



2024

Section: Obstetrics and Gynecology

Comparison between Closure and Non-Closure Technique of the Skin during Repair of Episiotomy by Continuous Suturing

Samia Mohamad Eid

Professor of Obstetrics and Gynecology Damietta Faculty of medicine - Al-Azhar University

AbdelRahman Ali Emam

Assistant professor of Obstetrics and Gynecology Damietta Faculty of medicine - Al-Azhar University

Mariam Ali Hashem

Resident of Obstetrics and Gynecology Department, Al-Azhar University Hospital,

mariamhashm93@gmail.com

Follow this and additional works at: <https://aimj.researchcommons.org/journal>



Part of the [Medical Sciences Commons](#), [Obstetrics and Gynecology Commons](#), and the [Surgery Commons](#)

How to Cite This Article

Eid, Samia Mohamad; Emam, AbdelRahman Ali; and Hashem, Mariam Ali (2024) "Comparison between Closure and Non-Closure Technique of the Skin during Repair of Episiotomy by Continuous Suturing," *Al-Azhar International Medical Journal*: Vol. 5: Iss. 3, Article 15.

DOI: <https://doi.org/10.58675/2682-339X.2324>

This Original Article is brought to you for free and open access by Al-Azhar International Medical Journal. It has been accepted for inclusion in Al-Azhar International Medical Journal by an authorized editor of Al-Azhar International Medical Journal. For more information, please contact dryasserhelmy@gmail.com.

Comparison Between Closure and Nonclosure Technique of the Skin During Repair of Episiotomy by Continuous Suturing

Mariam Ali Hashem ^{b,*}, Abdel-Rahman Ali Emam ^a, Samia Mohamed Eid ^a

^a Department of Obstetrics and Gynecology, Faculty of Medicine, Al-Azhar University, Damietta, Egypt

^b Department of Obstetrics and Gynecology, Al-Azhar University Hospital, Damietta, Egypt

Abstract

Background: An episiotomy is a surgical incision made in the perineum to enlarge the birth canal and is one of the most frequently conducted obstetrical procedures.

Objective: Evaluation of using continuous suturing during the closure of the skin versus nonclosure methods throughout episiotomy healing.

Patients and methods: Our randomized comparative interventional study carried out within the Al-Azhar University hospital within Damietta's Obstetrics and Gynecology department; included 150 patients full term primigravida who underwent episiotomy repair by two different techniques; Suture less (group 1), and subcuticular (group 2) 75 patients in each.

Results: The group 2's repair time was considerably more than the group 1's. In group 1 no statistically significant difference either between all follow-up periods or between each two follow-up periods. In group 2, we found a significant difference between all follow-up periods; we found a significant difference between 6 h and 1 week, and between 6 h and 2 months. We reported only one (1.3%) case in group 1 at 1 week postoperative of wound dehiscence. The ugly scar was found to be positive in 6.7% of group 1, and 13.3% in group 2 with no significant difference. 81.3% in both groups had no pain with intercourse, 12% in group 1, and 16% in group 2 had pain with intercourse that does not prevent the completion, and 6.7% in group 1, and 2.7% in group 2 had pain with intercourse requiring discontinuance.

Conclusion: On-closure technique is associated with less time of repair, while both techniques have similar results during episiotomy repair.

Keywords: Closure and nonclosure skin technique, Continuous suturing, Episiotomy, Repair

1. Introduction

A surgical incision called an episiotomy is done in the perineum to widen the delivery canal, and it is one of the most common obstetric operations.¹

Maternal outcomes related to delivery and obstetrical qualities of care are difficult to quantify because of the scarcity of relevant indicators. Birth-related morbidity has the potential to have short- and long-term negative effects on a woman's physical, mental, and social health. Peritoneal pain can interfere with nursing, family time, and sex.²

Episiotomy is useful in a limited number of trials. A 2017 study of the Cochrane database found that compared to women who had regular episiotomies, considerably fewer women who had non-operative vaginal deliveries experienced severe perineal injuries after the establishment of a selective episiotomy strategy.^{3,4}

According to a 2019 paper by Sultan and colleagues, the WHO has not determined the function of episiotomy. Because of this, indications are still being kept under wraps and should be decided by the healthcare team on an individual basis. In cases

Accepted 16 November 2023.
Available online 1 July 2024

* Corresponding author at: Damietta Faculty of Medicine, Al-Azhar University, Egypt.
E-mail address: mariamhashm93@gmail.com (M.A. Hashem).

