invasive allied technology* 2009; 10: 23-29.
- [13] Mujeeb Rehman Abbasi, Ubedullah Shaikh, Sadaf Iqbal, Muhamad Rafique Pathan, Ati Fjaved Bhatti port site complications in patients after laparoscopic cholecystectomy, *medical forum monthly* April 2012; 1.

- [14] Jan W A Ali I S, Shah N A, Ghani A, Khan M, Khan A S: The frequency of port site infection in laparoscopic cholecystectomies. *jpmi*;2008;22(1):66-70.
- [15] Chiu CC, Lee WJ, Wang W, Wei PL, Huang MT: Prevention of trocar wound hernia in laparoscopic bariatric operations. *obssurg* 2006,16:913-918. Pubmed abstract.
- [16] Hashizume M, Sugimachi K. dept. of surgery II, Kyushu univ, 3-1-1 maidashi, higashi-ku, fukuoka, 812-82 japan. Needle and trocar injury during lap surgery in japan 1997dec1198-2011 pubmed

Authors Profile



Dr. Deepak Sharma is M.S. Gen. Surgery 3rd yr, civil hospital Ahmedabad, Gujrat, India



Dr. Kavach Patel, M.S. Gen. Surgery, Senior Resident, Civil Hospital Ahmedabad, Gujrat, India



Dr. M. M. Anchalia is M.S. Gen. Surgery, FIAGS, HOD, Department of Surgery, Civil Hospital Ahmedabad, Gujrat, India