

Original Research Article

Comparison between Interrupted Vertical Mattress Suture versus Subcuticular Suture for Skin Closure in Caesarean Section at SMIMS

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ABSTRACT

Background: Few clinical trials have studied the functional and cosmetic outcomes of different closure techniques of surgical incisions. Skin wound and incision closure methods will influence the healing process and cosmetic outcome. The present study aims at comparing two different suture techniques of skin closure.

Objective: of the present study was to compare 2 commonly used methods of skin closure-subcuticular and mattress sutures.

Methodology: This was a hospital based study. Sample Size is calculated by $\{Z(\alpha)\}^2 PQ/d^2 \cdot 100$ pregnant patients undergoing elective LSCS at term were chosen for the study. Sampling Technique - Systematic sampling. Data was entered in Microsoft excel 2013. Data was analysed by SPSS trail version 20. Statistical test used descriptive statistics, correlation & Chi Square test. Institutional ethical committee clearance obtained.

Results: Majority of the patients (95%) belonged to the age group of 19-30 years. 42 % of the patients in our study were primigravida, 46% had undergone a previous LSCS and 12% had previous vaginal delivery. Among the 50 patients with mattress sutures, 36% were Primigravidae, 50% had undergone a previous LSCS and 14% had previous vaginal delivery. Among the 50 patients who had subcuticular sutures, 48% were primigravidae, 42% had undergone a previous LSCS and 10% had a previous vaginal delivery. Among the 100 patients in our study, 13% had wound inflammation, out of which 76% (10/13) were patients with mattress sutures and 34% (3/13) had subcuticular sutures. 5% of our patients had serous discharge of which 40% (2/5) had mattress sutures and 60% (3/5) had subcuticular sutures. Purulent discharge was noticed in 6% patients of which 83% (5/6) belonged to the mattress group and 17% (1/6) belonged to the subcuticular group. Wound dehiscence occurred in a single case with mattress sutures. Stitch granuloma occurred in a single case which belonged to the subcuticular group.

There were 72% patients without any surgical wound related complications of which 43 % (32/74) were from the mattress group and 57% (42/74) were from the subcuticular group.

Conclusions: Subcuticular suture is technically difficult when compared to mattress sutures but it yields a cosmetically better scar.

Keywords: Subcuticular suture, mattress sutures, scar, surgical incisions.

INTRODUCTION

Repair technique may play a significant role in keloid formation and

development of hypertrophic scar and hyperpigmentation at the repaired site. The depth and extension of the wound as well as

infection and local irritation could affect the scar and scab formation. [1] Suture type and technique are significant factors that may affect wound closure outcomes. [2] The technique of closure should be quick, easy, cost effective and simple, while maximizing wound cosmesis and patient satisfaction. The ultimate goal of any skin closure technique is skin approximation and adequate healing with minimum wound complications like pain, infection, scarring, keloid formation. [3] Most Caesarean sections are now performed using a transverse suprapubic (Pfannenstiel) incision. The transverse incision is generally believed to have superior strength and healing outcomes and may be less prone to infection than vertical midline incisions. However existing skin closure studies have been limited by study design and small numbers. The present study aims to compare two commonly used methods of skin closure i.e. mattress and subcuticular sutures to decide which among them is superior with regards to wound healing and cosmesis.

The main reason for using vertical mattress sutures is to produce greater wound eversion. It also closes dead space and provides increased strength across the wound by incorporating a large amount of tissue within the passage of suture loops. Disadvantages include difficulty in approximating wound edges and prominent suture marks if the sutures are not removed sooner. Necrosis of skin beneath the externalized loops of the vertical mattress sutures has been noted when the knot is tied too tightly. In addition, the natural process of wound inflammation and scar retraction will pull loops of suture that lie on the skin surface downward. This pull results in small skin scars that have been given a variety of names, including cross-hatching, railroad marks or Frankenstein marks. It is a somewhat time consuming technique. [4,5]

Subcuticular technique is an elegant but difficult technique which was first described by Halstead. This technique is valuable when sutures should be in place for

about a week but suture marks are to be avoided. [4] Advantages of Subcuticular sutures in young patients is that in them the skin is comparatively soft and supple so there is good healing tendency and also this technique helps in good cosmetic appearance. Patient compliance too is better with Subcuticular sutures. [6]

Aim & Objective: To compare two commonly used methods of skin closure – subcuticular and mattress sutures.

MATERIALS AND METHODS

The present study was carried out in the Department of Obstetrics and Gynaecology, Sree Mookambika Institute of Medical Sciences from June 2015 to December 2015 after getting approval from the Scientific and Ethical Review Committee of Medical College. It is an observational study comprising of 100 patients.

