

# A Retrospective Study of Postoperative Abdominal Complications in Midline Laparotomy at Tertiary Care Hospital of South Gujarat

Dhruvkumar Makwana<sup>1</sup>, Parth Patel<sup>2</sup>, Rajesh Chandnani<sup>3</sup>

<sup>1</sup>Third Year Resident, Department of Surgery, SMIMER Medical College, Surat, Gujarat, India

Corresponding Author Email: [dhruvmakwana29796\[at\]gmail.com](mailto:dhruvmakwana29796[at]gmail.com)

Phone no: 8200363091

<sup>2</sup>Senior resident, Department of Surgery, Government Medical College, Surat, Gujarat, India

<sup>3</sup>Associate professor, Department of Surgery, SMIMER Medical College, Surat, Gujarat, India

**Abstract:** Background: The word laparotomy explains exploration of the abdomen and proceeds further according to the cause identified. A few major indications for an abdominal laparotomy are like perforation peritonitis, acute intestinal obstruction, burst appendix and blunt or penetrating abdominal injuries either due to road side accidents, fall from height or gun shot or stab injuries. Method: The Retrospective Study of 50 cases of operated midline laparotomy in department of surgery in tertiary care hospital of south Gujarat. Data like Age, Sex, Addiction, Comorbidities, Glycosylated haemoglobin (HbA1c), Nature of laparotomy (elective or emergency), Manner of rectus sheath closure (continuous or interrupted), Manner of wound closure (mass closure or layer - wise closure) collected from indoor case sheet. And post operative complications identified and evaluated. Results: In present study, most common complication seen was Surgical site infection followed by wound dehiscence while the least common complication seen was fistulisation. No case of early post operative obstruction was seen in present study. Most complications were seen in males and with diabetes most common comorbidity.

**Keywords:** Midline exploratory laparotomy, Complications

## 1. Introduction

Laparotomy is a most common surgical procedure done by general surgeon. In surgical language, the word laparotomy explains exploration of the abdomen and proceeds further according to the cause identified. [1] post - operative complication may be defined as any negative outcome as perceived by the surgeon or by the patient. It may occur intra - operatively in the immediate post - operative period or later. Post - operative complication may occur after laparotomy whether elective or emergency. Various factors such as time of presentation, pre - operative resuscitation, underlying pathology (mesenteric ischemia and faecal peritonitis), meticulous surgical technique, age, any co - morbid condition (coronary artery disease, diabetes mellitus, hypertension, and any chronic illness), anaesthesia technique, and post - operative care contribute to final result. Post - operative sequel can range from fever, pneumonitis, wound complications, and in extremes cases death. [2] Average mortality rate after emergency laparotomies range from 10% to 18% in different studies which is much higher than elective surgeries. [3] So, present study was conducted to improve knowledge about rate of different complications and effect of different management regime on outcome of abdominal Laparotomy.

## 2. Method

### Aims and Objectives

- 1) To know the frequency of different types of surgical complications after laparotomy.

- 2) To study the effect of different management regime and their efficacy related to stay in hospital among the different complication.
- 3) To study the frequency of mortality in patient having abdominal complication after laparotomy.

The Retrospective Study of 50 cases of operated midline laparotomy in department of surgery in Government Medical College, Surat.

Protocol of the study was approved by institutional review board.

### Inclusion criteria

- All Patients of operated cases of midline laparotomy (emergency and nonemergency) in single surgical unit
- >18 years of Age

### Exclusion criteria

- Laparotomy other than Midline Laparotomy
- Gynaecological laparotomy
- <18 years of Age
- Polytrauma
- MLC cases.

Data like Age, Sex, Addiction, Comorbidities, Glycosylated haemoglobin (HbA1c), Nature of laparotomy (elective or emergency), Manner of rectus sheath closure (continuous or interrupted), Manner of wound closure (mass closure or layer - wise closure) collected from indoor case sheet.

