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Evaluation of Relaparotomy in General Surgery Patients - Indications and Outcome

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Abstract: *Background: Many laparotomy may require relaparotomy due to post-operative complication as life-saving procedure. Incidence of relaparotomy and post-operative outcome defers from patient to patient. The objectives of our study were to evaluate the indication of relaparotomy, outcome of the relaparotomy. Methods: Data was collected between October 2019 to October 2021 in Government Rajaji Hospital, Madurai. Patient's demographics, indication and intra-operative findings of initial surgery and relaparotomy with morbidity and mortality were studied. Patients from department general surgery were included. Consent was taken in a pre-validated form. Results:Total 544 laparotomy were performed out of which 42(7.72%) patients underwent relaparotomies for various complications. Average interval between onset of symptom to initial emergency laparotomy was 2.79 days (range: 1-27 days). All 42 patients underwent emergency re laparotomy. No planned relaparotomies were conducted. Out of 42 patients 30 (71.4%) were male and 12(28.5%) were female. Median age of the patient was 49 years (range-21 years to 73 years). Incidence of relaparotomy was highest among 51-60 years age group (11.2%) followed by 41-50 years (9.8%), 61-70 years (9.3%) and lowest in >70 years (5%) The most common indication for initial laparotomy were hollow viscus perforation, intestinal obstruction, stab and blunt abdominal injuries, appendectomy and other conditions such as septic peritonitis. Conclusions: Although relaparotomy is life-saving procedure, it has high mortality rate. The possibility of efficiently lowering relaparotomy depends on success of the first laparotomy, patient's status, early re-exploration with proper surgical techniques and thorough postoperative care.*

Keywords *(Burst abdomen, Anastomotic leak, complications, ICU admission, Relaparotomy)*

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I. Introduction

Complications following emergency laparotomy are common. Some patients might need relaparotomy for correction of these complications Relaparotomy refers to operations performed within 60 days of initial laparotomy due to complication of the same. It can be classified depending on time, its goal and nature of urgency (early or late, radical or palliative, planned or unplanned)Some of the important indications of relaparotomy are anastomotic leakage, septic peritonitis, intestinal obstruction, burst abdomen, intestinal perforation and haemorrhage. Incidence of relaparotomy can be decreased by proper understanding of predisposing factors and by taking appropriate measures. Emergency initial surgery, sepsis and primary suppurative diseases are some of the risk factors for relaparotomyIncidence of relaparotomy range from 0.5 - 15% in various studies. Highest incidence was with gastrointestinal surgeries, while lowest in vascular surgeries. Mortality after relaparotomy ranges from 24 to 71%. Factors associated with high mortality are elderly patients peritonitis at the initial surgery and sepsis with multiorgan failure. Majority of patients who underwent relaparotomy are admitted in Intensive care unit. This retrospective study aimed to study incidence of relaparotomy in department of general surgery in Madurai Medical College, India during October 2019 to October 2021

AIM AND OBJECTIVES

The aim is to study the indications of relaparotomy and to evaluate mortality and morbidity following relaparotomy in emergency laparotomies.

II. Materials And Methods

INCLUSION CRITERIA

All the patients of any age group who underwent relaparotomy within 60 days of the initial laparotomy were included.

EXCLUSION

Patients giving negative consent were excluded from the study

ANALYSIS

Data analysis was done using SPSS 18 software. Range, frequencies, percentages, means, standard deviations, chi square and 'p' values were calculated by One way ANOVA and Chi-square test was used to test the significance of difference between quantitative variables.

METHODOLOGY

Total 42 relaparotomies were conducted in general surgical operation theatre. Evaluation of various causes of relaparotomy, factors responsible for relaparotomy and outcome of relaparotomy in terms of morbidity and mortality .Prior written and informed consent to participate in the study was taken with thorough explanation of the method and treatment. All patients were observed for their preoperative assessment, findings in initial laparotomy, Procedure of relaparotomy with intraoperative findings and post-operative outcomes including morbidity and mortality.

SOURCE OF DATA

All patients satisfying inclusion criteria admitted in General Surgery Department, Government Rajaji Hospital and followed for a period of 24 months.

METHOD OF COLLECTION OF DATA:

All patients within the inclusion criteria was followed for 24 months period and were divided into two categories and followed up and findings were collected

DATA ANALYSIS :

Using Chi square test, Student paired t test

III. Results

Total 544 laparotomy were performed out of which 42(7.72%) patients underwent relaparotomies for various complications. Average interval between onset of symptom to initial emergency laparotomy was 2.79 days (range: 1-27 days). All 42 patients underwent emergency re laparotomy. No planned relaparotomies were conducted.Out of 42 patients 30 (71.4%) were male and 12(28.5%) were female. Median age of the patient was 49 years (range-21 years to 73 years). Incidence of relaparotomy was highest among 51-60 years age group (11.2%) followed by 41-50 years (9.8%), 61-70 years (9.3%) and lowest in >70 years (5%) (Table 1) The most common indication for initial laparotomy were hollow viscus perforation, intestinal obstruction, stab and blunt abdominal injuries, appendectomy and other conditions such as septic peritonitis

Patients Demographics.