Sample Size is calculated by $\{Z(\alpha)\}^{2PQ}/d^2$.

Sampling Technique: Systematic sampling.

In all cases, after taking informed and written consent, a detailed history, physical examination and investigations were done as per proforma.

Inclusion Criteria:

a. Pregnant women at term undergoing Caesarean section

Exclusion Criteria:

- History of systemic diseases such as diabetes, rheumatologic disorders and other skin diseases
 - History of long term steroid intake
 - History of allergy to suture materials
 - Past history of surgical wound infection.
- The 100 patients in our study were divided into 2 groups as follows.

Group A: 50 patients having skin closure with subcuticular suture.

Group B: 50 patients having skin closure with vertical interrupted mattress sutures.

Case records of enrolled patients were recorded in the proforma.

Technique of Skin Closure:

Group A (Subcuticular): Skin was approximated with subcuticular sutures using absorbable Polyglactin 2-0 on cutting needle and tie-over dressing was applied

Group B (Vertical Mattress): Skin was approximated with vertical mattress sutures using non-absorbable Polyamide 2-0 at a distance of 1 cm from each other and sterile dressing was applied.

Postoperative follow up of the patients was done on the 3rd day, 7th day and 30th day in relation to local infection, healing and cosmesis.

- Data was entered in Microsoft excel 2013
- Data was analysed by SPSS trail version 20
- Statistical test used is descriptive statistics.

- Institutional ethical committee clearance obtained.

RESULTS

Table 1: Age distribution

Age Group	Percentage
19-30 years	95
>30 years	5

Majority of the patients (95%) belonged to the age group of 19-30 years.

Table 2: Number of pregnancies

No. Of Pregnancy	Percentage
Primigravida	42
Previous LSCS	46
Previous Vaginal Delivery	12

42 % of the patients in our study were primigravida, 46% had undergone a previous LSCS and 12% had previous vaginal delivery.

Table 3: Mattress & Subcuticular Suture

No. Of Pregnancy	No. Of Mattress	Percentage Of Mattress	No. Of Subcuticular	Percentage Of Subcuticular
Primigravida	18	36	24	48
Previous LSCS	25	50	21	42
Previous NVD	7	14	5	10

Among the 50 patients with mattress sutures, 36% were primigravidae, 50% had undergone a previous LSCS and 14% had previous vaginal delivery. Among the 50 patients who had subcuticular sutures, 48% were primigravidae, 42% had undergone a previous LSCS and 10% had a previous vaginal delivery.

Table 4: Wound

Wound	Mattress	Subcuticular	Total Percentage
Inflammation	10	3	13
Serous discharge	2	3	5
Purulent discharge	5	1	6
Scar dehiscence	1	1	1
Stitch granuloma	0	1	1
No complications	32	42	74

Table 5: Grading of Scar

Grading Of Scar	Mattress	Subcuticular	Total Percentage
Fair	18	10	28
Good	28	24	52
Excellent	04	16	20

Fair- Linear scar with railroading, **Good-** Linear scar with scar marks other than railroading, **Excellent-** Linear scar only

Among the 100 patients in our study, 13% had wound inflammation, out of which 76% (10/13) were patients with mattress sutures and 34% (3/13) had subcuticular

sutures. 5% of our patients had serous discharge of which 40% (2/5) had mattress sutures and 60% (3/5) had subcuticular sutures. Purulent discharge was noticed in 6% patients of which 83% (5/6) belonged to the mattress group and 17% (1/6) belonged to the subcuticular group.

Wound dehiscence occurred in a single case with mattress sutures. Stitch granuloma occurred in a single case which belonged to the subcuticular group.

There were 72% patients without any surgical wound related complications of which 43 % (32/74) were from the mattress group and 57% (42/74) were from the subcuticular group.

DISCUSSION

Subcuticular sutures are associated with a low rate of inflammation and wound infection. It also gives a cosmetically better scar. On the other hand, vertical mattress sutures are associated with a high rate of surgical wound complications like inflammation, infection, wound dehiscence etc. The cosmetic appearance too is not as

good as the scar obtained after subcuticular sutures. Rail roading is seen with vertical mattress sutures. [6]

CONCLUSION

Subcuticular suture is technically difficult when compared to mattress sutures but it yields a cosmetically better scar.

Limitations: This is hospital based study. So we can not apply results to general population. As each unit in the study have not get equal chance of selection to be include in this study.

Institutional Ethical Clearance: Taken.

Source of funding: Self

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