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Original Research Article

Relaparotomy in general surgery department of tertiary care hospital of Western India

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ABSTRACT

Background: Relaparotomy has to be performed in case of certain post-operative complications. Incidence of relaparotomy differs according to hospital setup as well as patient characteristics and initial surgery. It also depends on post-operative care given to patient following first surgery and incidence of post-operative sepsis. This study was carried out to know the incidence of relaparotomy and indications of it, so that in the future this factors can be modified and incidence can be further lowered.
Methods: This is an observational study in which 75 relaparotomy cases reported during the period of May 2008 to September 2010 were included. All patients irrespective of age and sex, who have undergone re exploration of the abdomen during the period of hospitalization after the first operation and discharge of patients. All the gynaecological and obstetrical laparotomies were excluded. Data were recorded in pre-validated case record form.
Results: Incidence of relaparotomy was 2.84%. It was most common in age group of 31 to 40 years; with mean age of 39.25 years. The most common indication of relaparotomy was leak (34 patients); from an anastomotic site (29 patients) or from perforation (5 patients). The mean duration between first Laparotomy and relaparotomy was 6.85 days. The mortality was 34.72% (25 patients). Mean number of days stay in ICU or the patient requires continuous close monitoring was 4.01 days; mean days of hospitalization was 25.72 days.
Conclusions: Relaparotomy is lifesaving procedure for patients. Incidence of relaparotomy depends on expertise in primary surgery, proper surgical technique and prevention of post-operative infection.

Keywords: Haemorrhage, Laparotomy, Relaparotomy, Sepsis

INTRODUCTION

Many patients develop complications following elective or emergency laparotomy. Some of these patients have to undergo relaparotomy for correction of these complications. Relaparotomy means operations performed with in hospitalization period which is related to initial surgery. Relaparotomy can be classified as early or late, radical or palliative, planned or unplanned depending on time, its goal and nature of urgency.[1]

Certain predisposing factors play important role in occurrence of surgical complications leading to re laparotomy. Some of the important indications of relaparotomy are anastomotic leakage, septic peritonitis, intestinal obstruction, burst abdomen, intestinal perforation and haemorrhage.[1-3] Measures which can be carried out to reduce the incidence of relaparotomy are proper pre-operative work up, use of newer anaesthetic techniques, newer antibiotics and proper antiseptics, better post-operative fluid and electrolyte balance, proper

surgical techniques, secured haemostasis, complete exploration and appropriate drainage.

Incidence of relaparotomy can be decreased by proper understanding of predisposing factors and by taking appropriate measures. Emergency, sepsis, primary suppurating disease, these are some factors, because of which incidence of relaparotomy cannot be brought down further.

Incidence of relaparotomy ranges from 0.5 -15% in various reported studies1,3. Highest incidence was seen in gastrointestinal surgeries, while lowest in vascular surgeries1. Mortality after relaparotomy ranges from 24 to 71 %. Factors associated with high mortality are elderly patients, peritonitis at the initial surgery and multi organ failure.[1-4]

Majority of patients who have to undergo relaparotomy have to be cared in intensive care unit. Incidence of relaparotomy is also found to be higher in hospital setup associated training facility. Studies have indicated that out of total laparotomies performed 1-1.6% require early relaparotomy after initial surgery.[1]

Considering all these information, primary objective of this study is to study incidence of relaparotomy in general surgery department f SSG Hospital, Vadodara, India. Secondary objectives are to know the various indications of relaparotomy in our setup and to evaluate mortality and morbidity associated with relaparotomy.

METHODS

This is an observational study in which 75 relaparotomy cases reported during the period of May 2008 to September 2010 were included. For study purpose, abdominal operation has been defined arbitrarily as one in which peritoneum is opened. Appendicectomy, open cholecystectomy, colostomy and colostomy closure all are included as abdominal surgery. The term "relaparotomy" refers to surgery performed with in hospitalization period in association with the initial surgery.

All patients irrespective of age and sex, who have undergone re exploration of the abdomen during the period of hospitalization after the first operation and discharge of patients. All the gynaecological and obstetrical laparotomies were excluded.

