



ORIGINAL RESEARCH PAPER

General Surgery

COMPARITIVE STUDY OF ABSORBABLE WITH NON ABSORBABLE SUTURES IN CLOSURE OF LAPAROTOMY INCISIONS : A STUDY OF 100 CASES

KEY WORDS: Absorbable suture, non absorbable suture, wound dehiscence.

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ABSTRACT

Background: This study is conducted to compare the absorbable with non absorbable sutures in wound dehiscence after closure of Laparotomy incisions

Methods: This randomized control trial was conducted in the department of general surgery, Dr PDMMC Amravati, Maharashtra in 1 year duration from January 2018 to January 2019. Mean was calculated for numerical data like age and Body Mass Index categorical data like gender, Anemia etc effect modification or association of outcome variables with effect modifiers.

Results: In this study, a total number of 100 patients were included, divided into two equal groups, 50 in each i.e. group Prolene and group Vicryl. In our study, wound dehiscence occurred in 3 cases in whom Prolene was used whereas 10 cases had wound dehiscence with the use of Vicryl suture. Vicryl was followed by significantly higher incidence of wound dehiscence than closure by Prolene

Conclusions: Observation of our study concluded that non absorbable Prolene has better outcome and less wound dehiscence and other complication as compared to absorbable Vicryl suture.

INTRODUCTION:

Wound dehiscence in post operative period is and undesirable condition with high risk complications which may lead to morbidity and mortality (1). From a long time surgeons are in continuous struggle to overcome postoperative complications relevant to wound closure with different methods and suturing materials (2). Many studies have been conducted on closing abdominal fascia with different Sutures used, but no definite suggestions were made for better outcomes (3).

Many factors should be kept in mind while choosing suture, like knot tying, handling of suture, cost effectiveness, strengthening and susceptibility (4). Durability of tensile strength is also a factor and most important to be considered. Classification of available Sutures done on three categories; non Absorbable or permanent suture, slowly absorbable and third one is rapidly absorbable suture (5). Another criterion that surgeons mostly used to choose a suture is early and wound dehiscence. Prolene is a non absorbable clear blue colored suture made up of isotectic crystalline steroids Omer used for soft tissue closure or ligation. It seems to little less desirable for surgeons because of extra time on its removal and revisiting problems for patients (6). Vicryl suture is world's best known absorbable suture due to its better handling easy to tie and smooth glidance through fascia (7). Vicryl was supported by different trials and clinical studies but problem is still lying there that it does not support fascia more than 15 days which I'd required in some cases (8). Surgeons are still curious about suturing material which full fills all necessities of post operative period.

METHODOLOGY:

This randomized control trial was conducted in the department of general surgery, Dr PDMMC Amravati, Maharashtra in 1 year duration from January 2018 to January 2019. Consent was taken from patients after complete information and ensured about confidentiality.

Patients with abdominal hernia, less than 18 years age and history of previous laparotomy were excluded from the study. All patients were divided into two groups randomly (group P and group V). In group P fascia were closed with Prolene and

in group V fascia were closed with Vicryl. Clinical history was obtained for special risk factors of wound dehiscence like anemia, malnutrition, malignancy, diabetes and obesity. Investigations; complete blood count, urine examination, random blood sugar, renal parameters, Liver function tests, chest X ray ultrasound abdomen, CT scan, echocardiogram and serum electrolytes were done. Fascia was closed after surgery with same size suture (prolene 1.0 and vicryl 1.0) in both groups by using continuous suturing technique. Length of suture in both groups was constant 4:1 and preoperative and post operative management was same. Follow ups done for observation of infection at 3rd, 5th, 7th and 9th post operative days. Patients hospital stay, duration of surgery was noted on a pre design performa.

Mean was calculated for numerical data like age and Body Mass Index, and frequency percentages were calculated categorical data like gender, Anemia, smokers, Diabetes Mellitus Diagnosis, Intestinal perforation, intestinal obstruction, Hemoperitoneum, Blunt trauma abdomen, Mass abdomen, Gut gangrene, Obstructed umbilical hernia, Emergency cases, Elective cases, wound dehiscence.

