



## A CLINICAL STUDY ON POST OPERATIVE WOUND COMPLICATIONS IN ABDOMINAL SURGERIES

**Dr. K. Suhas Chaitanya**

Assistant Professor, Department of General Surgery, Narayana Medical College, Nellore

**Dr. B. Satya Sri**

Post graduate, Department of General Surgery, Narayana medical college, Nellore

### KEYWORDS :

#### INTRODUCTION

Surgical wounds in normal and healthy individuals heal through an orderly sequence of physiologic events that include inflammation, epithelialization, fibroplasia, and maturation. Factors affecting the wound healing are patient related and surgical treatment related.<sup>1</sup>

Risk factors in postoperative wound complications are general factors like malnourishment, diabetes, obesity, renal failure etc and local factors include poor closure of wound, infection, post op cough.

Wound complications are important causes of early and late postoperative morbidity following laparotomy. In most cases, such complications prolong hospitalization, with a substantial increase in cost of care.

Early intervention and preventive measures can avoid them, helping in early recovery and discharge from the hospital postoperatively.

**The aim of this study** is to assess: Post operative wound dehiscence, Post operative enterocutaneous fistula, Time to return to normal activities in patients undergoing laparotomy both for emergency and elective conditions.

#### METHODOLOGY:

A single centered prospective observational study conducted in the Department of General Surgery, Narayana Medical College, Nellore during the period from October 2015 to November 2017. All patients who underwent exploratory laparotomy for various abdominal conditions will be included in this study.

Preoperative assessment of the patient is done by history, examination, blood and investigations. Type of surgery and complications in the post op were recorded.

#### RESULTS

**Table No 1: age distribution**

Age group(in years)	Number of patients	Percentage
21-30	26	9.1
31-40	55	19.2
41-50	100	35
51-60	72	25.3
61-70	20	7
>70	12	4.2

**Table No 2: postoperative complications in patients**

Complication	Number of Patients	Percentage
Seroma	285	70.02
Hematoma	0	0
Surgical Site Infection	238	58.47
Wound Dehiscence	55	13.51
Enterocutaneous fistula	2	0.49

183 patients (64.21%) were male and 102 patients (35.78%) were female. 213 patients (74.73%) underwent emergency surgery and

72 patients (25.26%) underwent elective surgery.

**Table No 3: Organism isolated in surgical site infections of patients (n=238)**

Organism Isolated	No. of patients	Percentage
Acinetobacter baumannii	5	2.1
Escherichia coli	137	57.56
Klebsiella pneumonia	28	11.76
Pseudomonas aeruginosa	20	8.4
Staphylococcus aureus	41	17.22
Streptococcus pneumonia	7	2.94

55 patients had wound dehiscence of which 36 patients were male and 19 were female. Wound dehiscence was highest in 41-50 years least in 21- 30. 26 patients (47%) had hollow viscus perforation (duodenal and gastric perforation) and 17 patients (30%) had acute intestinal obstruction, and the remaining cases were with appendicular perforation, blunt trauma with splenic laceration and carcinoma colon. 7 patients had BMI >22 and 48 patients had BMI <22. p value (< 0.005) is significant. 50 cases had low serum albumin levels < 3gm/dl. p value is (<0.005) significant. 52 patients (95%) underwent emergency surgery and 3 patients (5%) underwent elective surgery. 48 patients (87.27%) had anaemia (<10 gm/dl) haemoglobin preoperatively. p value is (<0.05) significant. 41 patients had postoperative cough and 14 patients had no cough.

**Table No 4: Postoperative day on which wound dehiscence occurred (n=55)**

Post operative day of dehiscence	Number of patients with Wound Dehiscence	Percentage
4th day	8	14.54
5th day	26	47.27
6th day	11	20.00
7th day	4	7.27
8th day	2	3.64
9th day	2	3.64
10th day	2	3.64

2 patients had enterocutaneous fistula it was a low output fistula from colon underwent conservative management. The average hospital stay of patients with postoperative wound complications was 16.18 days.

#### DISCUSSION

In study done by Spiliotis J et al<sup>2</sup> it is shown that abdominal wound dehiscence occurs commonly in male gender 60%<sup>39</sup>. In study done by Garg Ramaneesh, et al<sup>3</sup> also it is shown that wound dehiscence occurs commonly in male gender of 74%.