Data were recorded in pre-validated case record form. Details of patient characteristics, pre-op and intraoperative findings, details of surgical procedure along with complications during and after surgery were recorded. Interval for relaparotomy and its outcome were recorded. Morbidity and mortality following relaparotomy were recorded.

RESULTS

Total 2638 laparotomies were performed in general surgery department during study period. Out of 2638 laparotomies, 72 patients have to undergo 75 laparotomies for various complications. 3 patients have to undergo relaparotomy twice. So, Incidence of relaparotomy was 2.84% during the study duration in our institute.

Out of 72 patents who have to undergo relaparotomy, in case of 14 patients first laparotomy was planned laparotomy, while 58 patients had emergency first laparotomy. Out of 14 first planned laparotomy patients, 8 planned relaparotomy were performed, while 7 emergency relaparotomy were performed. 1 patient was operated thrice including first surgery and two relaparotomy. Out of 58 patients who underwent emergency 1st laparotomy, 10 of them had planned and 50 had an emergency relaparotomy, of which 2 patients were operated thrice. So, 18 relaparotomy were planned while 57 were emergency relaparotomy.

Table 1: Classification of operative wounds based on degree of microbial contamination.

Type of wound in first laparotomy	No. of laparotomy (Total 2638)	No. of relaparotomy (Total 72)	Incidence of relaparotomy
Clean	5	0	0
Clean contaminated	993	19	1.91
Contaminated	758	22	2.90
Dirty	882	31	3.51

In our study of relaparotomy cases, 79.10% (57) of the patients were male and the remaining 20.90% (15) being females. The male: female ratio was approximately 3.8: 1. Youngest patient in our study was 6 month old infant, while oldest one was 75 year old who had undergone relaparotomy. Incidence of relaparotomy was highest in 31-40 years age group (3.22%) followed by 41-50 (3.16%), 51-16 (2.80%) and more than 70 (2.63%). Incidence was lowest in 61-70 years age group, only 2 patients out of 223 patients had relaparotomy (1.34%). Out of 72 patients of relaparotomy, indication for first laparotomy were intestinal obstruction (22), peptic perforation (16), ileal perforation (12), Appendicectomy (2), liver trauma (4) and other conditions (16) such as

colostomy closure, carcinoma of rectum, pseudocyst of pancreas and necrotizing pancreatitis. Incidence of relaparotomy according to classification of wounds during first surgery is given in Table 1.

Out of 75 total relaparotomy performed, major indication (34) of relaparotomy was leak from anastomotic site or from perforation site. Second common cause was burst abdomen (29) followed by intestinal obstruction (7), haemorrhage (4) and intraabdominal sepsis (1). Out of the 4 cases of haemorrhage for which relaparotomy was done 3 were the patients with liver trauma and one was having a large ruptured liver abscess from the lobe VI and VII.

The maximum cases were operated (39 cases) after 5 -10 days of first Laparotomy, 21 cases after 2-4 days and 12 cases after more than 10 days and 3 of them within one day. One of the patients was operated for traumatic bowel perforation (jejunal transaction) and jejunojeunal anastomosis was done. He also developed femoral artery embolus for which emergency embolectomy was done and patient was under treatment for this. In due time he developed intestinal obstruction for which he was again re-operated and there was an adhesion band which was causing an obstruction. The interval between two laparotomies was 60 days and in due time he was admitted in ward.

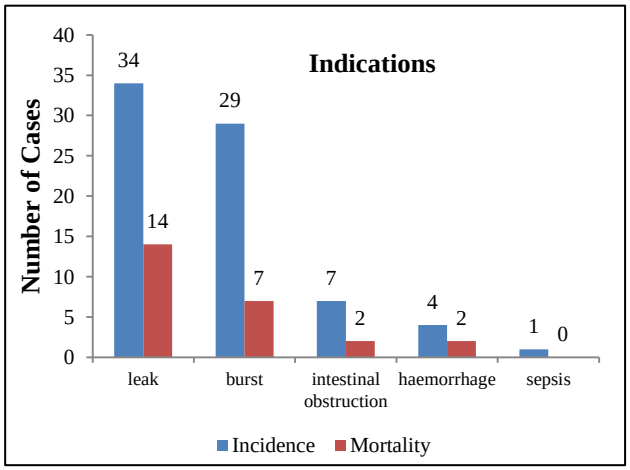

Figure 1: Incidence and mortality for relaparotomy according to indication.

