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Original Research Article

Novel technique for repairing episiotomy incisions to achieve optimal vaginal and perineal anatomy

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ABSTRACT

Background: Episiotomy is one of the most commonly practiced obstetric procedures done to enlarge the diameter of the vulval outlet to facilitate the passage for the fetal head and prevent an uncontrolled tear of the perineal tissues in the second stage of labor. The study compared the effectiveness of the new technique with the standard technique in promoting proper tissue healing, reducing discomfort and minimizing the risk of complications.
Methods: The prospective comparative study was conducted for duration of 15 years. Women who were primigravida, with singleton pregnancy, at term gestation, with vertex presentation were included in the study and women with multigravida, multiple pregnancy, preterms were excluded from the study. Episiotomies were performed either novel technique or traditional technique by random allocation and results were compared.
Results: At 6 weeks and 1 year, 80% and 95% patients had no pain who had episiotomy repaired by novel technique. At one year follow up 1% patients had vaginal discharge who had episiotomy repaired by novel technique while 6% who had episiotomy repaired by traditional technique. 78% patients were psychologically satisfied with episiotomy repaired by novel technique.
Conclusions: Novel technique of episiotomy suturing is recommended for less postoperative complications, cosmetic pleasing aesthetic outcome and psychological satisfaction.

Keywords: Episiotomy, Novel technique, REEDA

INTRODUCTION

Episiotomy is a surgical procedure performed during childbirth where a small incision is made in the perineum, which is the area between the vagina and the anus. This incision is done to widen the birth canal and facilitate the delivery of the baby.[1] Episiotomy incision repair is a crucial part of perineal and vaginal anatomy restoration after childbirth. Episiotomy was first introduced in the 18th century for preventive measures. The rate of performing this intervention increased gradually in the first half of the 20th century worldwide. Also, with an increasing trend for hospital births and for physicians to get involved in the normal uncomplicated birth process, there was significant rise in the number of episiotomies.[2] According to a study published in the Indian Journal of Medical Research in 2020, the prevalence of episiotomy in India was found to be around 46.7% based on the data analyzed. However, it is important to note that this prevalence figure may not represent the entire country, as the study included data from selected healthcare facilities and regions. It is worth mentioning that the World Health Organization (WHO) recommends that the episiotomy rate should not exceed 10-15% of vaginal deliveries. This recommendation is based on evidence suggesting that routine episiotomies do not provide significant benefits and may lead to increased complications and discomfort for mothers.[3]

The risks and benefits of episiotomy surgery can vary depending on various factors, including the specific circumstances of the childbirth and the skill of the

healthcare provider. Here are some potential risks and benefits to consider:

Benefits of episiotomy

Controlled incision

An episiotomy can provide a controlled incision that may be easier to repair compared to a spontaneous tear.

Facilitates delivery

In certain situations, an episiotomy can help facilitate the delivery of the baby, especially in cases where there is a risk of fetal distress or prolonged labor.

Reduced risk of severe tears

Episiotomies may reduce the risk of severe tears that can extend to the anal sphincter and rectum.

Risks of episiotomy

Increased pain and discomfort

Episiotomies can cause more pain and discomfort during the postpartum period compared to natural tears.[4]

Delayed healing

The incision from an episiotomy may take longer to heal compared to a natural tear, increasing the risk of infection and complications.

Increased risk of perineal trauma

Episiotomies can result in more extensive perineal trauma compared to spontaneous tears.

Potential for long-term complications

There is a slight increased risk of long-term complications, such as perineal pain, sexual dysfunction, and fecal incontinence, associated with episiotomy.

There are different recommended approaches for repairing an episiotomy, and the choice of technique may depend on the individual patient, the extent and location of the episiotomy, and the healthcare provider's preference and experience.

