

IMPACT OF INTERRUPTED VERSUS CONTINUOUS SUTURING IN EPISIOTOMY REPAIR AFTER VAGINAL BIRTH IN PRIMIGRAVIDAS

By

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ABSTRACT

Background: Short and long-term maternal morbidity associated with perineal repair can lead to major physical, psychological and social problems, affecting the woman's ability to care for her new baby and other members of the family. complications depend on the severity of perineal trauma and on the effectiveness of treatment. The type of suturing material, the skill of the operator and the technique of repair are the three main factors that influence the outcome of perineal repair.

Objective: To compare the impact of interrupted versus continuous suturing in episiotomy repair after vaginal birth in primigravidas.

Patients and Methods: A randomized controlled trial was performed at EL-Minia general hospital and AL-Hussin university hospital in Obstetric unit the study included 160 healthy women with viable normal singleton Pregnancy achieving normal vaginal delivery at or beyond 37 gestation from April 2019 till December 2019 women were randomized to repair either interrupted or continuous suturing after episiotomy done at the crowning in the second stage of labor.

Results: In the present study, the mean participant's age in continuous group was 25.1±5.03 and in interrupted group was 24.2±4.68. As regard parity, all patients were primigravidae. None of these groups revealed any statistically significant differences indicating that the two groups were well matched. There was no statistically significant difference could be detected between continuous and interrupted groups as regard participant's age, wound dehiscence and infection, hematoma formation and amount of blood loss during the repair measured by number of soaked gauze towels. The results showed that there was highly statistically significant difference could be detected between continuous and interrupted groups as regard number of units of sutures material that it was higher in interrupted group compared to continuous group. The results showed that there was no statistically significant difference could be detected between continuous and interrupted groups as regard perineal pain at 48 hours 10 days 42days measured by VAS.

Conclusion: The use of continuous knotless technique for perineal repair is associated with less number of units of sutures material used.

Keywords: Interrupted, Continuous Suturing, Episiotomy Repair, After Vaginal Birth, Primigravidas.

INTRODUCTION

Episiotomies are known to provide the following benefits; speed up the the birth,

prevent vaginal tears. Protect against incontinence, protect against pelvic floor relaxation and heals easier than tears (Arulkumaran, 2010).

In a strict sense, episiotomy is incision of the pudenda. The incision may be made in the midline, creating a median or midline episiotomy, or it may begin in the midline but be directed laterally and downward away from the rectum, termed a medio lateral episiotomy; or start as median one then curve to take a J-shaped episiotomy (*Cunningham et al., 2015*).

Perineal trauma is conventionally repaired in three layers. First, a continuous locking stitch is inserted to close the vaginal trauma, commencing above the apex of the wound and finishing at the level of the fourchette with a loop knot. A traditional locking stitch is used to repair the vaginal trauma, as a continuous running stitch may cause shortening of the vagina if it is pulled too tight, but no controlled studies have been carried out to investigate this theory. Next, the deep and superficial perineal muscles are re-approximated with three or four interrupted sutures, or sometimes a continuous running stitch is used. Finally, the skin is closed using continuous subcutaneous or interrupted sutures (*Sultan et al., 2017*).

Obstetricians increasingly face women who wish to have a caesarean section due to fear of genital tract injuries or following previous childbirth-related trauma. Complications depend on the severity of perineal trauma and on the effectiveness of treatment. The type of suturing material, the skill of the operator and the technique of repair are the 3 main factors that influence the outcome of perineal repair. Surgical repair of lacerations in the genital area is performed by obstetricians according to extent of trauma (*Williams et al., 2011*).

Rapidly absorbed synthetic materials are reported to be superior to monofilament sutures and other synthetic products with slower absorption when perineal pain and wound healing are evaluated (*Kettle et al., 2010*).

If the episiotomy is performed unnecessarily early bleeding from the episiotomy may be considerable during the interval between incision and delivery. If it is performed too late lacerations will not be prevented. It is common practice to perform episiotomy when the head is visible during a contraction to a diameter of 3 to 4 cm. The perineum is cut about 3-4 cm in the medio lateral direction, cut 2-3 cm up the middle of the posterior vagina (for medio lateral episiotomy), control the baby's head and shoulders as they deliver, ensuring that the shoulders have rotated to the midline to prevent an extension of the episiotomy, carefully examine for extensions and other tears and repair (*Cunningham et al., 2015*).

