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ORIGINAL ARTICLE

The Comparison of Frequency of Surgical Site Infections in patients with Primary Closure Versus Delayed Primary Closure in Contaminated Abdominal surgeries

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ABSTRACT

Aim: To compare the frequency of surgical site infections in patients with primary closure versus delayed primary closure in contaminated abdominal surgeries.
Study duration: 7th August 2020 to 6th February 2021
Study design & setting: Randomized controlled trial in the Department of Surgery, Bahawal Victoria Hospital, Bahawalpur.
Methods: A sample size of eighty two patients presented with the complaint of contaminated abdomen surgical procedures of any gender between the age of 20-60 years have been The calculated sample size was eighty two i.e. forty one in each group with 5% level of significance, the surgical site infections in patients with major closure as 42.5% and with delayed closure as 17.5%. Sampling technique was Non-probability, consecutive sampling. All subjects presented with contaminated stomach surgical procedures as per operational definitions and age twenty to sixty years have been included in the study. The patients with malignant ascites was excluded from the study. Patients with records of penetrating/blunt stomach injuries, with persistent steroid use i.e. >1 month and patients with persistent renal failure
Results: The age of women mean in group A was 37.68±7.37 years and in group B was 36.44 ± 8.12 years. Majority of the subjects were forty eight (58.54%) have been between twenty to forty years of age. Out of eighty two patients, fifty seven (69.51%) have been men and 25 (30.49%). The surgical site contamination in group A (primary closure) as eleven (26.83%) and in Group B (delayed primary closure) as four (9.76%) respectively with p-value of 0.046.
Conclusion: Therefore it is concluded that frequency of surgical site infections is much less in patients with delayed major closure in contaminated abdomen surgeries as in compare to main closure.
Keywords: Surgical site infections, delayed primary closure, Prolene.

INTRIDUCTION

The most common complication encountered postoperatively is wound contamination despite the utilization of prophylactic antibiotics and following thorough surgical techniques[1]. The magnitude relation of surgical site contamination is bigger just in case of contaminated surgical procedures as in distinction to elective surgeries. Surgical site contamination and its connected issues like wound organic phenomenon, stitch sinuses, incisional hernias, hypertrophic scar aren't any longer entirely provider of soreness for the sufferers but in addition discouraging for the surgeons[2]. These problems extend the operative procedure still be affected person and extend the worth of treatment[3,4] a variety of risk factors are acknowledged to enlarge the threat for SSIs, that embody blubber, old age, DM, deficiency disease, extended surgical keep, contamination at infections site, amount of surgery, operation technique, presence of drains, inappropriate use of antimicrobial prevention, surgical temperature, and poor operative glycemic management[5]. Of the various danger parts influencing operative wound infections, the approach of pores associate degreed skin closure has been involved as necessary issue. Delayed main four closure (DPC, closure of wound margins when 3 days of surgery) and predominant closure and several instances used strategies[6,7]. Delayed major closure is main cause for widespread infections[8].

Singh PK et al has shown the surgical site infection in 42% population. patients with primary closure and seventeen.5% patients with delayed closure[8]. Bibi A et al has shown no important distinction between surgical website infection in primary closure cluster versus delayed closure cluster (9.7% vs 10% respectively)[9].

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Bibi A et al has proven no major difference between surgical site contamination in primary closure side versus delayed closure Group A and B (9.7% vs 10% respectively)[9]. In 2002, the Centers for Medicare offerings collaborated with the Centers for Disease Control and Prevention to enforce the nationwide Surgical Infection Prevention project. The main purpose was to enhance prophylaxis practices that are regarded to decrease SSIs. The Surgical Infection Prevention risk has been changed by way of the Surgical Care Improvement prevention (SCIP) [10], which comprises antimicrobial treatment morbidity and mortality[11]. Therefore the purpose f this study was to compare the frequency of surgical site infections in patients with primary closure versus delayed primary closure in contaminated abdominal surgeries. . So my study is useful addition in local literature which help the clinicians to take some practical recommendations in our routine practice regarding control of surgical site infections and encourage the clinicians for using the better closure technique among the primary and delayed closure in order to reduce morbidity of these particular patients.