Here are some commonly used approaches: 1) mediolateral episiotomy repair; 2) midline episiotomy repair; 3) modified episiotomy repair: this technique is a modified version of the traditional episiotomy repair and is used when there are associated tears or extensions of the episiotomy.[5] It involves repairing the episiotomy incision and any tears separately, taking care to ensure proper tissue approximation and hemostasis. Median episiotomy approach escalates the risk of anal sphincter injury when compared to the mediolateral technique.[6,7] 4) Layered closure: this approach involves repairing the episiotomy incision in layers. The deeper tissues, including the muscles and fascia, are repaired first, followed by the superficial skin layer. This technique promotes proper wound healing and minimizes the risk of complications. 5) Continuous versus interrupted sutures: sutures can be placed in a continuous or interrupted pattern, depending on the healthcare provider's preference and the specific circumstances of the episiotomy repair. Continuous sutures provide a faster closure but may increase the risk of wound breakdown, while interrupted sutures allow for better tissue approximation and control of tension.[8,9]

Suture material and technique might influence postpartum perineal pain, as these parameters influence the rates and severity of spontaneous perineal trauma and episiotomies.[8,9]

Present guidelines recommend using the medio lateral technique, a safe zone of episiotomies with 45 to 60° degrees from the vertical axis has been proposed as protective for OASIS. To achieve a post suturing angle of >43° degrees, the episiotomy needs to be cut at 60°. Median episiotomy approach escalates the risk of anal sphincter injury when compared to the mediolateral technique.

Aim and objectives

Aim

The aim of the present study was to evaluate the effectiveness of a new technique compared with the standard episiotomy suture technique. This encompasses comparison and assessment of two specific suture techniques in the context of promoting proper tissue healing, reducing discomfort and minimizing the risk of complications

Objectives

To compare the effectiveness of the new technique with the standard technique in promoting proper tissue healing. To assess the impact of the new technique on minimizing postpartum pain and preventing dyspareunia. To evaluate the ability of the new technique to achieve a cosmetically pleasing aesthetic outcome of episiotomy wound closure. To investigate the impact of the new technique on reducing the risk of postpartum complications such as infection and dehiscence. To assess patient satisfaction and recovery time associated with the new technique compared to the standard technique. To analyze the long-term structural integrity and functional outcomes of the perineal area following the use of the new technique.

METHODS

The study was a prospective comparative interventional study, conducted at the department of obstetrics and gynecology of MLB Medical College, Jhansi for duration of 15 years spanning from January 2008 to December 2022. Informed consent was obtained and ethical clearance was taken from the institutional ethical committee.

Inclusion criteria

Women who were primigravida, with singleton pregnancy, at term gestation, with vertex presentation, normal BMI (18.5 to 24.9), 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

Women who were multigravida, with multiple pregnancy, preterm, with malpresentation, premature rupture of membranes, coagulation disorders, previous surgery on perineum, distorted anatomy, with instrumental delivery, associated vaginal or 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 episiotomy suturing technique used. Group A- females in which novel technique of episiotomy suturing was done and group B- females in which traditional interrupted episiotomy suturing was done. Initially sample size was 1200 in each group but due to loss to follow up, the sample size was reduced to 1000 in each group (study and control). All the episiotomies were right mediolateral as per hospital protocol and the suture material used was also chromic catgut 1-0 in both the groups. All women were similar in age and socioeconomic status.

Technique of novel episiotomy suturing

Patient was laid down in dorsal lithotomy position, perineal area was cleaned, local anesthesia was administered, the right mediolateral incision was given at 60°±5°. Anchoring stitch was placed 1 cm beyond the apex of incision in the vaginal mucosa with chromic catgut 1-0 and vaginal mucosa was stitched in a continuous non-interlocking manner (Figure 1a). Suturing in the vaginal mucosa was stopped 1 cm above the hymenal ring. Suturing was started again from the muco-cutaneous junction at introitus. Perineal fascia and muscles (transverse perinei and bulbospongiosus) were stitched in an interrupted manner (Figure 1b). Sutures were placed diagonally rather than horizontally for better approximation and muscle to muscle alignment. Skin was stitched in a similar fashion in a vertical mattress with proper skin to skin alignment (Figure 1c). There was no more than 1-2 mm misalignment during the muscle and skin approximation. Now remaining vaginal mucosa was sutured to restore hymenal ring (Figure 1d).