The aim of this study was to compare the impact of interrupted versus continuous suturing in episiotomy repair after vaginal birth in primi gravidas.

PATIENTS AND METHODS

A randomized controlled trial was performed at EL-Minia general hospital and AL-Hussin university hospital in Obstetric unit the study included 160 healthy women with viable normal singleton Pregnancy achieving normal vaginal delivery at or beyond 37 gestation from April 2019 till December 2019 women were randomized to repair either interrupted or continuous suturing after episiotomy done at the crowning in the second stage of labor.

Those women were allocated into 2 equal groups. Group A: was repaired by interrupted suturing technique and included 80 pregnant women, and Group B: was repaired by continuous suturing technique and included 80 pregnant women.

Inclusion criteria:

1. Age 21 -35 year.
2. Primigravidas.
3. Singleton pregnancy.
4. Term pregnancy with vertex presentation.
5. Without instrumentation.
6. An episiotomy involving the skin & the muscle but not the anal sphincter or rectum.

Exclusion criteria:

1. Cases like severe anemia, diabetes mellitus or patient on corticosteroid or immune suppressants that can affect wound healing.
2. Epidural labor analgesia which affects post-partum pain.
3. Post-partum hemorrhage (atonic and traumatic).
4. Any other vaginal tear.

Full history taking from the patient:

1. History taking: Full history was taken from the women including:

- **Personal history:** name, age, parity, address, occupation, telephone number, special habits as smoking and husband name and occupation.
- **Complaint:** as labor pain, gush of water per vagina.

- **History of the present pregnancy date of last menstrual period** (to calculate the gestational age and expected date of delivery), dyspareunia, urinary incontinence, investigations done and drugs received.

- **Obstetric history:** history of previous pregnancies, pregnancy outcome, abortion, ectopic pregnancy.

- **Past history:** medical diseases as hypertension or diabetes mellitus, history of pelvic floor surgery.

- **Family history:** of medical diseases as hypertension or diabetes mellitus.

2. **General examination:** This included vital data signs blood pressure, pulse, temperature, height, weight and body mass index.

3. Abdominal examination:

- Abdominal palpation (Leopold Maneuvers) including the fundal level, fundal grip, pelvic grip, umbilical grip to assess the fetal lie, presentation and position. Assessment of the head engagement, head above brim, expected fetal weight, monitoring of uterine contraction.

- Auscultation of fetal heart rate.

4. Local pelvic examination:

- Vaginal examination was performed to assess cervical effacement/length (estimate length in centimeters), dilatation (measured dilatation in centimeter), cervical position (stated as either anterior, posterior or midline), consistency (firm, medium, soft), membranes (intact or ruptured), liquor (clear, blood stained. meconium staining), presentation (stated as cephalic, breech, cord,...), position

(record LOA, ROP, ...), caput, molding. Station (this is measured in centimeter above (-) or below (+) the ischial spines, example -five, -four, -three, -two, -one, zero (at spines). + one, + two, + three, + four, + five).

- All the data were documented in a partograph to evaluate the progression of labor all through the first stage of labor, including also, the number of oxytocin units given by intra venous infusion.

5. Investigations:

- Routine laboratory investigations: e.g. complete blood count (CBC) and Rh type.
- Abdominal ultrasound for some cases.

Statistical analysis:

The collected data were coded, processed and analyzed using the SPSS (Statistical Package for Social Sciences) version 22 for Windows® (IBM SPSS Inc, Chicago, IL, USA). Data were tested for normal distribution using the Shapiro Walk test. Qualitative data were represented as frequencies and relative percentages. Chi square test (χ^2) to calculate difference between two or more groups of qualitative variables. Quantitative data were expressed as mean \pm SD (Standard deviation). Independent samples t-test was used to compare between two independent groups of normally distributed variables (parametric data). P value < 0.05 was considered significant.

RESULTS

The age of patient in each group, in continuous group the mean age was 25.1 ± 5.03 , while in interrupted group the mean age was 24.2 ± 4.68 years. was found that

there was no significant difference between the two studied group regarding age (**Table 1**).