<https://doi.org/10.58675/2682-339X.2324>

2682-339X/© 2024 The author. Published by Al-Azhar University, Faculty of Medicine. This is an open access article under the CC BY-SA 4.0 license (<https://creativecommons.org/licenses/by-sa/4.0/>).

of shoulder dystocia, fetal distress, or when an operative vaginal birth is needed, doctors may recommend an episiotomy.^{3,4}

Approximation using the continuous suture technique for episiotomies is related with significantly less short-term perineal pain, higher patient satisfaction, less analgesics use, and substantially lower suture removal compared to the interrupted technique.⁵

The continuous technique is faster and more cost-effective than the interrupted technique. Braided synthetic stitches with a quick absorbed profile are preferable to monofilament sutures or synthetic alternatives with a longer absorbed pattern in terms of reducing perineal pain and promoting wound healing. Episiotomies often involve the use of polyglactin 910 (Vicryl Rapide), a continuous, synthetic, multifilament, fast absorbable suture.⁶

Perineal skin closure using continuous subcutaneous methods was related to reduced short-term discomfort than using interrupted transcutaneous sutures, according to a meta-analysis of four randomized controlled studies including 1864 primiparous and multiparous women.⁷

Many complications related to episiotomy are comparable to those associated with spontaneous perineal injuries. Consequently, during the decision-making process, one must ensure that the benefits of the procedure outweigh the dangers. Among the adverse effects of episiotomy are bleeding, protracted wound recovery, complications during subsequent vaginal deliveries, dyspareunia, and inappropriate wound scarring. Injury to the external anal sphincter muscle is the most significant complication of an episiotomy, which can result in incontinence and fistula formation.⁸

The present research compared the use of closure and non-closure methods to repair the skin throughout continuous stitching for episiotomy healing.

2. Patients and methods

2.1. Design

A randomized comparative interventional trial examined the use of continuous suturing to stitch up the episiotomy wound via no closure of the wound.

2.2. Setting

The research project took place at the Obstetrics and Gynecology department of the hospital affiliated with Al-Azhar University in Damietta, from May 2022 to April 2023.

2.3. Participants

This study includes 150 full-term primigravidas undergoing mediolateral episiotomy before normal vaginal delivery.

2.4. Inclusion criteria

Primipara women, VBAC, full term pregnancy, singleton pregnancy, and mediolateral episiotomy were done in selective rather than liberal use.

2.5. Exclusion criteria

Multipara women with previous episiotomy, primiparous refuse to be in the study, preterm labour, instrumental delivery, other techniques of episiotomy, third or fourth-degree perineal tear, factors influencing wound recovery, such as diabetes and chronic debilitating diseases, etc, use of epidural analgesia, risk factors for episiotomy extension or vaginal lacerations e.g. macrosomia, congenital fetal malformations as hydrocephalus and spina bifida.

2.6. Interventions

Special technique for episiotomy repair.

2.7. Outcomes

Better healing and patient satisfaction regarding pain and infection.

2.8. Plan of assessment

Each patient involved in the study will be subjected to the following:

Full history taking, clinical examination, and local examination for assessment of the degree of episiotomy and exclude any vaginal lacerations (First and second degree episiotomy).

Consent: after explanation to the patient about the procedure.

2.9. Procedures

Good preparation and hydration of patients. Review the general care principle and apply an antiseptic solution to the perineum. The perineum will be infiltrated with local anesthetic (5–10 ml of 1% lidocaine) through the insertion of the needle into the perineum, first from the center of the fourchette, then along the posterior vaginal wall, then to the perineal muscle, and finally along the skin edges bilaterally toward 8.0 O'clock and 5.0 O'clock.

Before administering the local anesthetic, the plunger of the hypodermic must be withdrawn to ensure that the needle has not entered a blood vessel. As the syringe is withdrawn, local anesthesia is injected. Wait until head crowning (once 3–4 cm in diameter of the fetal head is visible during a contraction), then perform episiotomy.

The incision is made in the perineum with a pair of scissors to the extent that is required. In this study, medio-lateral approach used which commences at fourchette but extends in a straight line at 8.0 O'clock to completely avoid the anus. Carefully examine for extensions and other tears.

Routine antibiotics were given in all cases.

2.10. Episiotomy repair

Patients were separated into two groups:

Group 1: 75 patients who underwent nonclosure technique (subcutaneous sutures of the skin) during repair of episiotomy by continuous suturing.

Technique: By a loose and continuous, nonlocking approach, the skin is re-approximated. The skin stitching was applied in the subcutaneous tissue via polyglactin 910 (vicryl) sutures No. 2/0, then it reversed its direction and dismissed with a final knotted placed within the vagina beyond the hymenal remnant.