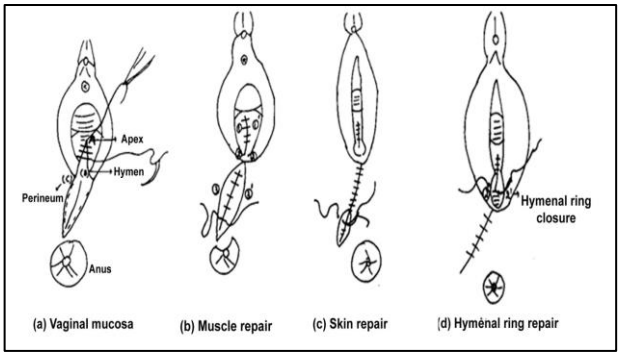

Figure 1: Novel episiotomy suturing technique.

Follow up

After episiotomy repair and subsequent discharge of the patient; patients were followed up at 6 weeks and then at 1 year and the two groups were compared for the following parameters- pain in episiotomy, pain during defecation, pain during intercourse, vaginal discharge, perineal wound infection, psychological satisfaction and cosmetically pleasing aesthetic outcome of episiotomy wound closure.

Statistical analysis

The data was compiled and analyzed using Microsoft excel (R) office 365, Graph Pad 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. Chi square test was used for the comparison of proportions (categorical variables). P value of <0.05 was considered significant.

RESULTS

The study was conducted at the department of obstetrics and gynecology of MLB Medical College, Jhansi for duration of 15 years spanning from January 2008 to December 2022. The enrolled patients were divided into two groups by simple random sampling method according to the episiotomy suturing technique used. Group A- females in which novel technique of episiotomy suturing was done and group B- females in which traditional interrupted episiotomy suturing was done. Initially sample size was 1200 in each group but due to loss to follow up, the sample size was reduced to 1000 in each group (study and control).

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 two groups novel technique and traditional technique the following outcome parameters were found in study.

Table 1: Pain in episiotomy (VAS based category).

Duration of follow-up	Scoring	Novel technique (n=1000) (%)	Traditional technique (n=1000) (%)	P value
6 weeks	No	800 (80)	600 (60)	0.00001
	Mild	150 (15)	300 (30)	
	Moderate	45 (4.5)	94 (9.4)	
	Severe	5 (0.5)	6 (0.6)	
1 year	No	950 (95)	900 (90)	0.00012
	Mild	45 (4.5)	90 (9)	
	Moderate	5 (0.5)	10 (1)	
	Severe	0	0	

Table 2: Pain in episiotomy during defaecation.

Duration of follow-up	Present/absent	Novel technique (n=1000) (%)	Traditional technique (n=1000) (%)	P value
6 weeks	Present	280 (28)	390 (39)	0.00001
	Absent	720 (72)	610 (61)	
1 year	Present	100 (10)	15 (15)	0.00072
	Absent	900 (90)	850 (85)	

Table 3a: Pain during intercourse after 6 weeks.

Duration of follow-up	Present/absent	Novel technique (n=300) (%)	Traditional technique (n=300) (%)	P value
6 weeks	Present	250 (83.3)	280 (93.3)	0.0001
	Absent	50 (16.6)	20 (6.6)	

Table 3b: Pain during intercourse after 1 year.

Duration of follow-up	Present/absent	Novel technique (n=1000) (%)	Traditional technique (n=1000) (%)	P value
1 year	Present	190 (19)	480 (48)	0.00001
	Absent	810 (81)	520 (52)	

P value was <0.05, hence the result is significant. At 6 weeks, 80% patients had no pain who had episiotomy repaired by novel technique while 60% who had episiotomy repaired by traditional technique and 5% patients had severe pain who had episiotomy repaired by novel technique while 6% who episiotomy repaired by traditional technique. At 1 year, 95% patients had no pain who had episiotomy repaired by novel technique while 90% who had episiotomy repaired by traditional technique and 0% patients had severe pain who had episiotomy repaired by novel technique while 0% who episiotomy repaired by traditional technique (Table 1).

