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CLOSURE OF PFANNENSTEIL INCISION IN CAESAREAN SECTION: COMPARISON OF WOUND OUTCOMES WITH INTERRUPTED MATTRESS VS. SUBCUTICULAR SUTURE

Gynecology

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ABSTRACT

Introduction: A large number of women undergo caesarean section throughout the world. These women translate into a substantial portion of population and hence there is a load on the financial resources of healthcare system. Use of appropriate techniques to approximate the wound after caesarean section would not only avoid financial load but also help in early recovery of the patient.

Aim: The aim of this study was to compare wound outcomes in pfannensteil incision in interrupted mattress sutures and subcuticular sutures with absorbable material in a prospective study of caesarean deliveries.

Methods: It was studied in 100 women who had caesarean sections with pfannensteil incision prospectively for wound outcomes in terms of wound complications (hematoma formation, infection, non-union, dehiscence and need for resuturing), pain and cosmetic appearance in two groups, one with absorbable subcuticular suture and another with interrupted mattress suture.

Results: Women who had subcuticular stiches had less postoperative pain, better wound outcomes, faster recovery, early discharge from hospital and cosmetically superior scars as compared with interrupted mattress sutures.

Conclusions: While search for the latest method and material for skin closure will continue, the subcuticular stitches with absorbable material has lesser wound complications with cosmetically better scar.

KEYWORDS

Pfannensteil incision, interrupted mattress sutures, subcuticular suture.

Introduction:

Cesarean section is by far the commonest surgery performed worldwide. It is usually performed by pfannensteil incision nowadays. [1] Pfannensteil incision allows adequate exposure of pelvic viscera and leaves a cosmetically acceptable scar. Skin incisions needs closure to restore function, reduce pain and bleeding. Various techniques and materials have been tried for skin closure for surgeries. Each method has its own advantages and disadvantages.

The goals of wound closure include obliteration of dead space, even distribution of tension along deep suture lines, and maintainance of tensile strength across wound. [2]

Many techniques and suture materials have been tried to achieve closure and restore the structural and functional anatomy of skin. Suture materials that have been tried are natural and synthetic materials, which are absorbable and non-absorbable.[3] Various methods used to close such wounds are interrupted mattress sutures, staples,adhesive tapes and subcuticular stitches with absorbable and non-absorbable materials.[4]

Materials and techniques used for skin closure influences the quality of wound outcome, in terms of postoperative pain, induration, infection, healing, cosmetic appearance and wound acceptance by patient.[5]

Best ways to close skin incisions for optimal results are still under experimentation.[2,6] There is need to identify the right method and suture material to provide the best wound outcomes. The methods should have less postoperative morbidity, helps faster recovery and be cost effective at the same time.

The objective of this study was to compare wound outcomes in subcuticular and interrupted sutures for skin closure in a prospective study of caesarean sections, in terms of cosmoses, pain and wound complications.

Methods:

This study was conducted in 100 women undergoing primary caesarean section; these patients were divided into two equal groups. Only patients with pfannensteil incision during an elective or emergency caesarean section were included in this study. Patients with established or gestational diabetes, coagulation defects, hemodynamic instability, septicaemia or chorioamnionitis were excluded. Patients on cytotoxic drugs or anticoagulants and those with haematological disorders or malignancy were excluded from the study. The subject study was carried out at Government Hospital, Gandhi nagar, Jammu. The study was given approval by institutional ethical committee. Written informed consent was taken from all the patients. Group one consisted of women with subcuticular sutures with absorbable material (Polygalactin (Vicryl)). Group two was consisted of women with interrupted mattress stitches with non- absorbable material (Ethicon).

Women from both groups were questioned regarding amount and intensity of pain and need for analgesics in early postoperative period. The dressing was removed after forty- eight hours of surgery and the condition of the wound regarding union, discharge, bleeding, hematoma and indurations were noted. Wound was reassessed at the 7th day and after 1 month for the nature of scar, infection, indurations, pain and cosmoses. Duration of hospital stay and cost of stay was noted. Wound outcome, pain and cosmetic appearance were compared in both groups after 48 hours, 7th day and 1 month.

Results:-

A total of 100 women (50 cases in each group) were included in study. There was marginal difference in pain perception in the immediate post operative day in both the groups. Group 1 with subcuticular sutures experienced lesser pain and needed fewer analgesics as compared to Group 2. After 48 hours, in group 1 majority of wounds were well approximated, with less induration and bleeding edges. Many women in group 2 had everted, non aligned skin edges. Some women had fresh bleeding or haematoma formation.

Women with subcuticular sutures (group 1) had clean united skin, without induration, oozing or infection by the end of first week. Since this group had absorbable sutures, so they were discharged early and hence reduced hospital stay and cost. More women from group 2 who had interrupted mattress sutures experienced wound complications like haematoma, indurations, serosanguinous discharge, sepsis, non-union or dehiscence. These women were discharged from hospital after seventh day.