Group 2: 75 patients who underwent closure technique (subcuticular sutures of the skin) during repair of episiotomy by continuous suturing.

Technique: it is initiated by inserting a needle transcutaneously through the margin of a laceration. The tip of the needle is placed horizontally into the top layer of the dermis with the opposing edge everted. Across both sides of the wound, this is performed. To finish the suture, a terminal knot is placed in the vagina beyond the hymenal remnants.

All patients were evaluated through: Primary indicators of result, pain after surgery was evaluated on a visual analog scale (VAS) (duration: 6 h).

Additional indicators of result: [Time taken in repair (minutes), Amount of suture material used. Post-operative pain 2 months after delivery (time frame 2 months) and superficial dyspareunia (time frame 2 months)].

The pain was assessed according to a visual analogue scale.⁹

VAS is usually a horizontal line 10 mm as: no pain (0), mild pain (1–3), moderate pain (4–6), severe pain (7–10).

The Marinoff dyspareunia scale¹⁰ is employed to evaluate superficial dyspareunia: Zero = no difficulty with sexual activity. 1 = painful sensation during sexual activity but not obstruction to

completion. 2 = painful intercourse that must be stopped or discontinued. 3 = painful sensation during sexual activity prevents any sexual activity.

2.11. Statistical data analysis

SPSS, version 26 (IBM, Chicago, Illinois, United States) was utilized for statistical analysis. Using the χ^2 test, categorical data were presented as numbers and percentages and compared. The Kolmogorov–Smirnov test was initially used to examine the normality of continuous data. As our continuous data were not parametric, we presented them as median and Interquartile range (IQR), and we used the Mann–Whitney *U* test to contrast both groups. Within follow-up, the comparison was done by the Friedmann test, and the comparison between each two follow-up periods was done by the Wilcoxon test.

2.12. Ethical approval

The details of the study technique were explained to the patients and their parents or guardians and informed written consent was obtained. In addition, approval by the ethical committee for research (IRB) in AL-Azhar University, Damietta Faculty of Medicine was obtained before initiating this study. Approval of the health care services managers in which the research was carried out.

3. Results

According to the intraoperative outcomes, we used a single suture material for all patients. In terms of repair time, it was significantly higher in group 2 than in group 1, which was 18 (17–20) minutes in group 2 and 17 (15–19) minutes in group 1 (*P* value = 0.003) (Table 1).

We compared the follow-up periods in each group regarding the VAS, and we found that in group 1 no statistically significant difference either between all follow-up periods or between each two follow-up periods. However, in group 2, we found a significant difference between all follow-up periods (*P* value = 0.003). Also, we found a significant difference between 6 h and 1 week (*P* value = 0.03), and between 6 h and 2 months (*P* value = 0.02) (Table 2).

Table 1. Intraoperative outcomes of the study participants.

Variables	Group 1 (<i>n</i> = 75)	Group 2 (<i>n</i> = 75)	<i>P</i> value ^a
Time of repair (minutes)	17 (15–19)	18 (17–20)	0.003
Number of suture material	1 (1–1)	1 (1–1)	1

All data represented as Median and Inter Quartile Range (IQR).

^a Mann–Whitney *U* test.

Table 2. Assessment of the postoperative pain over the follow-up periods.

Pain (VAS)	Group 1	P value ^b	Group 2	P value ^b	P value between the 2 groups ^c
6 h	0 (0–1)	P 1 = 0.81	0 (0–1)	P 1 = 0.03*	0.92
1 week	0	P 2 = 0.42	0	P 2 = 0.02*	0.34
2 month	0	P 3 = 0.61	0	P 3 = 1	0.64
P value ^a	0.11		0.003		

All data represented as Median and Inter Quartile Range (IQR).

P 1: Comparison between the VAS at 6 hours, and at 1 week. P 2: Comparison between VAS at 6 hours, and at 2 months. P 3: Comparison between VAS at 1 week, and at 2 months. *: Significant P value.

We bolded “6 hours” because it was our post-operative pain assessment in the hospital setting while “1 week” and “2 months” were assessed during follow up in the outpatient clinic and we consider “6 hours” as the most significant point of pain estimation. And we bolded “P value between the 2 groups” estimates because we consider the P value between the 2 groups the most important difference indicator.

^a Friedman test.

^b Wilcoxon signed ranks test.

^c Mann Whitney U test.

Table 3. Prevalence of infection in each study group over the follow-up periods.

Follow-up periods	Group 1 (n = 75) [n (%)]	Group 2 (n = 75) [n (%)]	P value ^a
1 week			
Positive	1 (1.3)	1 (1.3)	1
Negative	74 (98.7)	74 (98.7)	
2 months			
Positive	0	0	–
Negative	75 (100)	75 (100)	

Data describes as numbers and percentages.