P value was <0.05, hence the result is significant. At 6 weeks, 28% patients had pain during defaecation who had episiotomy repaired by novel technique while 39% who had episiotomy repaired by traditional technique and 72% patients had no pain during defaecation who had episiotomy repaired by novel technique while 61% who episiotomy repaired by traditional technique. At 1 year, 10% patients had pain during defaecation who had episiotomy repaired by novel technique while 15% who had episiotomy repaired by traditional technique and 90% patients had no pain during defaecation who had episiotomy repaired by novel technique while 85% who episiotomy repaired by traditional technique (Table 2).

Only 300 out of 1000 patients resumed sexual activity at 6 weeks. P value was <0.05, hence the result was significant. At 6 weeks 83.3% patients had pain during intercourse who had episiotomy repaired by novel technique while 93.3% who had episiotomy repaired by traditional technique and 16.6% patients had no pain during intercourse who had episiotomy repaired by novel technique while 6.6% who episiotomy repaired by traditional technique (Table 3a).

Table 4: Vaginal discharge at 6 weeks and 1-year follow-up.

Duration of follow up	Present/absent	Novel technique (n=1000) (%)	Traditional technique (n=1000) (%)	P value
6 weeks	Present	100 (10)	280 (28)	0.00001
	Absent	900 (90)	720 (72)	
1 year	Present	10 (1)	60 (6)	0.00001
	Absent	990 (99)	940 (94)	

Table 5: Episiotomy healing assessment at 6 weeks (according to Reeda score).

Scoring	Novel technique (n=1000) (%)	Traditional technique (n=1000) (%)	P value
Healed (0)	820 (82)	610 (61)	<0.00001
Moderately healed (1-5)	130 (13)	290 (29)	
Mildly healed (6-10)	47 (4.5)	94 (9.4)	
Not healed (11-15)	3 (0.3)	6 (0.6)	

Table 6: Psychological satisfaction at 1 year.

Scoring	Novel technique (n=1000) (%)	Traditional technique (n=1000) (%)	P value
Very satisfied	780 (78)	554 (55.4)	0.00001
Moderately satisfied and dissatisfied	218 (21.8)	435 (43.5)	
Very dissatisfied	2 (0.2)	11 (1.1)	

Table 7: Cosmetic perineal outcome.

Duration of follow up	Scoring	Novel technique (n=1000) (%)	Traditional technique (n=1000) (%)	P value
6 weeks	Very satisfied	530 (53)	450 (45)	0.00001
	Moderately satisfied and dissatisfied	390 (39)	380 (38)	
	Very dissatisfied	80 (8)	170 (17)	
1 year	Very satisfied	891 (89.1)	748 (74.8)	0.00001
	Moderately satisfied and dissatisfied	108 (10.8)	205 (20.5)	
	Very dissatisfied	1 (0.1)	47 (4.7)	

P value was <0.05, hence the result is significant. At 1 year, 19% patients had pain during intercourse who had episiotomy repaired by novel technique while 48% who had episiotomy repaired by traditional technique and 81% patients had no pain during intercourse who had episiotomy repaired by novel technique while 52% who episiotomy repaired by traditional technique (Table 3b).

P value was <0.05, hence the result is significant. At 6 weeks 10% patients had vaginal discharge who had episiotomy repaired by novel technique while 28% who had episiotomy repaired by traditional technique and 90% patients had no vaginal discharge who had episiotomy repaired by novel technique while 72% who episiotomy repaired by traditional technique. At 1 year 1% patients had vaginal discharge who had episiotomy repaired by novel technique while 6% who had episiotomy repaired by traditional technique and 99% patients had no vaginal discharge who had episiotomy repaired by novel technique while 94% who episiotomy repaired by traditional technique (Table 4).