METHODOLOGY

After IRB permission, this randomized managed trial find out about performed in the Department of Surgery, Bahawal Victoria Hospital, Bahawalpur. Duration of the study was from 7th August 2020 to 6th February 2021. The calculated sample size was eighty two i.e. forty one in each group with 5% level of significance, the surgical site infections in patients with major closure as 42.5% and with delayed closure as 17.5%. Sampling technique was Non-probability, consecutive sampling. All subjects presented with contaminated stomach surgical procedures as per operational definitions and age 20-60 years of both gender have been included in the study. The exclusion criteria were patients with malignant ascites. Patients with records of penetrating/blunt stomach injuries, with persistent steroid use i.e. & gt;1 month and patients with

persistent renal failure (assessed on record s and clinical document i.e. s/creatinine &t;1.5mg/dl). Patients with persistent liver diseases (assessed on records and laboratory profile i.e. s/bilirubin >2 mg/dl) have been excluded from the study.

Total eighty two patients contaminated abdomen surgical procedures of any gender between the age of 20-60 years have been included. Patients with records of penetrating/blunt abdomen injuries, CRF and CLD have been excluded from the study.

First of all blood group wound was once washed with regular saline and closure was once completed with prolene one and pores and skin closed with silk 2/0 vertical pad sutures in essential closure (PC). Where as in B wound closed with prolene one and pores and skin and 2 hypodermic tissue left open with saline-soaked gauze dressings for delayed most vital closure (DPC) on the third operative day. Patients had been accompanied normally for 7 days post-operatively for presence or absence of surgical situate infections.

RESULTS

Age range was from 20 to 60 years with mean age of 36.89 ± 7.65 years. The mean of female in group A was 37.68 ± 7.37 years and in group B mean age was 36.44±8.12 years. Majority of the patients was (58.54%) had been between 20 to forty years of age as shown in Table VI. Out of eighty two patients, fifty seven (69.51%) have been men and 25(30.49%) had been female and with male to Female ratio was of 2.3:1 (Table VII). Mean time period of surgical procedure was 22.52 ± 7.55 minutes (Table VIII). Mean BMI was 28.88 ± 3.19 kg/m2 (Table IX). Distribution of patients in accordance to duration of diabetes mellitus is shown in Table X ; XI respectively Stratification of surgical site contamination with appreciate to age and gender in each group is shown in Table XIII; XIV respectively. Stratification of surgical site contamination with recognize to period of surgical operation and BMI is shown in Table XV; XVI respectively. Stratification of surgical site contamination with recognize to region of living area and diabetes mellitus is shown in Table XVII to XVIII respectively.

Table-I: Age distribution

Age (years)	Group A	Group B	Total
20-40	23(56/10%)	25(60.98%)	48(58.54%)
41-60	18(43.90%)	16(30.02%)	34(41.46%)
Mean±SD	37.68±7.37	36.44±8.12	36.89±7.65

Table-II: Gender distribution for both groups (n=60).

Gender	Group A	Group B	Total
Male	28(68.29%)	29(70.73%)	57(69.51%)
Female	13(31.71%)	12(29.27%)	25(30.49%)

Table-III: Distribution of patients according to duration of Surgery (n=82)

Duration of surgery	Group A (n=41)		Group B (n=41)		Total (n=82)	
	Frequency	%age	Frequency	%age	Frequency	%age
≤25minutes	27	65.85	27	65.85	54	65.85
>25minutes	14	34.15	14	34.15	28	34.15
Mean±SD	23.02±6.77		22.20±8.24		22.52±7.55	

Table IV: Comparison of surgical site infection between both Groups(n=82).

Surgical site infection	Group A	Group B
Yes	11(26/83%)	4(9.76%)
No	30(73/17%)	37(90.24%)

P value is 0.046 which is statistically significant.

Table V: Stratification of surgical site infection with respect to age groups.

Age (years)	Group A (n=41)		Group B (n=41)		P-value
	Yes	No	Yes	No	
20-40	07	16	03	22	0.116
41-60	04	14	01	15	0.189

Table VI: Stratification of Surgical site infection with respect to gender.

Gender	Group A (n=41)		Group B (n=41)		P-value
	Yes	No	Yes	No	
Male	06	22	04	25	0.449
Female	05	08	00	12	0.016

Table VII: Stratification of Surgical site infection with respect to duration of surgery.

Duration of surgery	Group A (n=41)		Group B (n=41)		p-value
	Yes	No	Yes	No	
≤25minutes	06	21	02	25	0.125
>25minutes	05	09	02	12	0.190

Table VIII: Stratification of Surgical site infection with respect to BMI.