RESULTS:

In this study, a total number of 100 patients were included, divided into two equal groups, 50 in each i.e. group Prolene and group Vicryl. The mean age and BMI of the patients of group Prolene was 50.4 years and 26.2 kg/m2 respectively while the mean age and BMI of the patients of group Vicryl was 53.8 years and 25.4 kg/m2 respectively. It was observed that, in our study, wound dehiscence occurred in 6% cases in whom Prolene was used whereas 20% cases had wound dehiscence with the use of Vicryl suture.

It was observed that there were 32 males and 18 females in group Prolene, 30 males and 20 females in group Vicryl. Anemia was noted as 8 cases and 5 cases in group Prolene and Vicryl respectively. There were 15 and 13 smokers in group Prolene and Vicryl respectively. Diabetes mellitus diagnosis noted as 16 and 13 cases in group Prolene and Vicryl respectively. Intestinal perforation noted as 24 cases and 21 in group Prolene and Vicryl respectively. Intestinal obstruction noted in 11 and 13 cases in group Prolene and Vicryl

respectively. Blunt trauma abdomen noted as 5 and 8 cases in group Prolene and Vicryl respectively. Mass abdomen noted as 8 and 6 cases in group Prolene and Vicryl respectively. Gut gangrene noted as 7 and 5 cases in group Prolene and Vicryl respectively. Elective noted as 16 and 13 cases in group Prolene and Vicryl respectively. Emergency observed as 34 and 37 in group Prolene and Vicryl respectively.

Table 1: Base line characteristics of Patients

Variables	Group P	Group V
Mean age	50.4 years	53.8 years
Sex	32M / 18F	30M / 20F
Anemia	8 cases	5 cases
BMI	26.2 kg/m ²	25.4 kg/m ²
Diabetes Mellitus	16 cases	13 cases
Smokers	15 cases	13 cases

Table 2: Distribution according to diagnosis

Diagnoses	Group P	Group V
Intestinal perforation	24	21
Intestinal obstruction	11	13
Blunt abdominal trauma	5	8
Mass in abdomen	8	6
Hydatid liver	2	2
Gut gangrene	7	5

Table 3: Distribution according to type of procedure

Type of procedure	Group P	Group V
Elective	16	13
Emergency	34	37

Table 4: Distribution according to Wound dehiscence

Wound dehiscence	Group P	Group V
Yes	3	10
No	47	40

DISCUSSION:

Midline laparotomy surgeries performed electively and their incision closure without any complication like wound dehiscence, post operative site infection and pain remains a challenge for surgeons worldwide after abdominal operations (9). Minimum complications possibly reduce the morbidity and mortality rate, for the achievement of this purpose and optimal suture material and suturing technique is under debate from last ten to twenty years and still unresolved. Ideal suture material is the most important thing to resolve this issue (10).

Pandey S et al (11) conducted a study on this topic and reported that there is a markable difference in two groups when evaluated for wound dehiscence. Prolene group has 8% wound dehiscence and Vicryl group has 17% wound dehiscence. This ratio is higher than surgeon's expectations, but it was concluded that Prolene is a better suture material for laparotomy incision closure as compared to Vicryl. These results are identical to our results, in our trial wound dehiscence in Prolene group was 6% and in Vicryl group it was 20%. Our study is also in accordance with studies conducted by Penninckx et al (12), and McGinn et al (13), reporting similar higher ratio of wound dehiscence in Vicryl group.

Chalya PL (14) reported in his study that to minimize the rate of complications like wound dehiscence, incisional hernia and wound pain continuous mass closure with vicryl seems to be the optimal method of fascial closure. These results are against our results and study is counter study for our report.

In our study we also observe association of wound dehiscence with other risk factors and found there was no association wound dehiscence with age, gender, anemia, BMI, intestinal perforation, intestinal obstruction, blunt trauma abdomen, mass abdomen, gut gangrene, elective and emergency surgery.

CONCLUSION

Observation of our study concluded that non absorbable Prolene has better outcome and less wound dehiscence and other complication as compared to absorbable Vicryl suture.

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