AGE (Years)	NUMBER OF INITIAL LAPAROTOMIES	NUMBER RE LAPAROTOMY
0-10	Nil	Nil
11-20	18	0
21-30	124	8(6.45%)
31-40	106	6(5.66%)
41-50	71	7(9.8%)
51-60	89	10(11.2%)
61-70	96	9(9.3%)
>70	40	2(5%)
Total	544	42(7.2%)

Male	30(71.4%)
Female	12 (28.5%)

Table 1 Showing Patients demographics

Dirty wound in initial laparotomy had maximum incidence 3.21% of relaparotomy followed by contaminated wound (2.90%), clean-contaminated wound (1.91%). There were no cases of relaparotomy noted in case of initial laparotomy with clean wound.Out of 42 re laparotomies,most common cause was Burst abdomen(18 cases-42.85%). Next common cause leak from previous perforation site or anastomotic site(17

cases-40.47%) Others being Stomal site complications(3cases-7.14%) Septic peritonitis and post operative haemorrhage 2 cases each(4.76%)Out of 42 re laparotomies,most common cause was Burst abdomen(18 cases-42.85%). Next common cause leak from previous perforation site or anastomotic site(17 cases-40.47%). Others being Stomal site complications(3cases-7.14%). Septic peritonitis and post operative haemorrhage 2 cases each(4.76%)

INDICATIONS OF RE LAPAROTOMY

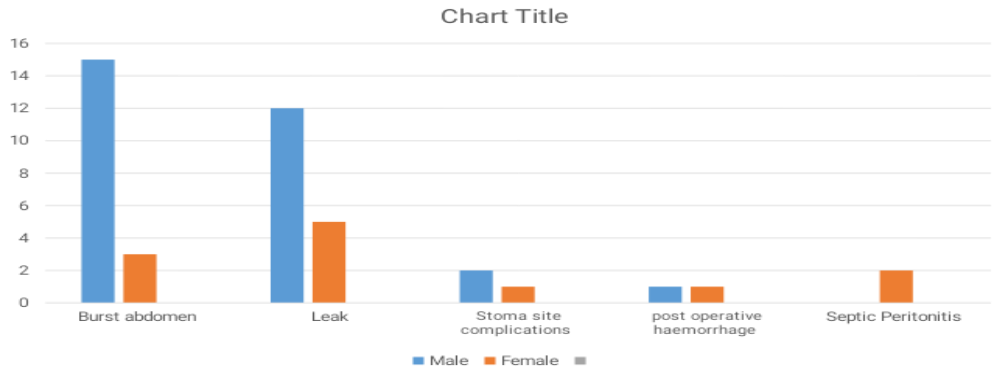

Figure1 Incidence of relaparotomy -Indication and demographic variables

SITE AND INCIDENCE OF LEAK

Perforation site leak		Anastomotic leak	
SITE	INCIDENCE	SITE	INCIDENCE
Pre pyloric	3(37.5%)	IleoIliac	4(44.44%)
Duodenal	3(37.5%)	Ileocolic	3(33.33%)
Jejunal	1(12.5%)	Colocolic	1(11.11%)
Ileal	1(12.5%)	Jejunojejunal	Nil
Colonic	Nil	Ileojejunal	1(11.11%)
Total	8	Total	9

Table 2 showing perforation site and its incidence

The highest 20 (47.61%) relaparotomy were conducted after 5-10 days of initial laparotomy. On preoperative assessment, 17 (40.48%) patients were anaemic. 31(73.81%) patients had hypoalbuminemia, 23(54.71%) had leukocytosis and 6(14.28%) had leukopenia. 7(16.66%) patients had poor respiratory system. 8 patients were chronic smoker whereas 5 patients were alcoholic and 12 patients were both chronic smoker and alcoholic. 13 patients had associated co morbidity in which 1 had coranary artery disease, 8 patients had diabetes mellitus, 3 had systemic hypertension 1 had abdominal tuberculosis.

Wound classification	
Class-1	3(7.14%)
Class-2	7(16.6%)
Class-3	12(28.5%)
Class-4	10(23.8%)

Anaemia	
Mild	6(14.28%)
Moderate	10(23.8%)
Severe	1(2.38%)
	17(14.48%)

Serum Albumin	
Marked	2(4.76%)
Mild	29(69.04%)
	31(73.81%)

Wbc	
Leucocytosis	6(14.28%)
Leucocytopenia	23(54.71%)
Respiratory rate	
Good	19(45.23%)
Fair	15(35.71%)

Poor	7(16.66%)

Table-3

In post-operative period, 33 (78.56%) patients were shifted to ICU following relaparotomy for close monitoring .Mean duration of ICU admission were 4.16±2.25 days. Out of 42 relaparotomies 9(27.26%) case died as a consequence of relaparotomy. Maximum mortality was noted in relaparotomy for leak from anastomotic and perforation site 5(55.55%) followed by perforation 2(22.22%) and 1 (11.11%) each due to burst abdomen and stomal complication.

