

Original article:

Study of surgical site infections in abdominal surgeries

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ABSTRACT

Background: Surgical site infections are common following the abdominal surgeries. Centre for disease control has found 45% SSI incidence in abdominal surgeries with contaminated wounds. SSI causes morbidity with additional risk of mortality and also impact on health resources and cost through increased hospital stay, repeated surgeries, nursing care cost and drug treatment.

Method: This study was undertaken in surgical units of Shri. B.M.Patil Medical College, Hospital and Research Centre, Vijayapur. During the period of October 1, 2013 to September 1, 2015. A total of 100 patients were studied. Out of 100 patients 50 were in Primary Closure group and 50 were in Delayed Primary closure group cases.

The patients admitted in B.L.D.E.U.'s Shri. B. M. Patil Medical College Hospital Vijayapur attending surgical OPD who underwent exploratory laparotomy were studied. Details of patient were recorded including Clinical History, Clinical Examination, and Investigation.

Result: In primary closure group, wound infection was observed in 27 patients (54 %). The wounds of these patient were opened by removing the skin stitches only and managed by open technique with a daily Betadine soaked packing, out of 27 patients, 19 underwent secondary closure and 8 of 27 patients were left open for healing by secondary intention .

Conclusion: Our study showed that the main post-operative stay ,16.5 days seen in delayed primary closure group and 19.4 days in primary closure group.

INTRODUCTION

Surgical site infections are common following the abdominal surgeries. Centre for disease control has found 45% SSI incidence in abdominal surgeries with contaminated wounds. ¹SSI causes morbidity with additional risk of mortality and also impact on health resources and cost through increased hospital stay, repeated surgeries, nursing care cost and drug treatment. Despite of major improvement in antibiotics, better anesthesia, superior instruments, early diagnosis of surgical problems and better post-operative care but still surgical site infection (SSI) do

occur. The occurrence of SSI , wound dehiscence , incisional hernia are common following primary closure of skin in dirty / contaminated wounds.² Disadvantage of primary closure is increases the length of hospital stay and thereby increase in the cost. By delaying the closure of skin in contaminated wounds, and we can reduce SSI. It has better prognosis compared to primary closure. Advantage: there is no specialized equipment required, easy procedure, it allows the soft tissue to drain, it reduces the no. of colonic bacteria, and particularly anaerobes in contaminated wounds. Thus it would be helpful to

reduce SSI³

MATERIALS AND METHODS

This study was undertaken in surgical units of Shri. B.M.Patil Medical College, Hospital and Research Centre, Vijayapur. During the period of October 1, 2013 to September 1 ,2015. A total of 100 patients were studied. Out of 100 patients 50 were in Primary Closure group and 50 were in Delayed Primary closure group cases.

The patients admitted in B.L.D.E.U.'s Shri. B. M. Patil Medical College Hospital Vijayapur attending surgical OPD who underwent exploratory laparotomy were studied. Details of patient were recorded including Clinical History, Clinical Examination, and Investigation.

INCLUSION CRITERIA

All diagnosed cases of peritonitis, who underwent exploratory laparotomy and found to be contaminated

intra operatively were included in this study from the period of October 1, 2013 to September 1, 2015. Perforated appendicitis, perforated hollow viscous, ileostomy closure, trauma and intra-abdominal abscess / other peritonitis, Patients > 18 years of age are included.

Patient diagnosed as acute peritonitis and posted for exploratory laparotomy during the period of October 1 2013 to September 1 2015 were included. In this series a total of 100 patients were included and were divided in two groups. Each group had 50 patients. Patients underwent laparotomy procedure for acute peritonitis during surgery.Turbid ascites was cultured and peritoneal lavage was performed with warm saline until clear effluent restored. Drain was placed in the pelvis and anastomotic site through a separate incision in the abdominal wall. Peritoneum, muscle and fascia were closed in layers.

RESULT

A total of 100 patients, 76 male and 24 female included in this study. (table no 1).

Table 1 A : Percentage Distribution of Gender

| Gender | N | Percentage (%) |
|---------------|----------|-----------------------|
| MALE | 76 | 76 |
| FEMALE | 24 | 24 |
| Total | 100 | 100 |

The mean age of the patients was 50±5 years with the range of 18 to 65 years. There were 25 (25%) patients in range of 15 to 25 years, 44(44%) patients were in the range of 26 to 50 years and 26(26%) patient were in the range of 51 to 65 years, more than age of 65 years were 9.