### 3. Result

In the study, 30% patients were belonged to 21 - 30 years of age group followed by 26% from 41 - 50 years of age group. The mean age of study participants was 39.6 + 11.9 years. Out of total, 29 (58%) and 21 (42%) patients were respectively, males and females. Of total, presence of comorbidities among 11 patients in which 7 had history of diabetes mellitus, 2 had history of hypertension, 1 had both COPD and hypertension and 1 had malignancy. 16 (32%) patients had addiction of alcohol, 11 (22%), patients had addiction of smoking, 7 (14%) cases had addiction of tobacco chewing. In my study total 11 (22%) patients had BMI >30 kg/m<sup>2</sup>, out of which 7 (64%) developed surgical site infection, 2 (19%) developed wound dehiscence and 2 (19%) developed incisional hernia. (Table - 2) Out of 50 cases, 43 had HbA1c level <6.5 % and 7 had HbA1c >6.5 %. Out of 43 patients, 24 (56%) had wound infection and out of 7, 5 (71.4%) patients had wound infection. Out of 50 cases, 31 (62%) were closed in continuous fashion. In this method, 16 (51%), 5 (16%) patients had wound infection & wound dehiscence respectively. 19 (38%) were closed in interrupted fashion. In this method, 13 (68%) patients had wound infection. Out of 50 cases, mass closure was done in 26 (52%) cases and in rest of the 24 (48%) cases layer - wise closure was done. In mass closure, 12 (46%), 2 (7.6%), 3 (11.5%) patients had wound infection, wound dehiscence, incisional hernia respectively. In layer - wise closure, 18 (75%), 4 (16.6%), 2 (8.3%) patients had wound infection, wound dehiscence, incisional hernia respectively. (Table 3) Out of 50 cases, 27 operations were performed in emergency setting and 23 were in elective setting. In emergency operation, 23 (85%), 5 (18.5%), 1 (3.7%) patient had wound infection, wound dehiscence, fistula respectively. In elective operation, 6 (26%), 1 (4.3%) patient had wound infection, wound dehiscence respectively. Among the study participants, 35 had Wound Pain, 30 had Wound Infection, 6 had wound Dehiscence, 5 had incisional hernia, 4 had seroma, 3 had hematoma, 1 had fistulisation, 3 patients had paralytic ileus and no case of early postoperative obstruction was seen. Of total, 48 patients had given conservative/medical treatment and 2 had re - exploratory laparotomy done for the management of Complications. In the study, 94% patients were discharged and 3 deaths were noted. Mortality rate was 6%.

### 4. Discussion

In my study, most of the patients (78%) were between 21 and 50 years of age. Out of these maximum cases were found in 3rd decade, that is 15 cases (30%). Surgical site infection (60%) was the most common complication while the least common complication was paralytic ileus (10%). Surgical site infection was seen maximum (18%) among 21 - 30 years age group. These results were comparable with the study of Manoj P et al, [4] the primary indications for an exploratory laparotomy are perforation peritonitis constituted (58.8%) cases followed by intestinal obstruction (13%), gallbladder perforation (10%), blunt and penetrating trauma abdomen (9.2%), and appendicular abscess/perforation (4.8%). In my study, male - to - female ratio in the study was 1.5: 1. Among the males 18 (62%) had wound infection and in females 14 (66%) had wound infection. which is comparable with the studies of Dickson and Cole [5], Nogueira et al. [6] and

Kapoor S et al. [7] who also found a higher male to female ratio of 2.4: 1, 2.5: 1 and 2.57: 1, respectively. In my study total number of patients was 50 out of which 5 (10%) developed incisional hernia. Out of these 2 were male and 3 were female. Diabetes was identified in 2 patients (40%) whereas the incidence of COPD, smoking, tobacco chewing and obesity was 1 (10%), 1 (10%), 2 (40%) and 1 (10%) respectively. Which is comparable to the study of Amjad Shah [31] in which the total number of study subjects was 672, Diabetes was identified in 18 patients (38.3%) whereas the incidence of smoking, steroid use, COPD, and obesity was 2 (4.3%), 0 (%), 3 (6.4%) and 7 (14.9%) respectively. BMI result is comparable with the study of Wehrle CJ, [8] in which he reported 51.9 % incidence of incisional hernia in obese group. Wound infection was higher, 23 (85%) in emergency setting. These results are compared with study of Chauhan S et al. [9]

The wound infection was seen in 16 (51%) and 13 (68%) cases in continuous and interrupted manner respectively, which is opposite to the study of Roy et al., [10] in which wound infection rate was higher in continuous manner than interrupted manner, 40.5% and 32.4% respectively. Wound infection rate was 46% in mass closure group and 75% in layer - wise closure group. Which is comparatively higher than study of Chhabra et al., [11] in which rate was 20% and 37.5% respectively.