SOFA SCORE	INCIDENCE	NUMBER OF INTUBATED PATIENTS	EXPIRED PATIENTS	DISCHARDED PATIENTS
0-6	12(36.35%)	2	1	11
7-9	8(24.23%)	4	1	7
10-12	9(27.26%)	4	4	5
13-14	3(9.08%)	2	2	1
15	-	-	-	-
16-24	1(3.02%)	-	-	1
Total	33(78.56%)	12(36.35%)	9(27.26%)	25(75.76%)

Table 4 Summary of ICU admission

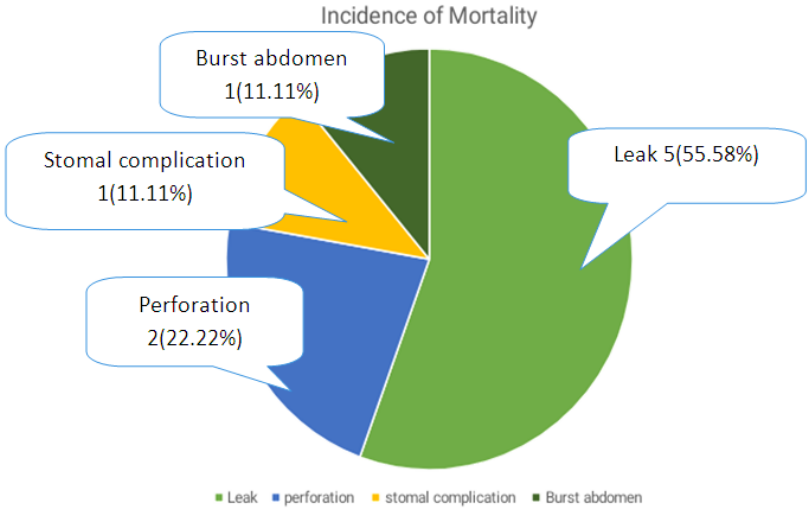

Figure 2 Incidence of mortality

6(14.28%) deaths were reported in 51-60 years age group followed by 2 (4.76%) deaths in 41-50 year age group 1(2.38%) in 61 -70 age group. Highest deaths of 4 patients (%) were noted within 2-4 days of relaparotomy followed by 2(9.52%) within 4-6 days, 1(2.38%) within 2 days, 1 (2.38%) within 6-8 days and 1 (2.38%) after more than 10 days of relaparotomy.

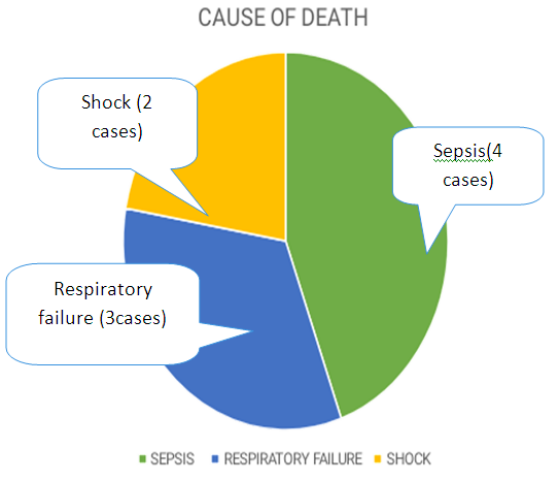

Figure 3 Cause of death

IV. Discussion

In this study, evaluation of 42 patients who underwent relaparotomy in Government Rajaji hospital, Madurai was done. Measures which were carried out to reduce the incidence of relaparotomy are proper preoperative workup, perioperative antibiotics and proper antiseptics, proper surgical techniques, secured haemostasis, complete exploration and appropriate drainage, better postoperative fluid and electrolyte balance. The incidence of relaparotomy depends upon the disease process and the type of surgery performed.Early diagnosis and immediate surgery to rectify the cause might decrease the mortality. Despite the advances in imaging, surgical technique and critical care, relaparotomy still carries high mortality rate. Despite with best possible post-operative care in our study, mortality rate in case of relaparotomy was high as 27.26%, which is similar to other studies in which mortality rate was in between 26.7% to 37.3%.[2,3,6,7]

V. Conclusion

Relaparotomy is life-saving procedure in many unsuccessful primary laparotomy.

Burst abdomen is the most common indication of relaparotomy followed by leak from anastomotic/perforation site.

The older, anemic and patient with hypoalbuminemia in pre and postoperative period and dirty wound in 1st laparotomy have higher risk to undergo relaparotomy.

Earlier recognition and treatment of post-operative complications, consideration of relaparotomy with vigorous ICU monitoring and post-operative care leads to decrease post-operative mortality.

Despite the recent advances in the preoperative management and postoperative care, the mortality following relaparotomy ranges around 20-25%.

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