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Original Research Article

A comparative study of three layered interrupted suturing versus continuous subcuticular suturing in episiotomy closure

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ABSTRACT

Background: Episiotomy is a surgically planned incision on the perineum and posterior vaginal wall during the second stage of labour. There are various types of episiotomy like midline, mediolateral, lateral and J-shaped. There are various maternal and fetal benefits of episiotomy like reduction in perineal injuries, preservation of pelvic floor muscle function and cranial protection etc. There are various ways of suturing of episiotomy like three layered interrupted suturing, single knot type, three layered subcuticuler and continuous subcuticular technique. Perineal pain is the most common complaint after episiotomy. Objective of the study was to compare between the two episiotomy suturing techniques, one is traditional three layered interrupted technique and the other is continuous subcuticular technique.
Methods: It is prospective comparative interventional study conducted in department of obstetrics and gynaecology at Sardar Vallabh Bhai Patel (SVBP) Hospital, Meerut from January 2020 to July 2021. In this study, 100 primigravida who delivered vaginally with the aid of episiotomy in the hospital were included. The episiotomy of 50 patients were sutured by three layered interrupted technique (control) and 50 patients episiotomy were sutured by continuous subcuticular technique (cases). Both groups were compared in view of duration of surgery in minutes, amount of suture material used, and post-operative pain within 12 hours and within 48 hours of delivery and delayed complication if any.
Results: The duration of surgery was significantly lower in the continuous subcuticular technique (9.94±1.17 min) p value <0.0001 as compared to three layered interrupted technique (13.04±1.38 min). The amount of suture material used is less in continuous group (81.18±5.61 cm) as compared to control group (85.22±5.40 cm) p value <0.0004. There was no need of extra use of local analgesia (p<0.0061) and patient had less post-operative pain at 12 hrs and 48 hrs of delivery in continuous subcuticular group (p<0.0001). There was not any delayed complication seen in continuous group.
Conclusions: From my study it is concluded that continuous subcuticular episiotomy suturing technique is better than three layered traditional technique as it require less time, less suture material, less local analgesia and associated with less pain experience and complication.

Keywords: Episiotomy, Subcuticular, Interrupted suturing, VAS scale

INTRODUCTION

Episiotomy is a surgically planned incision on the perineum and posterior vaginal wall during the second stage of labour. Episiotomy is reserved for cases where perineum is likely to be torn, rigid perineum, complicated childbirths, good size baby and assisted deliveries. Episiotomy is usually performed during second stage of labor to quickly enlarge the opening for the baby to pass through. There are various types of episiotomy- midline, mediolateral, lateral and J shaped episiotomy.

The maternal morbidity is affected by extent of trauma, surgical skill, type of material used and suturing technique.[3] The American College of Obstetricians and Gynecologists (ACOG) recommended that the restricted

use of episiotomy is preferred over routine use.[1] The maternal benefits of episiotomy are- reduction in likelihood of severe perineal laceration and obstetric anal sphincter injury, preservation of pelvic floor muscle function, reduce risk of fecal and urinary incontinence. The potential benefits for fetus include- cranial protection especially for premature infants, less fetal acidosis.

There are various techniques of episiotomy suturing- Traditional three layered technique, three layered subcuticular technique, double layered technique, single knot technique and continuous subcuticular technique.

In this study the author compared two episiotomy repair methods and tried to present the best method with least complication rate.

There are various complications of episiotomy. The immediate complications are: bleeding from episiotomy wound, perineal lacerations, anal sphincter damage, hematoma formation, pain at episiotomy site.[2] The delayed complications are- perineal pain, urinary incontinence, faecal incontinence, gaping of episiotomy, dyspareunia, scar endometriosis (rare). The better technique will require lesser time, cause lesser pain and use lesser amount of suture material. The associated morbidity in the form of pain, infection and perineal discomfort disrupts breastfeeding, family life and sexual relations.[3] The type of suturing material, the technique of repair and the skill of the operator are the three main factors that influence the outcome of perineal repair.[2]

METHODS

The study was conducted in department of obstetrics and gynaecology in Lala Lajpat Rai Memorial (L. L. R. M) Medical College, Meerut during one and half year period from February 2020 to July 2021 (18 months). The study was prospective comparative interventional study. Initially the sample size was 100 in each group but due to COVID-19 pandemic and conversion of my hospital into COVID centre (L3), my non-COVID sample size reduced to 50 in each group (study and control).

Inclusion criteria

Singleton term pregnancy with vertex presentation, vaginal birth without instrumentation, and an episiotomy involving the skin and muscle but not anal sphincter or rectum i.e. clean cut episiotomy were included.