P value was <0.05, hence the result is significant. At 6 weeks, 82% patients had healed episiotomy repaired by novel technique while 61% who had episiotomy repaired by traditional technique and 3% patients had not healed episiotomy repaired by novel technique while 6% who episiotomy repaired by traditional technique (Table 5).

P value was <0.05, hence the result is significant. At 1 year, 78% patients were very psychologically satisfied who had episiotomy repaired by novel technique while 55.4% who had episiotomy repaired by traditional technique and 21.8% patients were moderately psychologically satisfied and dissatisfied who had episiotomy repaired by novel technique while 43.5% who

episiotomy repaired by traditional technique, 2% patients were very psychologically dissatisfied who had episiotomy repaired by novel technique while 1.1% who had episiotomy repaired by traditional technique (Table 6).

P value was <0.05, hence the result is significant. At 6 weeks, 53% patients were very cosmetically satisfied who had episiotomy repaired by novel technique while 45% who had episiotomy repaired by traditional technique and 39% patients were moderately cosmetically satisfied and dissatisfied who had episiotomy repaired by novel technique while 38% who episiotomy repaired by traditional technique, 8% patients were very cosmetically dissatisfied who had episiotomy repaired by novel technique while 17% who had episiotomy repaired by traditional technique. At 1 year, 89.1% patients were very cosmetically satisfied who had episiotomy repaired by novel technique while 74.8% who had episiotomy repaired by traditional technique and 10.8% patients were moderately cosmetically satisfied and dissatisfied who had episiotomy repaired by novel technique, while 20.5% who episiotomy repaired by traditional technique, 1% patients were very cosmetically dissatisfied who had episiotomy repaired by novel technique while 4.7% who had episiotomy repaired by traditional technique (Table 7).

DISCUSSION

The study was conducted at the department of obstetrics and gynecology of MLB Medical College, Jhansi for duration of 15 years spanning from January 2008 to December 2022. The enrolled patients were divided into two groups by simple random sampling method according to the episiotomy suturing technique used. Group A- females in which novel technique of episiotomy suturing was done and group B- females in which traditional interrupted episiotomy suturing was done.

Concerning pain in episiotomy at 6 weeks and 1-year current study presented that pain in episiotomy line was significantly less than traditional technique (p value of <0.0001). The current study results agreed with Almeida et al Morano et al who reported more pain in traditional interrupted episiotomy repair.[10,11]

Concerning pain during defecation at 6 weeks and 1 year was lower in episiotomy repaired by novel technique than traditional technique (p value <0.00001).

Concerning pain during intercourse at 8 week and 1 year was lower in episiotomy repaired by novel technique than traditional technique (p value <0.00001). The result agreed with Aydin study which stated more pain during intercourse with traditional interrupted suturing.[12]

Concerning vaginal discharge at 6 and 1 year was lower in episiotomy repaired by novel technique than traditional technique (p value <0.00001). Concerning episiotomy healing assessment at 6 weeks and 1 year was lower in episiotomy repaired by novel technique than traditional technique (p value <0.00001). The result agreed with Khatri study.[13]

Psychological satisfaction at 1 year was more in episiotomy repaired by novel technique than traditional technique (P value <0.00001). Concerning cosmetic perineal outcome at 6 weeks and 1 year the current study showed that novel technique had cosmetically pleasing perineal outcome than traditional technique of episiotomy. The current study agreed with Fawzy study which showed term of aesthetic outcomes, continuous suturing can provide a smoother, more uniform wound closure, which may be considered aesthetically favorable than traditional interrupted episiotomy repair.[14]

CONCLUSION

The conclusion drawn from present study are- novel technique of episiotomy suturing has less postoperative complications like pain at episiotomy, pain during intercourse, pain during defecation, vaginal discharge and less edema. There is more psychological satisfaction and more cosmetically pleasing aesthetic outcome. Hence the authors recommend novel technique of episiotomy suturing for less postoperative complications, cosmetic pleasing aesthetic outcome and psychological satisfaction.

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