Original Article

Wound Complications: Subcuticular Suture versus Skin Staples for Skin Closure after Caesarean Section

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ABSTRACT

Objective: To compare the frequency of wound infection with subcuticular suture versus skin staples for skin closure after caesarean section.

Study Design: Randomized controlled trial study.

Place and Duration of Study: This study was conducted at the Department of Obstetrics and Gynaecology, Jinnah Hospital, Lahore from January 2014 to July 2014.

Materials and Methods: A total of 500 cases (250 cases in each group). Patients were randomly divided in two equal groups. Patients in Group A were stitched by subcuticular suture maternal while patients in group B were stitched with metal staples.

Results: In group A, mean gestational age was 38.60±1.23 weeks and in group B, 38.71±1.33 weeks. Regarding parity, 120 patients (48.0%) from group A and 127 patients (50.8%) from group B were having parity 0-2. In group A, 130 patients (52.0%) and in group B, 123 patients (49.2%) were para 3-5. Wound infection was observed in 18 patients (7.2%) and 36 patients (14.4%) in groups A and B, respectively. There was a statistically significant difference between two groups (p=0.009).

Conclusion: A significantly less wound infection with subcuticular suture when the cesarean delivery skin incision was closed with suture rather than with staples.

Key Word: Caesarean section, Subcuticular suture, Skin staples for skin closure

Citation of article: Zafar S. Wound Complications: Subcuticular Suture versus Skin Staples for Skin Closure after Caesarean Section. Med Forum 2020;31(7):88-91

INTRODUCTION

Caesarean section is one of the most common obstetric procedures, and on an average, 20-25% of pregnancies are delivered by CS. However; the rising incidence of CS has also led to an increase in complications, which are now reported to occur in 2.5-16% of cases.[1] Most of the major steps during cesarean section have been evaluated and evidence-based recommendations made to enhance best practice.[2] With regards to skin closure, skin can be reaproximated by a subcuticular suture immediately below the skin or by staples.

Skin wounds are the only step of CS in which patients are able to see and evaluate. It can be distressing for patients if they can see that their CS wound has not healed appropriately and this can impact upon their quality of life.[3]

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Received: January, 2020
Accepted: May, 2020
Printed: July, 2020

Ominously, the precise technique used for wound closure following CS is the only step in this common operation that is not supported by conclusive evidence. Consequently, there is significant debate as to which technique and material should be used for CS skin closure.[4]

There are many different techniques used to close skin wounds, including subcuticular stitches with absorbable or non-absorbable sutures, interrupted stitches, staples and skin adhesives.[5] Staples and subcuticular stitches are the most popular techniques. The most commonly used sutures are synthetic polyfilament sutures made from polyglycolic acid (Dexon) or polyglactin (Vicryl). Surgeons generally select the closure method and material according to personal preference. Existing studies on the rate of complications, the degree of patient satisfaction and the cost-effectiveness of CS have not yet identified the best evidence-based recommendation for wound closure technique and material; furthermore, existing data are contradictory.[4]

Some studies report increased rates of postoperative pain with sutures, while others describe increased rates of postoperative pain with staples.[6,7] Other papers show no difference in cosmetic outcome and patient satisfaction when comparing between staples and sutures,[8] although some have shown improved cosmetic outcomes with sutures.[9] Worryingly, wound separation data are also contradictory. Staples have been associated with a shorter procedural time than

subcuticular sutures, but with a higher incidence of wound separation.[10] The present study was conducted aimed to compare the frequency of wound infection with subcuticular suture versus skin staples for skin closure after caesarean section.

MATERIALS AND METHODS

This randomized controlled trial was conducted at Department of Obstetrics and Gynaecology, Jinnah Hospital, Lahore from 10th January 2014 to 9th July 2014 and comprised 500 cases. They were divided in two equal groups; each group comprised 250. Patients in Group A were stitched by subcuticular suture maternal while patients in group B were stitched with metal staples. All the females of age 18-40 years at term (gestational age >36 weeks on USG) and parity < 6 were included. Maternal obesity BMI >35 and high risk females, pre-eclamptic, eclamptic women and women with gestational diabetes were excluded from this study. Demographic information (name, age, gestational age, parity and contact) of the patients were obtained. All surgeries were done by a single surgical team. Patients were remained in ward for 3 days and discharged after complete wound examination. Patients were asked to come after 10 days of caesarean section or report earlier if they develop two or more of these symptoms i.e. redness, fever (>100°C), pus and serous discharge in wound. Patients who developed wound infection were managed as existing unit guidelines. The data was analyzed by using SPSS version 20. Chi square test was applied to compare frequency of wound infection both groups. P value <0.05 was considered as significant.