BMI(kg/m^2)	Group A (n=41)		Group B (n=41)		p-value
	Yes	No	Yes	No	
≤30	05	15	01	22	0.051
>30	06	15	03	15	0.379

Table I X : Stratification of Surgical site infection with respect to place of living.

Place of living	Group A(n=41)		Group B (n=41)		P-value
	Yes	No	Yes	No	
Rural	09	17	04	26	0.060
Urban	02	13	00	11	0.207

Table X: Stratification of Surgical site infection with respect to DM.

DM	Group A (n=41)		Group B(n=41)		P-value
	Yes	No	Yes	No	
Yes	04	16	04	14	0.867
No	07	14	00	23	0.003

DISCUSSION

Patients with abdominal wounds following perforation of organ have high incidence of wound contamination in post operative period than clean wounds[10]. A surgical site contamination (SSI) is viewed in concerning V-day of all clinic infections and takes place in 10%-30% of all sufferers having epithelial duct surgery[11.12].

Operative wound infections have huge impact on the sequelae of wound infections (wound organic phenomenon and succeeding incisional hernias) will outcome in right smart semipermanent issues. Of the various risk factors fundamentals influencing operative wound infections, the technique of pores and skin closure has been involved necessary issue. The foremost fulfilling technique of wound closure that consequences in lesser possibilities of contamination stays arguable. Delayed essential closure (DPC) and vital closure (PC) square measure oft used techniques of pores and skin closure once abdominal surgery.

Studies counseled that delayed major closure need to be utilized for abdomen incisions visible that it appreciably lowers the speed of SSI as satisfactorily as fascial organic phenomenon and reduces the recovery time and hospitalization stay time[13].

In my study, surgical site infectivity in A (primary closure) was determined in eleven (26.83%) and in team B (delayed primary closure) wont to be showing in 4(9.76%) severally with p-value of 0.046. Singh PK et al has established the surgical site contamination in 42%. and DPC sufferers with major closure and 17%. Bibi A et al has established no right smart distinction between surgical site contamination in most vital closure cluster versus delayed closure cluster (9.7% vs 10.0% respectively)[9].

At Islamia Trust Hospital Chiniot, eighty one sufferers are operated having localized or generalized anesthesia and subjects with essential closure had wound infectivity and exclusively in 38% patients with delayed leading closure requiring secondary closure. In the other close establish concerning Shabbir et al[15] sixty patients underwent through vertical belly incision. Skin wound of the primary thirty patients (DPC) had been left open and closed on fourth day while that of consequent thirty patients (PC) closed primarily. Out of sixty patients 10 subjects developed major wound infection (16.66%). Four belonged to DPC group (13.33%) and 6 belonged to other group (20 %); p< 0.005. Ashraf and et al sixteen sixty six patients (33 in closure and thirty three in DPC groups), the method of surgery for perforated appendix and small intestine or ileac perforation had been enclosed respectively; p= zero.02. However, a study allotted on cutting out wounds confirmed no gain to DPC in phrases of reduced wound contamination compared with closure[17].

A randomised management study establish concerning performed in Asian country eighteen involving seventy seven sufferers (DPC=37, closure=40) sufferers with severe infection belly incisions. The predominant result wont to be the incidence of operative SSI within the complete series, SSI developed incision closure in twenty third of the patients. Infections are drastically additional frequent within the group A (42.5% for closure vs. 2.7% for DPC; p = 0.00).

The suggestion of entire incision recovery (CIH) time and size of hospital keep are longer in primary closure (18.52 days) than DPC (13.86 days). Tsang and et al19 studied sixty 3 paediatric population with unhealthy or perforated rubor and set no distinction within the healing of wound contamination between the two groups. Pettigrew and et al[21] randomized management trial enclosed 100 patients each with unhealthy or perforated infection to Delayed main closure cluster versus Primary closure cluster. These authors used topical antibiotics to heal out the injuries.[22]Chiang RA study illustrated that almost all vital closure had a bigger incidence of wound contamination as in distinction to delayed primary closure in perforated cutting out wounds (38.9% vs. 2.9%).[23] Ferdinand Julius Cohn SM study stated that unfold of infection in major closure (48% vs. 12%) all infected wounds while (50% vs. 0%) in perforated cutting out wounds[24].

CONCLUSION

Therefore it was concluded that frequency of surgical site infections is much less in patients with delayed primary closure in infected abdominal surgical procedures as in contrast to predominant closure. So, we concluded that delayed primary closure must be not practice in infective abdominal surgical procedures for stopping of surgical site infections.

Conflict of interest: Nil

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