Table 1 B) Distribution of age wise pattern

| Age | N | Percent |
|--------------|-----|---------|
| <25 | 21 | 21 |
| 26-50 | 44 | 44 |
| 51-65 | 26 | 26 |
| >65 | 9 | 9 |
| Total | 100 | 100 |

The patients were divided into two equal groups primary closure and delayed primary closure group.

Table no. 2 Percentage Distribution of Type of Wound Closure

| TYPE OF WOUND CLOSURE | N | Percent |
|-----------------------|-----|---------|
| DPC | 50 | 50 |
| PC | 50 | 50 |
| Total | 100 | 100 |

In primary closure group , of 50, 37 were male and 13 were female.

In delayed primary closure group, of 50, 39 were male and 11 were female.

In primary closure group, wound infection was observed in 27 patients (54 %). The wounds of these patient were opened by removing the skin stitches only and managed by open technique with a daily Betadine soaked packing, out of 27 patients, 19 underwent secondary closure and 8 of 27 patients were left open for healing by secondary intention . In

delayed primary closure group, wound infection was observed in 6 patients (12.00%). Forty four (44) patients wound healed without any infection. Infected wound in this group were opened by removing skin stitches and subjected to healing by secondary intention. There was a significant association between wound infection and type of skin closure (delayed primary closure 12.00%vs primary closure p<0.000)

Table No 3: Distribution of Type of Wound Closure by SSI

| Infection | No | | Yes | | Total | p value |
|-----------|----|---------|-----|---------|-------|---------|
| | N | Percent | N | Percent | | |
| DPC | 44 | 88 | 6 | 12 | 50 | 0.000* |
| PC | 23 | 46 | 27 | 54 | 50 | |

*significant

DISCUSSION

This study was undertaken in surgical units of Shri. B.M.Patil Medical College, Hospital and Research Centre, Vijayapur. During the period of October 1, 2013 to September 1 ,2015. A total of 100 patients were studied. Out of 100 patients, 50 were in Primary Closure group and 50 were in Delayed Primary closure group.

Open wound management of contaminated wound is a practical measure that has been used for centuries⁴.The use of delayed primary closure was popularized by military surgeons. The method of DPC has the advantage of reducing the numbers of colonic bacteria, particularly anaerobes contaminating to the

wound⁵ However, the disadvantages of allowing exogenous bacteria such as staphylococci to contaminate the wound in ward before closure has been recognized³⁴ In the entire series, 33 patients developed wound infection. In primary closure group wound infection rate was 54.4% while it was 12 % in delayed primary group. There was significant difference between 2 groups regarding wound infection (p<0.00).Our study showed that delayed primary closure was more suitable for wound management for contaminated or dirty wound. In our study the most common diagnosis was perforated appendix (27%) followed by Ileal perforation (24%), prepyloric (16%), duodenal (18%). And also showed

that the mean post-operative stay was 16.5 ±5 in delayed primary group and 19.4 ±5 in primary group $p < 0.002$. There is a significant association between type of wound closure and length of hospital stay .

Study conducted by Duttaroy D D, Jitendra J .et al “Management Strategy For Dirty Abdominal Incisions: Primary Or Delayed Primary Closure? A Randomized trial .At Department of Surgery , Government Medical College and Sir Sayajirao General Hospital ,Baroda, Gujarat ,India 2009. in their study demonstrated SSI developed after incision closure in 23% of patients infection were significantly more common in the primary group (42.25%vs 2.57%for DPC; $p=0.00375$)and also mean length of hospital stay were longer after PC (18.52 days than DPC (13.86) days) (P value 0.02) ⁶

Stephen M .Cohn, Giovanni Giannottiaet al “Prospective Randomized Trial Of Two Wound Management Strategies For Dirty Abdominal Wounds” Division of Trauma and Surgical Critical Care and Colorectal Surgery, Department of surgery, University of Miami School of Medicine , Miami Florida. Demonstrated that in DPC group wound infection rate was 12%, in PC group was 48%. Wound infection rate was greater in the PC group than DPC. Length of the hospital stay and hospital charges were similar between two groups ⁷

Conclusion:

Our study showed that the main post-operative stay ,16.5 days seen in delayed primary closure group and 19.4 days in primary closure group.

There was significant association between post-operative stay and type of closure P-value 0.002.

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