ORIGINAL ARTICLE

Compare the Wound Infection Rate between Skin Staples and Sutures for Skin Closure after C-Section

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ABSTRACT

Aim: To compare the wound infection rate between skin staples and sutures for skin closure after C-section.
Study Design: Randomized Control trial
Place & duration of study: Department of Obstetrics & Gynaecology, M. Islam Medical College Gujranwala from 1st January 2018 to 31st December 2019.
Methodology: Four hundred patients were enrolled and detailed demographics were recorded.The patients were 20 to 45 years of age**.**They were equally divided into two groups; Group I received skin staples while group II received sutures. After caesarean section, wound infection was recorded on 5th post-operative day.
Results: Mean age of the enrolled patients in group I was 28.95±6.76 years with mean BMI 23.75±3.84 kg/m^2 and mean age in group II was 28.88±6.87 years with mean BMI 23.65±4.12kg/m^2.Gestational age was found between both groups 40.14±0.22 and 40.21±0.13. Ingroup I, 37(18.5%) females underwent for elective C-section and 163(81.5%) patients were in emergency C-section. While in group II, 41(20.5%) patients underwent elective C-section and the rest were 159(79.5%) underwent emergency. 30(15%) cases showed wound infection in group I while in group II frequency of wound infection was 14(7%).
Conclusion: Frequency of wound infection in staples groups was greater than that of sutures for skin closure after C-section.
Keywords: Wound infection, Sutures, Skin staples, Skin closure, Complication, C-section

INTRODUCTION

The most frequent surgery performed worldwide is the Cesarean section. As such, the incidence of this procedure, as well as the number of patients with subsequent caesarean sections, is increasing. Wound morbidity is an expensive complication, including infection, separation, and fluid collection, and poses a significant burden on the patient, affecting upto 16% of high-risk patients undergoing caesarean section.[1]It is therefore important to determine the most efficient and safest closure method for reducing patient morbidity. Significant morbidity and mortality are associated with wound infections. Over half of these SSIs are estimated to be preventable.[2]

There exists in the literature a longstanding debate regarding the superiority of primary suture versus staple closure in terms of wound morbidity, closure time and aesthetics. In a variety of surgical settings and in patients with a wide array of medical comorbidities, convincing arguments can be made for the use of both closure types. However a third option, which may combine the benefits of both the suture and the staples, is currently available in the form of an absorbable subcuticular staple closure. Tully et al showed that 73.9% of obstetricians preferred to use prolene (41.1%), vicryl (17.5%) followed by dexon (13.5%) and staples (10.4%) to close skin with subcuticular sutures[3].

Although there are conflicting results, it was reported that closure with subcuticular suture materials was more advantageous in terms of wound healing, improved cosmetic results, and higher rates of patient satisfaction[4,5]. Other studies have shown that staple skin in the emergency caesarean section is associated with increased hospital stays and rates of infection. There was no distinction between wound pain or complications[6].The aim of my study was to compare skin staples and sutures in skin closure in clean elective surgeries in terms of wound infection and skin closure time.

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MATERIAL AND METHODS

This randomized control trial study was conducted at Department of Obstetrics & Gynaecology, M. Islam Medical College Gujranwala from 1st January 2018 to 31st December 2019. A total of 400 patients with age ranges between 20-45 years undergoing caesarean section were enrolled. Patients detailed demographics age, body mass index, sex were recorded after taking written consent and the patients with previous history of co-morbid or any other previous wound infection and those with no consent were excluded.Patients were equally divided into two groups I and II. Each group comprised of 200 cases. Gestational age was greater than 35 weeks. All the patients were undergone for caesarean section. In group I skin staples were used but in group II sutures. After caesarean section wound infection were observed on 5th post-operative day. Complete data was analyzed by SPSS 24.

RESULTS

Mean age of the enrolled patients in group I was 28.95±6.76 years and in group II was 28.88±6.87 years with recorded mean BMI of both groups23.75±3.84kg/m^2 and 23.65±4.12kg/m^2. Gestational age was same between the groups 40.14±0.22 and 40.21±0.13 weeks. In group I, 37(18.5%) females undergone for elective C-section and 163(81.5%) patients were in emergency C-section. While in group II, 41(20.5%) patients underwent elective C-section and the rest were 159(79.5%) underwent emergency section (Table 1)

Wound infection was observed on 5th post-operative day after caesarean section. In group I (skin staples) 30(15%) cases showed wound infection and 170(85%) were not showed any infection. On the other end in group II 14(7%) patients showed wound infection while rest of 186(93%) were not any frequency of wound infection (Table 2)

Table 1: Details demographics of patients between the groups

Variables	Group I	Group II
Age (Years)	28.95±6.76	28.88±6.87
Body mass index (kg/m^2)	23.75±3.84	23.65±4.12
Gestational age(weeks)	40.14±0.22	40.21±0.13
Type of C-section		
Elective C-section	37 (18.5%)	41 (20.5%)
Emergency C-section	163 (81.5%)	159 (79.5%)

Table 2: Frequency of wound infection between both groups

Wound infection(on 5th day)	Skin staples	Sutures	Total
Yes	30(15%)	14(7%)	44(11%)
No	170(85%)	186(93%)	356(89%)

DISCUSSION

This present study was conducted to compare the wound infection rate between skin staples and sutures for skin closure after C-section. All the surgeries comprised of many risk factors and complications[7]. Wound infections during caesarean section are due to bacterial infections. In our study sutures 7% showed less wound infection as compared to skin staples and these results showed resemblance to the many previous studies[8,9,10].

In other studies conducted by Tseng et al[11] presented that skin staples were more complicated than that of sutures in skin closure after caesarean section. This technique was being used in previously orthopedic surgeries for rapid healing. In the present study, the wound infection is 11%, as compared to the Sajidet al[12] in which they presented wound infection lower in sutures as compared to skin staples.The current study enrolled cases were aged between 20-45 years of age and gestational age was same in both groups and compared to our study Basit et al in 2018 presented that the skin staples cause less wound infection than sutures in clean elective surgeries[13].

Other studies conducted by Smith et al in 2010 presented that the skin staples were resulted for higher wound infection in orthopedic surgeries[14].In his surgery similar results also obtained by Syed et al in 2010[15]. According to our above results of lower wound infection in sutures also showed resemblance to their studies of Tan et al in 2018 presented absorbable versus nonabsorbable sutures for subcuticular skin closure of a transverse suprapubic incision[16].

A study conducted by Chunder et al also presented suture materials for closure of skin after caesarean section[17]. In this study Mean age of the enrolled patients in group I was 28.95±6.76 years with mean BMI 23.75±3.84 kg/m2 and mean age in group II was 28.88±6.87 years with mean BMI 23.65±4.12 kg/m2. Patients those ages were greater than 28 years were mostly infected by wounds infection. Skin staples in this study showed higher number of wound infections on the 5th post-operative day after caesarean section.

CONCLUSION

Frequency of wound infection in skin staples was higherfor skin closure after C-section but in sutures it showed slightly minimum number of wound infection.

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