#### Acknowledgements

Authors would like to thank gratefully Dr. Pravin Sharma for his kind help.

#### Declarations

*Funding:* The author have not received any kind of support from any organization.

*Conflict of interest:* the authors have no financial or non - financial interest to disclose

*Ethical approval:* It was started only after ethical approval was taken from institutional ethical committee of Government medical college, Surat.

#### References

- [1] Bansal AR, Mallick MR and Jena S. A study of post - operative complications of all emergency laparotomy in a tertiary care hospital within 90 days. Arch Clin Gastroenterol.2019; 5 (2): 15 - 18.
- [2] Murtaza B, Saeed S and Sharif MA. Postoperative complications in emergency versus elective laparotomies at a peripheral hospital. J Ayub Med Coll Abbottabad.2010; 22 (3): 42 - 47.
- [3] Barazanchi AWH, Xia W, MacFater W, Bhat S, MacFater H, Taneja A, et al. Risk factors for mortality after emergency laparotomy: scoping systematic review. ANZ J Surg 2020. Online ahead of print 10.1111/ans.16082.
- [4] Manoj P, Shashikumar HB, Gangamma K. Post - operative complications rates in patients undergoing emergency laparotomy in tertiary care hospital. Asian Journal of Medical Sciences | Apr 2022 | Vol 13 | Issue 4.

- [5] Dickson JA and Cole GJ. Perforation of the terminal ileum. A review of 38 cases. Br J Surg.1964; 51: 893 - 897. <https://doi.org/10.1002/bjs.1800511207>
- [6] 29. Nogueira C, Silva AS, Santos JN, Silva AG, Ferreira J, Matos E, et al. Perforated factors of morbidity and mortality. World J Surg.2003; 27: 782 - 787. <https://doi.org/10.1007/s00268-003-6645-0>
- [7] Kapoor S, Sharma R, Srivastava A, Kumar A, Singh A and Singh H. Study of surgical complications of explorative laparotomy and their management - a study of 100 cases. J Dent Med Sci.2017; 16 (12): 36 - 41.
- [8] Wehrle CJ, Shukla P, Miller BT, Blake KE, Prabhu AS, Petro CC, Krpata DM, Beffa LR, Tu C, Rosen MJ. Incisional hernia rates following midline laparotomy in the obese patient: a retrospective review. Hernia.2022 Nov 1. doi: 10.1007/s10029-022-02688-6. Epub ahead of print. PMID: 36318389.
- [9] Chauhan S, Chauhan B and Sharma H. A Comparative study of postoperative complications in emergency versus elective laparotomy at a tertiary care centre. Int Surg J.2017; 4: 2730 - 2735.
- [10] Roy, et al.: Comparative study - interrupted and continuous suture - rectus sheath closure: Asian Journal of Medical Sciences | May 2022 | Vol 13 | Issue 5
- [11] Chhabra P, Maheswari M, Kumar D. A comparison between mass closure and layered closure in laparotomy wounds. International Journal of Medical and Health Research 2020; 6 (2): 8 - 11.

**Table 1: Post operative complications among patients**

Post operative complications	Present	Percentage (%)
Wound Pain	35	70
Wound Infection	30	60
Wound Dehiscence	6	12
Seroma	4	8
Hematoma	3	6
Fistula	1	2
Incisional Hernia	5	10
Early postoperative obstruction	0	0
Paralytic ileus	3	6

**Table 2: Frequency of Different complications in relation to BMI (Body mass index)**

BMI (kg/m <sup>2</sup> )	Frequency	Wound infection	Wound dehiscence	Incisional hernia
>30	11	7 (63.3%)	2 (18.1%)	2 (18.1%)
<30	39	22 (56.4%)	5 (12.8%)	3 (7.7%)

**Table 3: Frequency of wound infection and wound dehiscence in relation to manner of rectus sheath closure**

Manner of closure	Frequency	Wound infection	Wound dehiscence
Continuous	31	16 (51%)	5 (16%)
Interrupted	16	13 (68%)	0 (0%)