About 2% of women from group 1 and 16% of women from group 2 needed resuturing of the wound. One month follow of women from group 2 had raised indurated, hypertrophic scars with typical caterpillar appearance. Women from group 1 had thin linear scar merging well without indurations. There was no pain and the scar appeared cosmetically more acceptable, and they had no complaints. Condition of the wound after 48 hours, 1 week and 1 month are given in Table 1, 2 and 3 respectively;

Table 1: Wound condition after 48 hours

PARAMETER	GROUP 1(50)	GROUP 2 (50)	P value
United edges	49 (98%)	36 (72%)	(0.00272)
Everted edges	2 (4%)	12 (24%)	(.003952)
Hematoma	6 (12%)	12 (24%)	(.11835)
Bleeding	5 (10%)	14 (28%)	(.021871)
Induration	8 (16%)	25(50%)	(.0003)
Pain	12 (24%)	20 (40%)	(.086341)

Table 2 wound condition after one week

PARAMETER	GROUP 1 (50)	GROUP 2 (50)	P VALUE
Induration	8 (16%)	25 (50%)	(.003)
Infection	4 (8%)	20 (40%)	(.000179)
Mal union	3 (6%)	22 (44%)	(.000011)
Resuturing	1(2%)	8 (16%)	(.014445)

Table 3 : Follow up at 1 month (wound/scarappearancea)

PARAMETER	GROUP 1 (%)	GROUP 2 (%)	P VALUE
Induction	3 (6%)	20 (40%)	(0.000054)
Puckering	0	18 (36%)	Test invalid
Thick scar	3 (6%)	23 (46%)	(0.000005)
Cosmetic appearence	46 (92%)	25 (50%)	(0.000004)

% cannot be tallied as some women had a combination of parameter present.

P value < .05 is taken as significant.

Discussion:

Suture material used for skin closure affects the wound outcome. Although the search for ideal material continues, synthetic absorbable material is emerging as better materials as they provide adequate and longer skin approximation thereby giving better healing and cosmoses. Main aim of any skin closure technique is to produce appropriate approximation and adequate healing with less pain scarring and wound complication. The method should be faster, cost effective and have maximum cosmoses and patient satisfaction. (1)

Different materials have been provided with variable results (2). An absorbable material provides a temporary support to the skin edges while healing takes place it can be left in place, precludes the necessity of stitch removal. Tumuli et al in their study comparing subcuticular suture to staple in caesarean section found that staple closure is faster to perform but associated with a higher risk of wound complication (7, 8).

Mackerel AD bergehella, Vl Larsen Ml in their systematic review of Cochrane database on techniques and materials for closure in caesarean sections, compared non absorbable staples to absorbable subcutaneous suture found that staples are associated with increased risk of skin separation and re-suturing (4).

In our study we found that subcuticular suture with absorbable material offered better skin approximation and healing than the interrupted suture, which needed resuturing more often with a P Value of 0.014 which is significant. In another prospective randomised trial performed by Brown JK et al where they compared subcuticular suture to skin adhesive and observed that there was no difference in cosmetic outcome. Skin adhesive on the other hand is more expensive to suture though it reduces operating time. (9)

It was found that subcuticular suture is not only cost effective but it also saves operating time when compared with interrupted mattress stitches.

Absorbable subcuticular suture when placed into subcutaneous tissue eliminate the dead space, reducing potential spaces for collection of blood and serum. It brings the edges closure for tension free apposition of skin. When epidermis is closed it avoids direct needle contact with skin surface, allowing better healing. Synthetic monofilament material has less tissue reaction hence are better for skin closure. Mohan kudur et al in their extensive description of suture materials and suturing techniques praised the subcuticular running suture as a fast and useful technique with enhanced cosmetic results. (3)

In the present study it was observed that subcuticular absorbable suture is superior to interrupted mattress stitches with regard to many variables for the wound outcome. Time taken for skin closure was less approximation was better and without tension. Women were discharged earlier since there was no need for suture removal. In our study very few women needed re suturing as compared with women with interrupted stitches this is in accordance with Guruswamy et al who also observed that superficial wound dehiscense may be reduced by using continuous subcuticular suture. (5)

Aesthetics is an important aspect of a good surgery. Abdominal closure after surgery should not only aim at restoring anatomy and function but also look neat, appealing and leave cosmetically acceptable scars. We found running subcuticular suture with synthetic absorbable material for closure of pfannestiel incisions have all these advantages, are faster to perform, leave a better scar with less complication, allow early ambulation and shorter hospital stay.

Conclusion:

Wound outcome and scar appearance after surgery with plannenstiel incision largely depends upon the material and the technique used for skin closure there is a continual search for "ideal" way to close surgical wounds with the best possible outcome. In our study we observed that subcuticular stitches with absorbable synthetic material appear to be superior to the interrupted mattress suture to close pfannestiel incisions with regard to wound outcome and cosmetic appearance.

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