^a Fisher's exact test.

Table 4. Pearson correlation analysis between the infection and the different variables in both groups.

Variables	Infection (1 week)			
	Group 1		Group 2	
	R	P value	r	P value
Age (years)	0.1	0.2	–0.1	0.2
Weight (Kg)	–0.2	0.06	–0.2	0.07
Height (cm)	–0.08	0.4	0.1	0.2
Gestational Age (weeks)	–0.04	0.7	–0.04	0.7
Time of repair (minutes)	–0.1	0.2	0.1	0.1

Table 5. Prevalence of Wound dehiscence and ugly scar in each study group over the follow-up periods.

Follow-up periods	Group 1 (n = 75) [n (%)]	Group 2 (n = 75) [n (%)]	P value
1 week (Wound dehiscence)			
Positive	1 (1.3)	0	0.5 ^a
Negative	74 (98.7)	75 (100)	
2 months (ugly scar)			
Positive	5 (6.7)	10 (13.3)	0.17 ^b
Negative	70 (93.3)	65 (86.7)	

Data describes as numbers and percentages.

^a Fisher's exact test.

^b Chi-square test.

Table 6. Comparison of dyspareunia according to Marinoff scales between the two groups.

Variables	Group 1 (n = 75) [n (%)]	Group 2 (n = 75) [n (%)]	P value
No pain with intercourse	61 (81.3)	61 (81.3)	
Pain with intercourse that does not prevent the completion	9 (12)	12 (16)	
Pain with intercourse requiring interruption or discontinuance	5 (6.7)	2 (2.7)	0.4 ^a
Pain with intercourse preventing any intercourse	0	0	

Data describes as numbers and percentages.

^a Chi-square test.

As regards the postoperative infection, the prevalence of infection was 1.3% in each group at one week postoperative with no statistically significant difference between the two groups (P value = 1). We did not report any cases of infection at two months postoperative (Table 3).

Pearson correlation analysis between the prevalence of infection and the different study variables was done, and we found no statistically significant association between the infection and the age, weight, Height, gestational age, and time of repair in the two groups (Table 4).

In terms of wound dehiscence, we reported only one (1.3%) case in group 1 at 1 week postoperative. However, the ugly scar was found to be positive in 6.7% of group 1, and 13.3% in group 2 with no significant difference between the two groups (P value = 0.1) (Table 5).

As regards the dyspareunia, we measured it by the Marinoff scales, and we found that 81.3% in both groups had no pain with intercourse, 12% in group 1, and 16% in group 2 had pain with intercourse that does not prevent the completion, and 6.7% in group 1, and 2.7% in group 2 had pain with intercourse requiring interruption or discontinuance. The difference between the two groups regarding the prevalence of dyspareunia was not significant statistically (P value = 0.4) (Table 6).

4. Discussion

According to the intraoperative outcomes, we used a single suture material for all patients. In terms of repair time, it was significantly higher in

group 2 than in group 1, which was 18 (17–20) min in group 2 and 17 (15–19) min in group 1 (P value = 0.03).

Kerrigan and Homa¹¹ found that the nonsuture skin closure method (Steri-Strips) permits faster wound closure than suture.

According to Alalfy *et al.*¹² they aimed to evaluate postpartum ecchymosis, redness, and edema in relation to the Subcuticular technique of episiotomy closure. They found no statistically significant relationship among the number of sutures and the occurrence of postoperative redness, ecchymosis, or edema ($P = 0.241$).

According to Faal Siahkal *et al.*¹³ who aimed to evaluate the effectiveness of the continuous non-locking approach in repairing an episiotomy or second-degree perineal tear versus the interrupted suturing method. Perineal repair with continuous suturing was reported to be completed in less time than utilizing an interrupted suture. Compared to the interrupted suture method, the researchers discovered that the continuous suture method used significantly less material.

Additional research has shown that continuous suturing uses less time and material than the interrupted suturing method.^{14,15} This is because with interrupted suturing, each stitch must be tied separately, requiring more threads and more time to complete the repair.¹⁶

Soliman *et al.*¹⁷ reported that wound suturing took the continuous groups less time (in minutes) and required less suture material. The average length utilizing the continuous method was 83.20 ± 8.723 (cm).

