

A Randomised Comparative Study of Continuous Versus Interrupted Suturing of Right Mediolateral Episiotomy

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ABSTRACT

Background: The technique of suturing perineal trauma following childbirth may have a significant effect on the extent and degree of postpartum maternal morbidity. The aim of this study was to compare continuous and interrupted suturing methods of right mediolateral episiotomy in terms of puerperal morbidity in women at Kamla Nehru State Hospital For Mother And Child, Shimla.

Methods: A randomized controlled trial was conducted in the Department of Obstetrics and Gynecology, Kamla Nehru State Hospital for Mother and Child, IGMC Shimla for a period of one year where two hundred seventy pregnant females at term were recruited for study after informed consent and satisfying inclusion and exclusion criteria. Only two hundred seven cases could complete the study. Rest was lost to follow up and hence were dropped from study. They were randomized in two groups: group A where the episiotomy was stitched by the continuous technique; group B had their episiotomy was repaired by the interrupted method.

Findings: Continuous suturing gave better results in terms of healing (REEDA score) as compared to interrupted suturing technique at two hours, twenty four hours and forty eight hours postpartum (p value<0.001). Less pain was experienced by patients in the continuous group as compared to patients in the interrupted group at two hours, twenty four hours, forty eight hours postpartum in lying, sitting position and while walking (p value<0.001). The time required to repair episiotomy, number of suture

packets required was less in continuous as compared to interrupted episiotomy (p value<0.001).

Interpretation: It was concluded that continuous suturing is a better method compared to the conventional interrupted technique of repair of RMLE. The continuous technique causes less discomfort to women in the postpartum period as compared to the interrupted method. Not only does it cause less pain immediately and in later hours and days postpartum but, it also gives better healing results.

Keywords: Episiotomy, continuous versus interrupted suturing, right mediolateral episiotomy

INTRODUCTION

An episiotomy is a surgically planned incision of the perineum given during the second stage of labour.^{1,2} The objective of episiotomy is not only to straighten the pelvic canal but also to reduce the soft tissue resistance of the outlet facilitating delivery.³The first episiotomy was performed as an emergency procedure by midwife Sir Fielding Ould of the Rotunda Hospital in Dublin in the year 1742.⁴ It is the most commonly employed procedure for women delivering in tertiary hospitals in India with a rate of about 70%. The episiotomy rate among nullipara is 85%.⁵ For more than 70 years, researchers have been suggesting that continuous non-locking

suture techniques for the repair of the vaginal mucosa, perineal muscle, and skin are far better than the traditional interrupted methods in terms of reduced postpartum pain but till now the continuous method is not generally followed.^{6,7} The technique of suturing perineal trauma following childbirth may have a significant effect on the extent and degree of morbidity. It is very easy to overtighten locked/ interrupted stitches which may restrict the distribution of tissue edema, cause necrosis and cause increased pain.¹¹ With the continuous technique, tension is transferred throughout the whole length of a single suture, also skin sutures are inserted well below the skin surface, thus avoiding nerve endings, hence decreasing perineal pain.⁸

Through this study we analyzed the effects of continuous versus interrupted suturing experienced by women in puerperium following repair of right mediolateral episiotomy and also to choose the most appropriate technique of perineal repair in terms of both health gain and cost.

METHODS

This randomized controlled study was carried out in the Department of Obstetrics and Gynecology, Kamla Nehru State Hospital for Mother and Child, IGMC Shimla with effect for a period of one year. Sample size was calculated as 270 patients. We calculated sample size taking significance level at 95%, power of study at 80%, percentage of patients experiencing pain on third day in interrupted suture group at 80%, difference between the two groups at 15% and 40% extra cases added because loss of follow up found was upto 40%. Final sample size came out to be 270 i.e. 135 in each group. We calculated size by using open epi software. These 270 patients were enrolled after their informed consent and satisfying inclusion and exclusion criteria. Only 207 cases could complete the study. Rest was lost to follow up and hence were dropped from study

INCLUSION CRITERIA:

1. Patients with right mediolateral episiotomy involving the skin and muscle but not the anal sphincter or rectum (size 4 to 5 cm and 2.5 cm away from the anus).
2. Women consenting for participation in the study.

