

COMPARATIVE STUDY OF WOUND COMPLICATIONS IN OBESE PATIENTS V/S NON-OBESE PATIENTS UNDERGOING EMERGENCY ABDOMINAL SURGERY.

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Abstract

Background : This is a prospective, comparative, observational study done amongst the obese and non-obese patients who are admitted and undergone emergency abdominal surgery during the duration of one year to compare incidence of complications in both obese and non-obese group of patients.

Objective : Prospective, comparative, observational study amongst the obese and non-obese patients who are undergone emergency abdominal surgery to compare the incidence of complications among them. **Methods :** All post-operative patients who are admitted in ward of department of general surgery, Sir T general hospital, Bhavnagar during the study duration of 1 year. We had applied aseptic dressings on all the postoperative patients and then divide them into obese and non-obese group according to their BMI and during study time period we will compare the role of obesity in wound complications.

Result : The incidence rate of post-operative complication as fever in obese(80%) & non-obese(35%), hemorrhage/hematoma in obese(15%) & nonobese(0%), septicemia in obese(45%) & non-obese(15%), atelectasis in obese(25%) & non-obese(0%), as pneumonitis in obese(25%) & nonobese(0%), as fistula both groups had 0%, as wound infection in obese(45%) & non-obese(10%), as seroma in obese(25%) & nonobese(0%) and dehiscence in obese(15%) & non-obese(0%) patients.

Conclusion: The wound complications are significantly associated with obesity in patients undergoing abdominal surgery and incidence of complications are more in obese as compared to in non-obese patients.

Key words : Obese, non-obese, Wound, Complications, emergency abdominal Surgery

Introduction

Wound is damage to the integrity of epithelium, including skin, mucous membranes, and organ tissues. Various types of traumas can cause these, and it is critical to ensure wounds are cleaned and appropriately dressed to limit the spread of infection and further injury.[1][2]. The post-operative wound complications can be defined as any negative outcome as perceived either by the surgeon or by the patient[3]. These complications can be encountered after any surgery, but the key to success is the early detection and the prompt management. Surgical site infections and wound and tissue dehiscence are well known postoperative complications in abdominal surgery. Surgical site infection (SSI) can be defined as an infection that is present up to 30 days after a surgical procedure if no implants are placed and up to one year if an implantable device was placed in the patient. Being the third most commonly reported nosocomial infection, it accounts for 12%-16% of all nosocomial infections. The complications of incisional infections are wound failure/prolongation of wound healing, sepsis, wound dehiscence, hernias and chronic disfiguring scars, which can lead to long term physical and psychological issues in patients. Obesity is

one of the co morbid conditions which can affect the operative and postoperative outcome of patients undergoing surgery[4]. Obesity causes hypo perfusion, reduced microcirculation, increased wound tension and hence prevents wound healing. It is better expressed by body mass index (BMI). The BMI, a key index for relating body weight to height, is a person's weight in kilograms (kg) divided by their height in meters (m) squared. Since the BMI describes the body weight relative to height, it correlates strongly (in adults) with the total body fat content. Body mass index of less than 18.5 is underweight, 18.5 to 24.9 is normal, 25 to 29.9 is overweight and more than and equal 30 is obesity [5]. The distribution of body fat between visceral and non-visceral compartments and within different subcutaneous areas is important clinically. Both the central and peripheral types of obesity are associated with surgical complications[6,7]. Hence in this study, we evaluate obesity as a risk factor for surgical wound complications, so that patients may be benefited with this study.

Materials and Methods

A prospective, comparative, observational, single centre study of a total of 40 patients aged 15-80 years admitted in general surgery ward of Sir T. Hospital, Bhavnagar-364001, Gujarat, India between September 2020 and October 2021. Prior approval from the local ethics committee (Institutional Review Board) was taken. Written informed consent from every participant was taken after explaining the purpose of the study. Anonymity and confidentiality of participants were maintained.

In this observational prospective study, 40 patients who underwent emergency abdominal surgery were taken as a study group. They were subjected to detailed clinical history with physical examination and following the information was entered in case report form, chief complaints with duration and severity, past history, family history, personal history, investigations such as CBC, LFT, KFT, Blood sugar, serum electrolytes.

After obtaining an informed and valid consent, we divided the patients in two groups according to BMI into obese group (BMI \geq 30) and non-obese group (BMI < 30). Then we applied aseptic dressing to both the groups and recorded any wound complications as in wound infection, seroma or wound dehiscence on post operative period on day 3, 5, 7 and 15 days and from this data we find out the incidence of wound complications in both the groups and evaluate the role of obesity in wound complication.