Out of 75 relaparotomy 25 cased died as a consequence of relaparotomy. Mortality was 34.72% in our study duration. Maximum mortality was highest in relaparotomy cases in which indication was leak from anastomotic site and perforation site (14 out of 34) followed by burst abdomen (7 out of 29) and intestinal obstruction (2 out of 7). Three patients who were operated for relaparotomy twice, 2 could not survive while 1 patient was discharged after complete recovery. Diagrammatic representation of mortality according to indications of relaparotomy is given in Figure 1.

Maximum mortality was seen in in 51-60 age group (9 out of 13), lowest in 41-5 (3 out of 14). The maximum number of patients died due to septicaemia, two patients had a sudden death, the cause might be pulmonary embolism or myocardial infarction, and others died due to cardiorespiratory arrest.

7 patients died within 2-4 days of relaparotomy, 6 within 4-6 days followed by 5 patients within 2 days, 4 within 6-8 days and 3 after more than 10 days of relaparotomy. Out of 57 emergency relaparotomy 19 patients could not survive, while 6 patients could not survive out of 18 planned relaparotomy.

Mean number of days in ICU or patients requiring close monitoring were 4.01 days, while mean days of hospitalization was 25.72 days in relaparotomy cases.

DISCUSSION

Incidence of relaparotomy in our study was 2.84%. Various studies have found different incidence rates of relaparotomy in various scenarios as low as 0.34% to as high as 3.5% to 4.4%.[1,5-8] Incidence is on higher side when compared to similar study in general surgery department.[1] Some Indian studies have incidence of relaparotomy in tertiary care setup as low as 0.34 to 0.76%.[7,8] This much low incidence rate might be because, these studies are carried out in obstetrics and gynaecology department. Patient characteristics as well as indications of relaparotomy are different in general surgery department.

Gender wise distribution of relaparotomy was higher in male patients. Which is comparable to similar study.[1] Relaparotomy were performed equally in both genders in one of the studies, which might be due to different setup and different patient profile of that particular study.[9] In present study of 75 total relaparotomy, 57 (76%) underwent emergency surgery and rest (18, 24%) underwent planned surgery. Whereas when compared to similar study a total of 57 (70.37%) underwent emergency relaparotomy and 24 (29.63%) underwent planned relaparotomy.[1] Major indications of relaparotomy in our study were leak from anastomotic site or perforation followed by burst abdomen, intestinal obstruction, haemorrhage and sepsis. Indications for relaparotomy in previous studies are more or less similar to our study. Only difference is incidence of each indication. Majority of relaparotomy were performed due to leak from anastomotic site in all the studies.[1-4]

Mean duration between first laparotomy and relaparotomy was 6.85 days in our study. One of the study had mean duration between two laparotomies to be 5 days, while another had mean duration to be 6.95 days.[1,6] Duration between laparotomy and relaparotomy depends on surgical technique employed during first surgery, post-operative patient care and patient factors. Even with best possible post-operative care in our

institute mortality rate in case of relaparotomy was as high as 34.72%, which is more or less similar to other studies in which mortality rate was in between 26.7% to 37.3%.[1,9,10]

High mortality rate in relaparotomy is due to the fact that relaparotomy is performed only in those patients who do not heal even with standard post-operative care, or patients whose clinical condition is not good. Mortality is seen more in the patients who were re operated in emergency in comparison to those who underwent planned surgery but the difference is statistically insignificant.

Morbidity was taken in an account by considering the number of days stay in ICU or requiring the close monitoring as in ICU, number of days stay in hospital. Man duration of hospitalisation in our study was 25.72 days, which was similar to other similar study (27 days).[1] One of the limitation of our study was, all the morbidity indicators were not taken into consideration, as in our institute, we do not have facility to measure SOFA score or MODS score.[11,12]

CONCLUSION

Relaparotomy is lifesaving procedure for patients. Incidence of relaparotomy depends on expertise in primary surgery, proper surgical technique and prevention of post-operative infection. Leak from anastomotic site is the most common indication for relaparotomy.

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