Table (1): Comparison between the two studied groups regarding age of the patients

Age (years)	Continuous		Interrupted		P-VALUE
	No.	%	No.	%	
≤ 25	47	58.75%	51	63.75%	842.0
> 25	00	41.25%	29	36.25%	
Total	80		08		
Mean	25.1		24.2		
\pmS.D	5.03		4.68		

RH of patient in each group, it was found that there was no significant difference between the two studies group regarding RH. The HCT of patient in each group, in Continuous group the mean HCT was 34.74 ± 2.38 , while in interrupted group the mean HCT was 34.4 ± 2.03 it

was found that there was no significant difference between the two studied group regarding HCT. The Hb of patient in each group, in continuous group the mean Hb was 11.38 ± 0.79 , while in interrupted group the mean Hb was 11.41 ± 0.74 it was found that there was no significant

difference between the two studied group regarding Hb. There was no significant

difference between two studies regarding hematoma formation (**Table 2**).

Table (2): Comparison between the two studied groups regarding the RH, HCT, Hb level and hematoma

		Type of suture		P value
		Continuous	Interrupted	
		N=80	N=80	
RH	-Ve	28(35%)	31(38.8%)	0.623
	+Ve	52(65%)	49(61.2%)	
HCT (%)	Range	(30.8-40)	(31.1-39.2)	0.332
	Mean±SD	34.74±2.38	34.4±2.03	
Hb (g/dl)	Range	(10-13.2)	(10-13)	0.805
	Mean±SD	11.38±0.79	11.41±0.74	
Hematoma	No	76(95%)	69(86.3%)	0.058
	Yes	4(5%)	11(13.8%)	

Chi square test for qualitative data between the two groups

Number of units of sutures material used in each group ,in continuous group Mean ± SD 1.01±0.11,while in interrupted group the Mean ± SD1.98±0.39 it was found that there was high significant difference between the two studied group regarding number of suture material used.

Number of soaked towels in continuous group the Mean ±SD 1.83±0.81While in interrupted group , Mean ±SD2.25±0.85 it was found that there was no significant difference between the two studied groups regarding number of soaked towels (p>0.05) (**Table 3**).

Table (3): Number of units of sutures material used and number of soaked towels in each group

		Type of suture		P value
		Continuous	Interrupted	
		N=80	N=80	
Number of sutures material used	Range	(1-2)	(1-3)	<0.001
	Mean ± SD	1.01±0.11	1.98±0.39	
Number of soaked towel	Range	(1-4)	(1-4)	0.002
	Mean±SD	1.83±0.81	2.25±0.85	

Independent samples t test for quantitative data between the two groups

Comparison between two studied regarding wound dehiscence it was found there was no significant differences between two studied regarding wound dehiscence. Comparison between two studied regarding infection .it was found there was no significant differences

between two studied regarding infection after delivery. Comparison between two studied regarding dyskesia it was found there was no significant differences between two studied regarding dyskesia after delivery (**Table 4**).

Table (4): Wound dehiscence, Infection, Dyskesia in each group

			Type of suture		P value
			Continuous	Interrupted	
			N=80	N=80	
Wound dehiscence	After 10 days	No	73(91.3%)	69(86.3%)	0.317
		Yes	7(8.8%)	11(13.8%)	
	After 42 days	No	76(95%)	74(92.5%)	0.514
		Yes	4(5%)	6(7.5%)	
Infection	After 10 days	No	74(92.5%)	72(90%)	0.576
		Yes	6(7.5%)	8(10%)	
	After 42 days	No	78(97.5%)	78(97.5%)	1
		Yes	2(2.5%)	2(2.5%)	
Dyskesia	After 10 days	No	76(95%)	70(87.5%)	0.093
		Yes	4(5%)	10(12.5%)	
	After 42 days	No	79(98.7%)	77(96.2%)	0.311
		Yes	1(1.3%)	3(3.8%)	

Chi square test for qualitative data between the two groups

Perineal pain in tow group during 24h, 10days and 42 days there was no significant difference between two groups.

Comparison between tow studied group regarding VAS there was no significant difference according VAS (Table 5).