The data was collected prospectively. Statistical analysis done, incidence was calculated and Fisher exact test applied.

Inclusion Criteria

1. Age group between 15-80 years.
2. Clean and Clean-Contaminated Surgical Procedures.

3. Clean Procedure: - an incision in which no inflammation was encountered and without a break in sterile technique, and during which the respiratory, alimentary and genitourinary tracts are not entered. e.g., Inguinal hernioplasty, lipoma excision, mastectomy.
4. Clean-contaminated procedure — an incision through which the respiratory, alimentary or genitourinary tract is entered under controlled conditions but with no contamination encountered. e.g., appendectomy, exploratory laparotomy for G.I. obstruction and bowel resection, colostomy ileostomy closure.
5. Patients giving written and informed consent to be include in this scientific prospective observational study of wound complications in obese vs non obese patients.

Exclusion Criteria

1. Re-exploratory Laparotomy Surgeries.
2. Diabetic patients.
3. Immunosuppressant conditions. Such as people living with HIV & AIDS, tuberculosis, patients who are on chemotherapy.

Ethical Clearance - The study was conducted in all surgical wards of sir t hospital between October 2020 to September 2021 after getting permission by The Institutional Ethical Committee of government medical college Bhavnagar.

Result

This study was carried out at Sir T. Hospital and Govt. Medical College, Bhavnagar, Gujarat, India. At the end of study all the data was collected, analyzed and interpreted using standard statistical methods. Results are presented here.

Table 1: Distribution of patients according to age.

Age (years)	Obese	Non-obese
15-30	9	11
31-45	6	5
45-60	4	3
60-80	1	1
Total	20	20

The mean age of the patients was 35.28 \pm 15.78 years. There is no any significance correlation of obesity with the age.

Table 2: According to postoperative fever Complication

	Obese	Non-obese
Postoperative fever	16	7
Postoperative afebrile	4	13
Incidence rate	80	35

There are 16 (80%) obese patients who has developed postoperative fever whereas 7 (35%) nonobese patients had fever postoperatively with 80% incidence rate of fever complication in obese patients. There is significance correlation between obesity and postoperative fever as per fisher exact test ($P < 0.05$).

There are 16 (80%) obese patients who has developed postoperative Nausea / Vomiting whereas 4 (20%) nonobese patients had Nausea / Vomiting postoperatively with 80% incidence rate of Nausea/ vomiting complication in obese patients.

Table 3: According to postoperative Hemorrhage/hematoma

	Obese	Non-obese
Postoperative hemorrhage/hematoma	3	0
Postoperative No hemorrhage/hematoma	17	20
Incidence rate	15	0

There are 3 (15%) obese patients who has developed postoperative Hemorrhage/ hematoma whereas none nonobese patients had hemorrhage / hematoma postoperatively with 15% incidence rate of hemorrhage / hematoma complication in obese patients. There is no significance correlation between obesity and postoperative hemorrhage / hematoma as per fisher exact test ($p > 0.05$).

Table 4: According to postoperative septicemia

	Obese	Non-obese
Postoperative septicemia	9	3
Postoperative non-septicemia	11	17
Incidence rate	45	15

There are 9 (45%) obese patients who has developed postoperative Septicemia whereas 3 (15%) nonobese patients had septicemia postoperatively with 45% incidence rate of septicemia complication in obese patients. There is no significance correlation between obesity and postoperative septicemia as per fisher exact test ($p > 0.05$).

There are 5 (25%) obese patients who has developed postoperative atelectasis whereas none nonobese patients had postoperatively atelectasis with 25% incidence rate of postoperative atelectasis complication in obese patients.

Table 5: According to postoperative pneumonitis

	Obese	Non-obese
Postoperative Pneumonitis	5	0
Postoperative non pneumonitis	15	20
Incidence rate	25	0

There are 5 (25%) obese patients who has developed postoperative pneumonitis whereas none nonobese patients had postoperatively pneumonitis with 25% incidence rate of postoperative pneumonitis complication in obese patients. There is significance correlation between obesity and postoperative pneumonitis as per fisher exact test ($p < 0.05$).

Table 6: According to postoperative wound Infection

	Obese	Non-obese
Postoperative wound infection	9	2
Postoperative clean wound	11	18
Incidence rate	45	10

There are 9 (45%) obese patients who has developed postoperative wound complication whereas 2 (10%) nonobese patients had postoperatively wound complication with 45% incidence rate of postoperative wound complication in obese patients.