EXCLUSION CRITERIA:

1. Severe anemia
2. Diabetes mellitus, obese
3. Patients with coagulopathy
4. On drugs like steroids and immunosuppressants
5. Patients given epidural labour analgesia
6. Patients with foul smelling vaginal discharge
7. Women whose membranes ruptured for >24 hours
8. Chronic illness like liver, heart or renal disease
9. Teenage pregnancy
10. Elderly pregnancy
11. Patients with postpartum haemorrhage
12. Episiotomy with other perineal tears
13. Instrumental delivery
14. Women not consenting for participation in the study

On admission to labour room, detailed history of the patient was taken regarding age, parity, POG, booking status, education, occupation, residential address, obstetric history, menstrual history, medical, surgical and history of any complication in past and present pregnancy. Per abdominal, per speculum and per vaginal examinations were done. All patients with right mediolateral episiotomy (RMLE) meeting inclusion criteria were enrolled in the study after taking consent. Patients were randomly allocated into two groups viz; group A and group B by computerized randomization software namely 'open epi'. In cases selected, the area of episiotomy was infiltrated with 10cc of 1% lignocaine. In both groups, RMLE was repaired by using chromic catgut 1-0



Fig A: Instruments used

Group A: RMLE was repaired by using continuous method in which the vaginal mucosa was stitched by continuous, non-locking sutures. After closing the vaginal incision and reapproximating cut margin of the hymenal ring, perineal muscles were sutured continuously by non-locking method. Subcuticular sutures were applied to skin with same thread used to suture vaginal mucosa and final tie was made at distal end.



Fig B: Continuous Suturing Method

Group B: RMLE was repaired by using interrupted technique i.e., continuous locking sutures for vaginal mucosa, interrupted sutures in the perineal muscles and interrupted transcutaneous sutures used in skin.

Suturing in both groups was done by the obstetrician. After suturing of RMLE, all patients were put on tab ibuprofen 400 mg TDS for 5 days and advised sitz bath for 5 min 3 times a day for 5 days. Patient were assessed by interview and examination at 2

hours, at 24 hour, 48 hours of delivery and on the 42nd postnatal day.

Inspection of RMLE was done under good light in lithotomy position. Assessment of wound was done by using REEDA scale at 2hrs, 24 hrs, 48 hrs and pain severity was evaluated by using VAS while lying, sitting, walking at 2hrs, 24 hrs and 48 hrs and 42nd postnatal day.

STATISTICAL ANALYSIS

Sample size was calculated by using open epi software. Randomization was done by open epi software. Data was collected by using open epi software 7.2.2. Qualitative variables presented as percentages with 95% confidence interval. Student t-test used to compare mean scores between groups and Chi-square test was used to compare proportions. p-value <0.05 was taken as statistically significant.

RESULTS

This randomized controlled study was carried out in the Department of Obstetrics and Gynecology, Kamla Nehru State Hospital for Mother and Child, IGMC Shimla with effect from 1st May 2019 to 30th April 2020. During this study period, sample size was calculated as 270 patients. These 270 patients were enrolled after their informed consent and satisfying inclusion and exclusion criteria. Out of these 23 patients were lost to follow up at 48 hours and 40 patients were lost to follow up at 42nd postnatal day. These 63 patients were dropped from the study due to COVID-19 pandemic. The remaining 207 patients (102 in the continuous group and 105 in the interrupted group) were finally analyzed.

There were no significant differences between the groups according to maternal age, parity, body mass index (BMI), gestational age, education status, newborn's birth weight and booking status.

Table A: Participant characteristic

Participant characteristic	Continuous group (group A)	Interrupted group (group B)	p VALUE
Mean age in years (S.D.)	25.8 (3.6)	25.2 (3.5)	0.254
Mean gestational age in weeks,days(S.D.)	39.5 (1.0)	39.1 (0.6)	0.186
Mean BMI in kg/m ² (S.D.)	22.8 (2.1)	24.1 (1.3)	0.166
Mean B.Wt. in kgs	2978 (238)	2795(308)	0.171
≥Higher secondary education n(%)	56 (54.9%)	51(48.5%)	0.625
Primigravida n(%)	99 (97.1%)	99 (94.3%)	0.263
Booked n (%)	95 (93.1%)	101 (96.2%)	0.252

Comparison of the safety profile of continuous vs interrupted suturing of RMLE in terms of wound healing by using REEDA scale is as shown in Table B:

Table B: COMPARISON OF REEDA SCORE

REEDA SCORE		GROUP A n (%)	GROUP B n (%)	P Value
AT 2 HOURS	≤3	100(98%)	42(40%)	<0.001
	>4	2 (2%)	63(60%)	
AT 24 HOURS	≤3	102(100%)	45(42.9%)	<0.001
	>4	0	60(57.1%)	
AT 48 HOURS	≤3	102(100%)	45(42.9%)	<0.001
	>4	0	60(57.1%)	

REEDA score was ≤3 in 98% of cases in the continuous episiotomy group as compared to only 40% in the interrupted episiotomy group at 2 hours postpartum. REEDA score was ≤3 in 100% of cases in the continuous episiotomy group as compared to only 42.9% in the interrupted episiotomy group at 24 hours and 48 hours postpartum.