According to Kokanali *et al.*¹⁸ who aimed to assess episiotomy suture materials and healing methods. Random allocation was used to divide 160 women undergoing a vertex birth with a right-mediolateral episiotomy into four groups. The continuous method involved the continual suturing of the vaginal mucosa, perineal muscles, and skin in the treatment groups that had this procedure. The vaginal mucosa was closed using continuous sutures in the interrupted method groups, whereas the muscle layers and skin were closed using interrupted sutures. The monofilament synthetic absorbed suture material is polyglycolide-co-caprolactone, while the multifilament synthetic absorbed suture material is polyglactin 910-Rapide. They found that the repair duration and amount of suture material required decreased while using the continuous approach.

According to Perveen and Shabbir¹⁹ they aimed evaluation of perineal repair with chromic catgut vs. polyglactin 910 suture and continuous vs.

interrupted suturing. This research comprised 200 women who each gave birth to a single baby and had either an episiotomy or a perineal tear of some degree. Group 1 received continuous repair with chromic catgut nos. 0 and 00; group 2 received continuous repair with polyglactin 910 nos. 0 and 00; group 3 received interrupted repair with chromic catgut; and group 4 received interrupted repair with polyglactin 910. They found that the repair duration and amount of suture material required decreased while using the continuous approach.

According to Lopamudra *et al.*²⁰ who aimed to investigate the rates of short-term and long-term maternal morbidity in women who had an episiotomy or a second-degree perineal tear repaired following vaginal delivery using continuous or interrupted suturing.

The 211 women were divided into two groups: one had their vaginal mucosa restored with continuous non-locking sutures, while the other had their perineal muscles and skin fixed using interrupted transcutaneous stitches. Both groups utilized the same suture material (catgut provided by the government). They demonstrated that less suture material was utilized when the episiotomy and perineal rip were repaired using the continuous suturing approach.

Valenzuela *et al.*²¹ reported their findings on 445 women who had undergone episiotomies for vaginal births; among those women, a subset had their wounds treated with continuous sutures; this subset required much less operating time and suture material than the control group.

It has been shown that one packet of sutures may be used for the continuous approach, but two or three packets are required for the interrupted procedures. This is crucial knowledge, as a global policy shift toward continuous suturing would significantly cut down on the cost of suture materials used in births throughout the world.⁶

In this study, we compared the follow-up periods in each group regarding the VAS, and we found that in group 1 no statistically significant difference either between all follow-up periods or between each 2 follow-up periods. However, in group 2, we found a significant difference between all follow-up periods (P value = 0.003), Also, we found a significant difference between 6 h and 1 week (P value = 0.03), and between 6 h and 2 months (P value = 0.02).

In contrast, Heeba *et al.*²² reported that Participants in the steri_strips group reported significantly less discomfort after surgery (3.72 ± 1.28 vs. 4.78 ± 1.67) and were able to walk and be discharged

from the hospital more quickly than those in the subcuticular suture group ($P = < 0.001$).

In addition, Katwala *et al.*²³ observed that the postoperative pain score was significantly higher in the suture group (6.7 ± 0.88) than in the Adhesive Tape group (6.13 ± 0.77) ($P = 0.0002$).

According to the study of Howida *et al.*²⁴ which Continuous knotless perineal repair was associated with less perineal pain at 48 h, 6–10 days, less need for pain medication, and lower VAS scores than interrupted perineal repair.

Gordon *et al.*²⁵ discovered that after three months postpartum, women whose perineal skin was left unsutured experienced less perineal discomfort along with fewer interventions on their repairs.

A randomized trial by Mota *et al.*²⁶ aimed to evaluate the effectiveness of subcuticular suturing against adhesive glue for perineal skin healing following episiotomy in terms of pain and wound complications. One hundred women who had a mediolateral episiotomy during a vaginal birth were included. Both skin adhesive ($n = 53$) and subcuticular suture ($n = 47$) were used to close the perineal skin. After a mediolateral episiotomy, the researchers found no difference in discomfort among perineal skin closure with suture and surgical adhesive.

By Kettle *et al.*⁶'s meta-analysis, continuous perineal closure methods (skin alone or with all layers) resulted in minimized pain during the first few days after delivery, reduced analgesic usage, plus fewer suture removal.

The studies done by Dash *et al.*²⁷ and Nagure *et al.*²⁸ reported that continuous suturing was related to a smaller decrease in perineal discomfort across all layers. Aslam *et al.*²⁹ aimed investigate the frequency and intensity (mild/severe) of pain experienced after interrupted versus continuous episiotomy or perineal tear healing. The authors observed that there was no statistically significant difference in the incidence of pain complications or the degree of pain between the two groups at either the 24 h or 10-day mark.