**Table No 5: Comparison of male gender predominance of various studies**

Study	Percentage
Spiliotis J et al <sup>2</sup>	60%
Garg Ramaneesh, et al <sup>3</sup>	74%
Present Study	65%

**Table No 6: Comparison of mean age presentation of various studies**

Study	Mean age presentation
Rodriguez-Hermosa JI et al <sup>4</sup>	70 Years
Spiliotis J et al <sup>2</sup>	69.5 Years
Garg Ramaneesh, et al <sup>3</sup>	41.6 Years
Present Study	48.38 Years

In a study done by Garg Ramaneesh, et al<sup>3</sup> patients who developed wound disruption following laparotomy 44 patients (88%) had either contaminated or dirty wounds. Study conducted at Pakistan institute of medical science showed that 71.4% of the patients who developed abdominal wound dehiscence had undergone emergency surgery<sup>5</sup> In the study done by Spiliotis J et al<sup>2</sup> showed that 60% of the patients who developed wound dehiscence had undergone emergency laparotomy. In the present study 94% of the patients who had postoperative wound dehiscence were operated in emergency setting.

In a study carried out at Oula university Hospital, among 48 patients who developed wound dehiscence, the mean hospital stay was 25 ±15 days. There were 31 (65%) patients with pre-operative hypoalbuminemia; other risk factors included anaemia, malnutrition, chronic lung disease and emergency procedure<sup>6</sup>. In Garg Ramaneesh, et al<sup>3</sup> study who developed wound disruption following laparotomy 13(26%) patients were anaemic, 12 (24%) patients had hypoalbuminemia, other risk factors include renal failure, jaundice, and emergency procedure<sup>40</sup>.

In the present study out of 55 patients, the mean hospital stay was 26 ± 5 days. About 87% of patients showed haemoglobin < 10gm%. Other risk factors in the study included, hypoalbuminemia, malnutrition, chronic lung diseases, old age, malignancy, obesity, emergency procedure and peritonitis. Malnutrition has an impact on wound healing. Protein catabolism can result in a delay in wound healing. A hypoalbuminemic patient can experience wound-healing delay or even dehiscence; although the albumin level must be lower than 2.0 g/dL to have an effect on wound healing, protein supplements can reverse this deficiency<sup>7</sup>. A study at Department of Surgery Sundsvall County Hospital, Sweden concluded overweight (BMI > 25) as a risk factor for wound infection but these effects may be eliminated if patients are sutured with a suture length to wound length ratio of 4 – 4.9<sup>8</sup>. In study done by Garg Ramaneesh, et al<sup>3</sup> India, who developed wound disruption following laparotomy of the total of 50 patients, 16 were found to be obese (BMI>35). In the present study, 348 patients were having their BMI above 22 and 7 patients were having their BMI below 22. Patients who had BMI<22 are found to have poor nourishment, less lean body mass and this causes poor wound healing thereby leading to wound dehiscence. Study conducted at long Island Jewish Medical Centre showed the average post-operative day of abdominal wound dehiscence to be 11.1 postoperatively. In our study, patients developed wound dehiscence on an average 8.6 days postoperative day.

## CONCLUSION

Significant risk factors for the development of post-operative abdominal postoperative wound complications are:

**Patient factors:** like middle age group, male sex, anaemia, malnutrition, obesity, patients with peritonitis due to bowel perforation, intestinal obstruction, those who undergone operation in emergency and those who had undergone perforation closure, resection and anastomosis.

**Surgeon factors:** like midline incisions, improper suture technique like too tight sutures causing necrosis at suture site and improper aseptic precautions which may lead to wound infection and then wound dehiscence.

Postoperative abdominal wound complications can be prevented by improving the nutritional status of the patient, strict aseptic precautions, improving patient's respiratory pathology to avoid

postoperative cough and by proper surgical technique. Postoperative wound complications prolong hospital stay of the patient and cause significant morbidity to the patient.

Whenever possible it is always better to have a good preoperative preparation of patient, like correction of dehydration, correction of lung pathology, correction of malnutrition and anaemia for surgery.

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