REEDA score was found to be 0 at 42nd PND in both continuous and interrupted group. In our study, we found that pain at 2 hours, 24 hrs and 48 hrs postpartum during lying, sitting and walking revealed more pain in the interrupted group compared to the continuous group which was statistically significant as shown in table C

Table C: COMPARISON OF VAS SCORE

VAS SCORE		Group A	Group B	p Value
AT 2 HOURS	lying	3.1 ± 1.5	5.6 ± 1.4	<0.001
	sitting	4.0 ± 1.4	6.3 ± 1.4	
	walking	3.6 ± 1.4	6.6 ± 1.4	
AT 24 HOURS	Lying	1.1± 0.9	3.4 ± 1.4	<0.001
	sitting	1.1 ± 0.9	3.4 ± 1.4	
	walking	1.9 ± 1.0	3.4 ± 1.6	
AT 48 HOURS	Lying	1.2± 1.0	3.5 ± 1.2	<0.001
	Sitting	1.1 ± 0.9	3.8 ± 1.2	
	walking	1.5 ± 0.7	3.8 ± 1.2	

we used 2 suture packets in continuous group as compared to 3 packets in majority (75.2%) of patients in interrupted group which was statistically significant (p value <0.001). The mean repair time taken in continuous group was 14 ± 3.6 minutes whereas in interrupted group was 23.8 ± 3.4 minutes. This difference was found to be highly significant (p value <0.001). It was found that 3(2.9%) cases in continuous group developed wound gaping during 10 days of follow up whereas 6(5.7%) cases developed wound dehiscence in interrupted group. This difference was not found to be statically significant.

DISCUSSION

An episiotomy is one of the most common surgeries performed in obstetrics worldwide. Traditionally it is stitched using continuous interlocking suture in vaginal mucosa and interrupted stitches in perineal muscles and skin. Continuous stitching methods have been used and compared to the traditional stitching method of repair in certain studies. Our institute has been following the interrupted method of repair. In this study, we compared continuously and interrupted suturing methods of right mediolateral episiotomy in terms of safety

profile in relation to wound healing and subjective experience in relation to pain.

In our study, the REEDA score was used to assess wound healing at 2 hours, 24 hours, 48 hours postpartum. We found better-wound healing in the continuous group as compared to the interrupted group at 2 hours and 24 hours. REEDA score showed a mean value of 2.4, 2.0 at 2 hours, 24 hours postpartum respectively with the continuous group and 3.5, 4.8 with the interrupted group respectively with a p value <0.001 which is highly significant statistically. Similarly, Besen MA et al reported a REEDA score showing a mean value of 3.6 with the continuous group and 4.5 with the interrupted group in the first 24 hours postpartum with a p value <0.001 which was highly significant.⁹ However, in the study conducted by Hasanpoor S et al, there was no statistically significant difference found between the two groups in REEDA score at 12 to 18 hrs.¹⁰ This may be due to the repair being done by a senior obstetrician and interobserver bias. interrupted group in the first 24 hours postpartum with a p value <0.001 which is highly significant. This may be due to repair being done by senior obstetrician and interobserver bias. we observed better-wound healing in the continuous group as compared to the interrupted group at 48 hours. REEDA score showed a mean value of 2.0 at 48 hours postpartum with the continuous group and 4.8 with the interrupted group, with a p value <0.001 which is highly significant. Similarly, Nagure et al found less REEDA score at 48 hours in the continuous group (3.6) as compared to the interrupted group (4.5) which was statistically significant (p<0.001). Kindberg et al compared continuous suture technique with interrupted stitches using inverted knots for the postpartum perineal repair of second-degree lacerations and episiotomies and found no difference in REEDA score at 24- 48 hours.¹² Better wound healing in continuous suturing was seen which might be due to better approximation, less oedema and less