As regards the postoperative infection, the prevalence of infection was 1.3% in each group at one week postoperative with no statistically significant difference between the two groups (P value = 1). We didn't report any cases of infection at 2 months postoperative. Pearson correlation analysis between the prevalence of infection and the different study variables was done, and found that no statistically significant association between the infection and the age, weight, height, gestational age, and time of repair in the two groups.

In terms of wound dehiscence, we reported only 1 (1.3%) case in group 1 at 1 week postoperative with no significant difference between the two groups (P value = 0.1).

During their meta-analysis of 10 randomized research studies including 3696 women, Pergialiotis *et al.*³⁰ demonstrated that the subcutaneous tissue sealing approach used through CS leads to fewer wound issues.

The occurrence of postoperative surgical site infections took place in 11 participants in the steri-strips category versus three people in the subcuticular category, as determined by Heeba *et al.*,²⁴ whom found that this happened with $P = 0.021$, considered of statistical significance. 5 of the participants in the steri strips group and 13 people in the subcuticular category experienced postoperative seroma formation on day 14; $P = 0.037$ has been determined to prove statistically significant.

As reported by Eming *et al.*³¹ infections of the wound following surgery took place in one individual who received sutures and 1 participant treated with adhesive tape, with $P = 1.000$, which is not of statistical significance.

Furthermore, Katwala *et al.*²³ reported that postoperative wound infections took place in four participants in the sutures category and three individuals in the adhesive tape group of people, with $P = 0.705\%$, meaning that it was likewise non significantly different.

Howida *et al.*'s research²⁴ demonstrated a relationship between the usage of a continuous knotless procedure for perineal repairs and a shorter stitching duration.

As reported by Mohamed *et al.*³² the continuous groups as well as lateral rather than mediolateral episiotomy were associated with lower rates of infections of the wound and dehiscence.

Kathrine *et al.*³³ did not find a correlation between technique and wound infection ($P = 0.73$), nor was there a correlation between technique and wound infection ($P = 0.37$). In clinical trials comparing lateral and mediolateral episiotomy, Sagi *et al.*³⁴ discovered no significant distinctions in perineal outcomes (wound infection and dehiscence).

The current study revealed that the ugly scar was found to be positive in 6.7% of group 1, and 13.3% in group 2 with no significant difference between the two groups (P value = 0.1).

Katwala *et al.*²³ showed that three (6%) participants in the Suture group and four (8%) patients in the Adhesive Tape group exhibited an excellent scar ($P = 0.705$) The difference among the two groups is not statistically significant 30 (60%) patients in the

Suture group and 37 (74%) participants in the Adhesive Tape group exhibited a satisfactory scar ($P = 0.392$). The difference among the two groups is not statistically significant. The difference between the two groups is not statistically significant ($P = 0.116$): 17 (34%) patients in the Suture group and 9 (18%) participants in the Adhesive Tape group had a light scar. Neither group had a poor scar during the study period.

Sutures that necessitate multiple needle punctures, strangulation of the wound margins, and the formation of a tight knot across the surgical wound. Increased inflammation is well-known to increase scar formation. However, statistical analysis revealed that the difference in scar width was not statistically significant.³⁵

As regards the superficial dyspareunia, we measured it by the Marinoff scale, and we found that 82.6% in group 1, and 80% in group 2 had no pain with intercourse, 13.3% in group 1, and 14.6% in group 2 had pain with intercourse that does not prevent the completion, and 4% in group 1, and 5.3% in group 2 had pain with intercourse requiring interruption or discontinuance. The difference between the two groups regarding the prevalence of dyspareunia was not significant statistically (P value = 0.4).

According to Detlefsen *et al.*³⁶ trials, the continuous suturing groups reported statistically significant reduced rates of dyspareunia.

In accordance with Kathrine *et al.*,³³ there was no relationship between different episiotomy procedures and the restart of sexual activity ($P = 0.15$), and there was no apparent distinction between short and extended episiotomies and the reinstatement of coitus ($P = 0.40$). Comparably there was no correlation between the restart of coital activity with the middle, the lateral direction, or unclassifiable incisions site groupings ($P = 0.14$).

Gordon *et al.*²⁵ found at 3 months postpartum, women whose perineal skin was not sutured experienced less dyspareunia than women whose perineal skin was sutured.

Kokanali *et al.*¹⁸ reported that the disparities in sexual discomfort six weeks after childbirth were not statistically significant. Furthermore, using the continuous knotless method, Morano *et al.*³⁷ found no difference in superficial dyspareunia at 3 months.