Table 7: According to postoperative wound Seroma

	Obese	Non-obese
Postoperative Seroma	5	0
Postoperative no Seroma	15	20
Incidence rate	25	0

There are 5 (25%) obese patients who has developed postoperative wound seroma complication whereas none nonobese patients had postoperatively wound complication with 25% incidence rate of postoperative wound seroma complication in obese patients.

Table 8: According to postoperative wound Dehiscence

	Obese	Non-obese
Postoperative wound dehiscence	3	0
Postoperative no wound dehiscence	17	20
Incidence rate	15	0

There are 3 (15%) obese patients who has developed postoperative wound dehiscence whereas none nonobese patients had postoperatively wound dehiscence with 15% incidence rate of postoperative wound dehiscence in obese patients.

Discussion

In the present study, the mean age of the patients was 35.28±15.78 years. There is no any significance correlation of obesity with the age. In the present study, there are 16 (80%) obese patients who has developed postoperative fever whereas 7 (35%) non obese patients had fever postoperatively with 80% incidence rate of fever complication in obese patients. There is significance correlation between obesity and postoperative fever. There was no any comparative study found.

In the present study, there are 16 (80%) obese patients who has developed postoperative Nausea / Vomiting whereas 4 (20%) nonobese patients had Nausea / Vomiting postoperatively with 80% incidence rate of Nausea/ vomiting complication in obese patients.

There is significance correlation between obesity and postoperative Nausea/ vomiting .

In the present study, there are 3 (15%) obese patients who has developed postoperative Hemorrhage/ hematoma whereas none nonobese patients had hemorrhage / hematoma postoperatively with 15% incidence rate of hemorrhage / hematoma complication in obese patients. There is no significance correlation between obesity and postoperative hemorrhage / hematoma. When compared with other study “Salvatore a giordane et al”[8]. there were

1.57 % hemorrhage /hematoma in obese patient and 1.7 % hemorrhage / hematoma in nonobese patient.

In the present study, there are 9 (45%) obese patients who has developed postoperative Septicemia whereas 3 (15%) nonobese patients had septicemia postoperatively with 45% incidence rate of septicemia complication in obese patients. There is no significance correlation between obesity and postoperative septicemia. When compared to other study “John S Garrow et al” [9]-there were 43 % obese patient develop septicemia and 25% non-obese patient develop septicemia.

In present study, there are 5 (25%) obese patients who has developed postoperative atelectasis whereas none nonobese patients had postoperatively atelectasis with 25% incidence rate of postoperative atelectasis complication in obese patients. There is significance correlation between obesity and postoperative atelectasis.

In present study, there were 5 (25%) obese patients who has developed postoperative pneumonitis whereas none non obese patients had postoperatively pneumonitis with 25% incidence rate of postoperative pneumonitis complication in obese patients. There is significance correlation between obesity and postoperative pneumonitis.

In present study there were None patient developed postoperatively fistula in obese and non obese group. When

compared with other study “Salvatore a giordane et al” [10]. there were 1.4 % fistula in obese patient and 2.1 % fistula in nonobese patient .

In present study There are 9 (45%) obese patients who has developed postoperative wound infection whereas 2 (10%) non obese patients had postoperatively wound infection with 45% incidence rate of postoperative wound infection in obese patients. There is significance correlation between obesity and postoperative wound infection. When compared with other study “Salvatore a giordane et al”. there were 17.5 % wound infection in obese patient and 4.3 % wound infection in nonobese patient.

In present study, there are 5 (25%) obese patients who has developed postoperative wound seroma complication whereas none nonobese patients had postoperatively wound complication with 25% incidence rate of postoperative wound seroma complication in obese patients. There is significance correlation between obesity and postoperative wound seroma complication. When compared with other study “Salvatore a giordane et al. there were 13.1 % seroma in obese patient and 2.1 % seroma in nonobese patient.

In present study, there are 3 (15%) obese patients who has developed postoperative wound dehiscence whereas none non obese patients had postoperatively wound dehiscence with 15% incidence rate of postoperative wound dehiscence in obese patients. There is no significance correlation between obesity and postoperative wound dehiscence When compared with other study “Salvatore a giordane et al”. there were 45.8 % dehiscence in obese patient and 7.2 % wound dehiscence in non obese patient.

Conclusion

From our observation and discussion, it can be concluded that the post-operative wound complications are significantly associated with obesity in patients undergoing abdominal surgery and are more in obese patients than nonobese patients, hence establishing obesity itself as a major morbidity factor in post-operative period.

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