suture material (foreign body) used. (p<0.001). Kindberg et al compared continuous suture technique with interrupted stitches using inverted knots for postpartum perineal repair of second-degree lacerations and episiotomies and found no difference in REEDA score at 24- 48 hours.¹² Better wound healing in continuous suturing was seen which might be due to better approximation, less oedema and less suture material (foreign body) used. There was no statistically significant difference between the two groups in terms of wound gaping. Wound gaping was seen in 2.9% and 5.7% cases in the continuous and in the interrupted group without any statistical difference. Similar results were demonstrated by Martínez-Galiano et al and Samal SK et al in their study where no statistical difference was seen between the two groups as well.^{3,13} In our study, we found that pain at 2 hours postpartum during lying, sitting, and walking revealed more pain in the interrupted group compared to the continuous group which was statistically significant. However, in the study conducted by Martinez- Galiano et al, no significant difference was detected in the first 2 hours.¹³ Our result was not comparable with this study which possibly due to different scales used for the evaluation of pain (VRS). In visual rating score (used by Martinez- Galiano et al), the patient was asked if they experienced no pain or mild, moderate, or severe pain with reference to previous happening & depending on the answer given by the patient, no pain was rated as 0, mild pain as 1, moderate pain as 2 and severe pain as 3. In our study, we observed that pain at 24 hours postpartum during lying, sitting, and walking revealed more pain in the interrupted group compared to the continuous group which was statistically significant. Nagure et al demonstrated a VAS score of 3 and above seen in 70% cases in the continuous group and 84% cases in the interrupted group on the second postnatal day and this difference was found to be statistically significant with a p value

of 0.000. Tandon et al found that only 32% of patients were complaining of moderate to severe pain on 1st day of postdelivery in the continuous group whereas 76% of the patients complained of moderate to severe pain on 1st day postpartum in the interrupted group.¹⁴

In our study, we found that pain at 48 hours postpartum during lying, sitting, and walking revealed more pain in the interrupted group compared to the continuous group which was statistically significant. Similarly, Kettle et al noted that significantly fewer women reported pain at 2 days during different activities in the continuous group than in the interrupted group (530/770 [69%] vs 609/770 [79%]).⁸ Samal SK evaluated pain on the 2nd day during lying, sitting, and walking and revealed moderate to severe pain in 52.2% in interrupted technique as compared to 30.1% in continuous technique which was statistically significant (p value 0.009).³ Kokanali et al. conducted a similar trial in which 160 women were included and concluded that the pain with a continuous suture was significantly less severe than with an interrupted suture repair technique.⁷ In this trial, the pain was assessed with the performance of different activities. Valenzuela et al. conducted randomized studies of continuous compared to interrupted sutures for perineal repair evaluating the level of pain and the use of analgesia on day two, day ten, and at 3 months postpartum and did not observe any significant difference in the two groups.¹⁵ This may be due to not considering position while recording vas scale and inclusion of second-degree tears apart from episiotomy in the above study.

Less time was taken for repair of RMLE in the continuous group as compared to the interrupted group: 14 minutes versus 23.8 minutes respectively. It was statistically significant. Similar results were seen in studies conducted by Nagure et al and Ahmed et al, where they also observed that significantly less time was taken to repair

episiotomy by the continuous method as compared to the interrupted technique.^{11,16}

In our study, we used 2 suture packets in the continuous group as compared to 3 packets in the majority (75.2%) of patients in the interrupted group. The results were not comparable to studies conducted by Nagure A et al, Ahmed A et al.^{11,16} where they used 1 suture packet in the continuous group and 2 or more suture packets in the interrupted group. The inconsistencies in the results could be as different methods of suturing were used in the continuous group. In our study, vaginal mucosa was stitched by continuous, non-locking sutures. After closing the vaginal incision and reapproximating the cut margin of the hymenal ring, perineal muscles were sutured continuously by non locking method. Subcuticular sutures were applied to the skin with the same thread used to suture vaginal mucosa and the final tie was made at the distal end whereas, in the above-mentioned studies, the single thread was used for continuous non-locking suturing in the vagina, perineum, and subcutaneous tissues for the skin.

CONCLUSION

“Episiotomy is one aspect of childbirth that affects millions of women throughout the world. The application, place, time, and repair method of episiotomy are currently among the most discussed subjects of midwifery science.” From the observations made in this study, it can be concluded that continuous suturing is a better method compared to the conventional interrupted technique of repair of RMLE. The continuous technique causes less discomfort to women in the postpartum period as compared to the interrupted method. Not only does it cause less pain immediately and in later hours and days postpartum but, it also gives better healing results. Also, less time taken to repair is another advantage of the continuous method. A smaller number of sutures required for the repair in the continuous method has potential economic advantages. Being beneficial for both the

patient and treating Doctor, this method can be recommended for the repair of episiotomy.

Declaration by Authors

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