RESULTS

One hundred seventy three (69.2%) patients in group A and 179 (75.6%) patients in group B were between 20-30 years old and 77 (30.8%) patients in group A and 71 (24.4%) patients in group B were between 31-40 years of age. Mean age was 28.22±4.91 and 28.01±4.72 in group A and B, respectively (Table 1). In group A, mean gestational age was 38.60±1.23 weeks and in group B, 38.71±1.33 weeks (Table-2).

Regarding parity, 120 patients (48.0%) from group A and 127 patients (50.8%) from group B were having parity 0-2. In group A 130 patients (52.0%) and in group B, 123 patients (49.2%) were para 3-5 (Table-3). Wound infection was observed in 18 patients (7.2%) and 36 patients (14.4%) in groups A and B respectively. There was a statistically significant difference between two groups (p=0.009) (Table-4).

Table No.1: Distribution of cases by age

Age (Year)	Group A		Group B	
	No.	%	No.	%
20-30	173	69.2	179	75.6
31-40	77	30.8	71	24.4
Mean±SD	28.22±4.91		28.01±4.72	

Table No.2: Distribution of cases by gestational age

Gestational age (week)	Group A		Group B	
	No.	%	No.	%
37-38	138	55.2	132	52.8
39-41	112	44.8	118	47.2
Mean±SD	38.60±1.23		38.71±1.33	

Table No.3: Distribution of cases by parity

Parity	Group A		Group B	
	No.	%	No.	%
Para 0-2	120	48.0	127	50.8
Para 3-5	130	52.0	123	49.2

Table No.4: Comparison of wound infection

Wound infection	Group A		Group B	
	No.	%	No.	%
Yes	18	07.2	36	14.4
No	232	98.8	214	85.6

Chi Square = 6.73
P value = 0.009

DISCUSSION

Cesarean section is one of the most performing surgical procedures in all over the world with high rate of complications such as wound infection, cosmetic complications, post-operative pain, fever etc.[11] Many of surgical techniques have been applied to reduce the complications rate especially wound infection, because it may lead to severe morbidity after surgical intervention.[12,13] The present study was conducted aimed to compare the prevalence of wound infection with subcuticular suture versus staples for skin closure after cesarean section. In this regard 500 women were analyzed and divided equally in to two groups. Majority of women in both groups A and B were ages between 20 to 30 years 69.2% and 75.6%, Mean age was 28.22±4.91 and 28.01±4.72 and mean gestational age was 38.60±1.23 weeks and 38.71±1.33 weeks. No significant difference was observed regarding age and gestational age between both groups. These results showed similarity to many of other studies in which majority 70% to 80% of women had ages 20 to 30 years and average gestational age was 37.5 weeks.[14-16]

In presents study wound infection was observed in 18 patients (7.2%) and 36 patients (14.4%) in groups A and B respectively. There was a statistically significant difference between two groups (p=0.009). A study conducted by Hasdemir et al[17] reported no significant difference in term of wound complication was observed between absorbable and nonabsorbable suture techniques with p-value >0.05. However, a study conducted by Nayak et al[18] regarding comparison of subcuticular suture versus staples in term of wound complications after cesarean sections and they demonstrated that staples skin closure technique had significantly higher incidence of wound complications

30% as compared to 8% in subcuticular suture with p-value 0.0001.

Al-kadri et al[19] reported that patients in the subcuticular group (G2) had a risk of developing overall wound complications that was double that for the group of patients treated by staples (OR = 2.41; 95% CI: 1.17-4.98; p = 0.02). Zaki et al[20] reported no significant difference between both techniques regarding frequency of wound complications, composite wound complication frequency was 19.3% in the staples group and 17.6% in the subcuticular suture group (P = .74) with an overall wound complication incidence of 18.5% in the entire study cohort.

Some other previous studies showed similarity to our study findings regarding wound complications in which sutures demonstrated a better technique with lower rate of wound complications as compared to staples for skink closure after cesarean sections.[21,22]

CONCLUSION

We concluded a significantly less wound infection with subcuticular suture when the cesarean delivery skin incision was closed with suture rather than with staples.

Author's Contribution:

Concept & Design of Study:	Sabahat Zafar
Drafting:	Sabahat Zafar
Data Analysis:	Sabahat Zafar
Revisiting Critically:	Sabahat Zafar
Final Approval of version:	Sabahat Zafar

Conflict of Interest: The study has no conflict of interest to declare by any author.

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