The continuous stitching method for episiotomy closure and the second stage of perineal laceration have been shown to be linked with decreased dyspareunia via Lopamudra *et al.*²⁰

Kettle *et al.*⁶ reported no proof of significant variance among groups for dyspareunia at 3 or 6–12 months following their systematic evaluations

extracted from the Cochran databases. Due to the occurrence of complications and the patients' disregard for completing their prescribed medication and exercises.

According to Mohamed *et al.*³² those in the continuous groups had a substantially reduced rate with dyspareunia 3 months following birth. Due to the limited number of cases (only two), there was no distinction among the continuous and interrupted groups, as well as the mediolateral and lateral subgroups.

4.1. Conclusion

Non-closure technique by continuous suturing is associated with less time for repair, while both techniques have similar results during repair of episiotomy. Furthermore, compared to existing techniques used for episiotomy repair, the recently developed subcutaneous sutures approach may be an improvement or potentially a better choice, because of the many benefits they offer, including quick application, low cost, lack of discomfort, enhanced aesthetics, and reduced risk of infection.

Conflicts of interest

There are no conflicts of interest.

References

- Moya-Jiménez LC, Sánchez-Ferrer ML, Adoamnei E, Mendiola J. New approach to the evaluation of perineal measurements to predict the likelihood of the need for an episiotomy. *Int Urogynecol J*. 2019;30:815–821.
- LaCross A, Groff M, Smaldone A. Obstetric anal sphincter injury and anal incontinence following vaginal birth: a systematic review and meta-analysis. *J Midwifery Wom Health*. 2015;60:37–47.
- Sultan AH, Thakar R, Ismail KM, Kalis V, Laine K. The role of mediolateral episiotomy during operative vaginal delivery. *Eur J Obstet Gynecol Reprod Biol*. 2019;240:192–196.
- Jiang H, Qian X, Carroli G, Garner P. Selective versus routine use of episiotomy for vaginal birth. *Cochrane Database Syst Rev*. 2017;2:CD000081.
- Kebaili S, Trigui K, Louati D, Smawi M, Ben Hlima S. Continuous versus interrupted techniques for repair of mediolateral episiotomy: a prospective 6 months follow-up study. *Androl Gynecol Current Res*; 2013:1–4.
- Kettle C, Dowsnell T, Ismail KM. Continuous and interrupted suturing techniques for repair of episiotomy or second-degree tears. *Cochrane Database Syst Rev*. 2012;11:CD000947.
- Kettle C, Hills RK, Ismail KMK. Continuous versus interrupted sutures for repair of episiotomy or second degree tears. *Cochrane Database Syst Rev*. 2007;4:6.
- Barjon K, Mahdy H. Episiotomy - StatPearls - NCBI bookshelf [Internet] [cited 2022 Mar 1]. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK546675/>; 2021.
- Haefeli M, Elfering A. Pain assessment. *Eur Spine J*. 2006;15:17–24.
- Hurt K, Zahalka F, Halaska M, Rakovicova I, Rakovic J. Extracorporeal shock wave therapy for treating dyspareunia:

- a prospective, randomized, double-blind, placebo-controlled study. *Ann Phys Rehabil Med [Internet]*. 2021;64:101545.
11. Kerrigan CL, Homa K. Evaluation of a new wound closure device for linear surgical incisions: 3M Steri-Strip S surgical skin closure versus subcuticular closure. *Plast Reconstr Surg*. 2010;125:186, 186.
 12. Alalfy M, Hamed A, Hasan A, et al. Subcuticular skin suturing in comparison to interrupted suturing on postpartum inflammation of episiotomy. *ObstetGynecolInt J*. 2018;9:435–438.
 13. FaalSiahkal S, Abedi P, Irvani M, Esfandiarinezhad P, Dastoorpoor M. Continuous non-locking vs. interrupted suturing techniques for the repair of episiotomy or second-degree perineal tears: a single-blind randomized controlled trial. *Front Surg*. 2023;10:1114477.
 14. AydönBesen M, Rathfisch G. The effect of suture techniques used in repair of episiotomy and perineal tear on perineal pain and dyspareunia. *Health Care Women Int*. 2020;41:22–37.
 15. Qurat-Ul-Ain SA, Gul HM. Comparison of the efficacy (in terms of no pain) of continuous and interrupted suturing in episiotomy repair. *Pak J Med Health Sci*. 2022;16:710.
 16. Loripoor M, AllahbakhshiNasab P, Najar M. Episiotomy repair in continuous versus interrupted suturing technique in primiparous women: a randomized clinical trial. *Iran J Obstet Gynecol Infertil*. 2021;24:16–23.
 17. Soliman LE, Ghareeb MA, Abdelhameid AA, Lashin ME. Interrupted versus continuous suturing of episiotomy: a comparative study. *ZUMJ*. 2020;26:287–296.
 18. Kokanali D, Ugur M, KuntayKokanali M, Karayalcõn R, Tonguc E. Continuous versus interrupted episiotomy repair with monofilament or multifilament absorbed suture materials: a randomised controlled trial. *Arch Gynecol Obstet*. 2011; 284:275–280.
 19. Perveen F, Shabbir T. Perineal repair: comparison of suture materials and suturing techniques. *J Surg Pakistan*. 2009;14: 23–28.
 20. Lopamudra J, Sagi-Dain L, Rabia B, Orna C, Kreinin-Bleicher I. A comparative study of continuous versus interrupted suturing for repair of episiotomy or second degree perineal tear. International Journal of Reproduction, Contraception, Obstetrics and Gynecology. Jena L et al. *Int J Reprod Contracept Obstet Gynecol*. 2015;4:52–55.
 21. Valenzuela P, Saiz Puente MS, Valero JL, Azorín R, Ortega R. Continuous versus interrupted sutures for repair of episiotomy or second degree perineal tears: a randomized controlled trial. *JOG*. 2009;116:436–441.
 22. Heeba I, Anbar A, Al Sawy I. Non-suture skin closure technique for cesarean section as an alternative to usual methods. *AIMJ*. 2022;3:94–97.
 23. Katwala PK, Chauhan S, Bhedi A, Choksi DB. A comparative study between adhesive tape (steri-strip) versus suture for closure of surgical site incisions. *Ann Trop Med Publ Health*. 2020;23:231–545.
 24. Howida E, Shamel M, Ahmed M. Continuous versus interrupted sutures technique for repair of episiotomy or second degree perineal tears: a randomized trial. Faculty of Medicine - department of Gynecology and Obstetrics. Cairo University; 2013.
 25. Gordon B, MackrodtC Fern E, Truesdale A, Ayers S. The Ipswich Childbirth Study: 1. Arandomised evaluation of two stage postpartum perineal repair leaving the skin unsutured. *Br J Obstet Gynaecol*. 1998;105:435–440.
 26. Mota R, Costa F, Amaral A, Oliveira F, Santos CC. Skin adhesive versus subcuticular suture for perineal skin repair after episiotomy—a randomized controlled trial. *Acta Obstet Gynecol Scand*. 2009;88:660–666.
 27. Dash S, Sekhara S, Nanda C. Continuous versus interrupted sutures for episiotomy wound and perineal tear repair. *Scholars J Appl Med Sci*. 2013;1:710–713.
 28. Gulab NA, Chacko V, Umashankar KM, Saleem MDM. Continuous vs interrupted sutures for the repair of episiotomy: a comparative study. *IJBAMR*. 2013;2:1131–1137.
 29. Aslam R, Khan SA, Amir ZU, Amir F. Interrupted versus continuous sutures for repair of episiotomy or 2n degree perineal tears. *J Ayub Med Coll Abbottabad*. 2015;27: 680–683.
 30. Pergialiotis V, Prodromidou A, Perrea DN, Doumouchtsis SK. The impact of subcutaneous tissue suturing at caesarean section on wound complications: a metaanalysis. *BJOG*. 2017; 124:1018–1025.
 31. Eming SA, Krieg T, Davidson JM. Inflammation in wound repair: molecular and cellular mechanisms. *J Invest Dermatol*. 2007;127:514–525.
 32. Mohamed AA, Seada MR, Borg TF, Samy MM. Continuous versus interrupted suturing in repair of lateral and medio-lateral episiotomy: a randomized controlled trial. *EJHM*. 2018; 71:2667–2680.
 33. Kathrine F, Anne C, Katariina L. Effect of different episiotomy techniques on perineal pain and sexual activity 3 months after delivery. *Int Urogynecol J*. 2014;25:1629–1637.
 34. Sagi-Dain L, Sagi S. The correct episiotomy: does it exist? A cross sectional survey of four public Israeli hospitals and review of the literature. *Int Urogynecol J*. 2015;26:1213–1219.
 35. Wilgus TA. Immune cells in the healing skin wound: influential players at each stage of repair. *Pharmacol Res*. 2008;58: 112–116.
 36. Detlefsen GU, Vinther S, Larsen P, Schroeder E. Intradermal suturing of episiotomy wounds compared with interrupted sutures. *Ugeskr Laeger*. 2000;142:3117–3120.
 37. Morano S, Mwastrangelo E, Pastorino D. A randomized comparison of suturing techniques for episiotomy and laceration repair after spontaneous vaginal birth. *J Minim Invasive Gynecol*. 2006;13:457–462.