Exclusion criteria

Patients with multiple gestation, preterm pregnancy, malpresentation, associated vaginal or perineal tears, instrumental vaginal delivery, and perineal tears, cases like severe anemia, diabetes or any other medical therapy that can affect wound healing, and epidural labour analgesia which affects postpartum pain were excluded.

The enrolled patients were divided into two groups by simple random sampling method according to the type of suturing technique used. Equal number of patients were taken into each group for an accurate comparison (50 in each group). All the episiotomies were right mediolateral as per hospital protocol and the suture material used was also same [polyglactin 1-0 (vicryl rapide)] of length 90 cm in both the groups. All women were similar in age, parity and socioeconomic status. All women were divided into two groups: group A - females in which continuous subcuticular suturing was done and group B- females in which traditional three-layered interrupted suturing was done. The analgesia used for episiotomy in our hospital setting is 1% Lignocaine which was diluted in normal saline (NS) (5 ml lignocaine+5 ml NS). This was given to all women in whom episiotomy procedure was done.

The duration of surgery in seconds was recorded by an independent observer blinded to the technique used. The time was recorded from start of first stitch till end of last suture is cut. The amount of suture material used was noticed. The postoperative pain was assessed within first 12 hours of delivery in all the cases and within 48 hours of delivery according to visual analogue scale (VAS) scale. So, in the end of the study the following parameters were compared between two groups- postoperative pain experienced by women within 12 hours of delivery and within 48 hours; duration of episiotomy procedure in minutes; amount of suture material used; and extra amount of local analgesia used.

We also followed up the patients after 6 weeks to rule out the delayed complication of episiotomy like dyspareunia, urinary incontinence, and faecal incontinence and the patients who had delayed complication if any, were also included in study.

Statistical analysis

The data was compiled and analyzed using Microsoft excel (R) office 365, GraphPad prism 8.4.2 and statistical package for the social sciences (SPSS) version 25. Descriptive statistics were presented in the form of proportions/percentages for categorical variables and mean and standard deviation for continuous data variables.

Fisher exact test/Chi square test was used for the comparison of proportions (categorical variables). Continuous variables were analyzed using the Mann Whitney test/student t test (independent group/unpaired data) and Wilcoxon sign rank test/paired t test (for paired data) based on the normality of the data. P value of <0.05 was considered significant.

RESULTS

The study was conducted in the department of obstetrics and gynaecology at the L. L. R. M. College and Associated Hospital, Chaudhary Charan Singh University, Meerut. 100 term primigravida patients who underwent normal

vaginal delivery with aid of episiotomy were included in the study – 50 patients underwent continuous subcuticular suturing, and 50 patients underwent three layered interrupted suturing. The major findings of the analysis are shown below.

Both the groups were comparable in their demographic characteristics viz. age, education, socioeconomic status, gravid status. The mean age of the patients in my study is 24 years in which most of the patients were uneducated housewives and of low socio-economic status having mean gestational age of 38 weeks with mean fetal birth weight of 2.7 kg. All these data were not significant.

After comparison between cases and controls the following outcome parameters were found in study.

Outcome parameters

Duration of surgery

The duration of surgery was significantly lower in the Continuous subcuticular group (9.94±1.17 minutes, p<0.0001) as compared to control group (Table 1).

Suture length used

The length of the suture used was significantly less in continuous subcuticular group (81.18 cm versus 85.22 cms, p=0.0004). The suture material used was vicryl rapide 1-0 of length 90 cm (Table 2).

Extra local anesthesia used

The local anesthesia used was 10 ml of 1% plain xylocaine. 14 % percent patients in the TLI group required extra local anesthesia in the study compared to none in the CS group (p=0.0061).

Post-operative pain- VAS <12 hours and 48 hours

A significantly higher proportion of patients in the CS group had slight pain at 12 hours post-operative compared to the TLI group (48% versus 24%). A very high proportion of patients had moderate to severe pain in the TLI group (76% versus 52%) (p=0.0277). A significantly higher proportion of patients in the CS group had slight pain at 48 hours post-operative compared to the TLI group (96% versus 52%). A very high proportion of patients had moderate to severe pain in the TLI group (48% versus 4%) (p<0.0001) (Table 3).

Early and delayed complications

A higher proportion of patients had complication in the TLI group (6% versus 2%). Infection was the most commonly seen complication in the study. The difference in terms of complication rates was not significant statistically (p=0.3074). Dyspareunia was seen as a delayed complication in one patient in the TLI group. The difference was not significant statistically. These findings were suggestive of resumption of sexual activity being early in continuous group and late in interrupted group (Table 4).

Table 1: Duration of surgery.

Duration of surgery (min)	Continuous subcuticular	Three-layer interrupted	P value
Mean duration	9.94	13.04	<0.0001
Standard deviation	1.17	1.38	
Minimum	8.00	10.00	
Maximum	12.00	16.00	

Table 2: Length of suture used (in cm).

Length of suture used (cm)	Continuous subcuticular	Three-layer interrupted	P value
Mean suture length	81.18	85.22	0.0004
Standard deviation	5.61	5.40	
Minimum	75.00	76.00	
Maximum	90.00	96.00	

Table 3: Post-operative pain (VAS based category) at 12 hours and 48 hours.

VAS based categories	Continuous subcuticular	Three-layer interrupted	P value
Post-operative pain (VAS <12 hours)			
Moderate	25 (50)	34 (68)	0.0277
Severe	1 (2)	4 (8)	
Slight	24 (48)	12 (24)	
Grand total	50	50	
Post-operative pain (VAS <48 hours)			

Continued.

VAS based categories	Continuous subcuticular	Three-layer interrupted	P value
Moderate	2 (4)	22 (44)	<0.0001
Severe	0	2 (4)	
Slight	48 (96)	26 (52)	
Grand total	50	50	

Table 4: Early and delayed complications.

Complications	Continuous subcuticular	Three-layer interrupted	P value
Infection	1 (2)	3 (6)	0.3074
Dyspareunia	0 (0)	1 (2)	0.3149

DISCUSSION

A total of 100 primigravida pregnant women who delivered vaginally with the aid of episiotomy in SVBP hospital, Meerut were included. They were randomly assigned into two groups; each included (50) women. The demographic characteristics were comparable in both groups to avoid the effect of age and parity on the parameters. The first group received continuous subcuticular suture technique of episiotomy repair, while the second group received three layered interrupted suture technique for episiotomy repair.

Concerning time needed for wound suturing, current study presented that the continuous groups had less time for wound suturing in minutes (9.94±1.17), while interrupted groups consumed more time (13.04±1.38) Table 1. The results agreed with previous studies, including Valenzuela et al and Ghareeb in which mean time required was 12.60 min versus 15.62 minutes in continuous and interrupted group, Kokanali et al, Kettle et al and Thukral et al where for continuous suturing mean time was 5.78 min as compared to7.7 min for interrupted suturing.[2,4-7,12]

Concerning length of the used suture material, the obtained results cleared that in continuous technique the mean length was 81.18±5.61 (cm) while with interrupted technique the mean length was 85.22±5.40 (cm) Table 2. The results agreed with previous studies including Valenzuela et al, Kokanali et al, Perveen and Shabbir, Thukral et al and Kettle et al who reported that continuous technique needed less suture material than interrupted technique.[3,4,6-8]

Considering the need for extra amount of local analgesia used during episiotomy suturing, the obtained results showed that there was no need of extra amount of local analgesia in continuous subcuticular suturing group while some patients required extra local analgesia in three layered interrupted group. P value of 0.0061 which was significant.

About postpartum perineal pain within 12 hour and within 48 hours and the need for additional post episiotomy analgesia: the present study showed that the numbers of patients who expressed pain in the interrupted suturing technique were more than patients in the continuous suturing technique with a highly significant difference between two groups, Table 3. At this point our results agreed with results reported by Kokanalı et al, Kettle et al, Dash et al, Hasanpur et al, Jena et al, and Thukral et al.[3,6,7,9,10]

In regard to other complications of healing (dehiscence, infection and incomplete healing): our present study showed that wound infection had high incidence in three layered interrupted group, Table 4, and wound dehiscence had no significant difference between the interrupted group and the continuous group. In my study all cases of wound infection were managed conservatively and none of them were required resuturing. Current results were in agreement with results of Samal et al, Morano and the Banninger trials declared in either group no cases required resuturing.[11-13] Kettle et al stated that risk of resuturing was indifferent in both groups.[7] Our results were also matched with Kokanali et al, who didn't find any significant differences between the studied groups regarding incomplete healing.[6]

In regard to dyspareunia 6 weeks after delivery, as late complication of episiotomy the present study stated that the incidence of dyspareunia was more in three layered interrupted group, (p value=0.3149). The current results agreed with results of Samal et al who mentioned that patients in interrupted group reported more complaints of dyspareunia throughout three months after delivery.[11]

CONCLUSION

The conclusion drawn from present study are- Continuous subcuticular suturing technique of episiotomy require less time for suturing, require less amount of suture material, no need for extra amount of local analgesia at the time of suturing. There is less post operative pain within 12 and 48 hours in continuous subcuticular technique and less early postoperative complications like infection, and gaping and also less delayed complication like dyspareunia.

Hence the authors recommend continuous subcuticular suturing technique for episiotomy for clean and uncomplicated episiotomies to cut time and cost of episiotomy and also for less maternal morbidity.

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