Table (5): Comparison between the two studied groups regarding the perineal pain and VAS

			Type of suture		P value
			Continuous	Interrupted	
			N=80	N=80	
Perineal Pain	After 24h	Yes	55(68.8%)	45(60%)	0.103
		No	25(31.2%)	35(40%)	
	After 10 days	Yes	30(37.5%)	23(28.8%)	0.240
		No	50(62.5%)	57(71.2%)	
	After 42 days	Yes	10(12.5%)	13(16.3%)	0.499
		No	70(87.5%)	67(83.7%)	
VAS	After 48h	Range	(0-5)	(0-5)	0.269
		Mean \pm SD	3.4 \pm 1.5	3.7 \pm 1.9	
	After 10 days	Range	(0-5)	(0-5)	0.655
		Mean \pm SD	3.2 \pm 1.6	3.3 \pm 1.2	
	After 42 days	Range	(0-3)	(0-4)	0.235
		Mean \pm SD	1.9 \pm 0.9	2.4 \pm 1.2	

Chi square test for qualitative data between the two groups

DISCUSSION

This study was designed to compare the effects of continuous versus interrupted sutures as regard short term postpartum maternal morbidity following medio lateral episiotomy repair after vaginal delivery regarding.

Perineal pain, the number of sutures material used, wound dehiscence, infection, Hematoma, dyskesia and blood loss after vaginal delivery.

In the present study, the randomization done with opaque envelopes resulted in 80 women in continuous sutures group and 80 women in interrupted sutures group.

In the present study, the mean participant's age in continuous group was 25.1±5.03 and in interrupted group was 24.2±4.68. As regard parity, all patients were primigravidae. None of these groups revealed any statistically significant differences indicating that the two groups were well matched.

The results showed that there was no significant increase in the number of towels used in continuous group than in the interrupted group so there is no significant difference in the amount of blood loss during repair of both groups.

The results showed that there was no statistically significant difference detected a continuous and interrupted groups as regard wound dehiscence.

The results showed that there was highly statistically significant difference detected between continuous and interrupted groups as regard length of threads used by centimeters that it was higher in interrupted group compared to continuous group.

The results agreed with previous studies including who reported that continuous group needed less suture materials while *Kettle et al. (2010)* and *Morano et al. (2012)*, did not include length of threads used by cm as a parameter for the comparison between continuous and interrupted suturing techniques.

The results showed that there was no statistically significant difference detected between continuous and interrupted groups as regard hematoma formation.

The results showed that there was no statistically significant difference detected between continuous and interrupted

groups as regard wound infection (Negative 92.5% versus 90% - Positive 7.5% versus 10%).

The results agreed with previous studies including *Kettle et al. (2010)* and *Morano et al. (2012)* who reported that there was no statistically significant difference detected between continuous and interrupted groups as regard wound infection while *Valenzuela et al. (2013)* did not include wound infection as a parameter for the comparison between continuous and interrupted groups.

The results showed that there was no statistically significant difference detected between continuous and interrupted groups as regard Dysklesia after delivery.

The results as regard hematoma formation, there was no events of hematoma formation in either groups so there was no statistically significant difference detected between continuous and interrupted groups as regard wound hematoma formation.

The previous researches including *Kettle et al. (2010)*, *Morano et al. (2012)* and *Valenzuela et al. (2013)* did not include wound hematoma formation as a parameter for the comparison between continuous and interrupted suturing techniques.

The number of patients had a perineal pain after 10 days and after 42 days in interrupted technique than the continuous (2.5% versus 15%).

Our results were in agreement with those of *Kettle et al. (2010)*, *Morano et al. (2012)* and *Hasanpoor et al. (2012)* who reported that there was a greater reduction in perineal pain associated with continuous suturing for all layers on the

contrary *Valenzuela et al. (2013)* reported that there was no statistically significant difference detected between continuous and interrupted groups.

Kettle et al. (2010) in their randomized study concluded that the continuous subcuticular technique of perineal repair was associated with less pain in the immediate postpartum period when compared with the interrupted suture technique.

The difference in pain between the suturing methods is believed to be due to increasing suture tension caused by edema. With continuous repair, tension is transferred through the whole length of the single suture. Another important factor which could contribute to this reduction of pain is that skin sutures are inserted into the subcutaneous tissue, thus avoiding nerve endings in the skin surface. For this reason, *Barber et al. (2017)* suggested leaving the skin un-sutured even in second stage postpartum perineal repair.

Millions of women worldwide undergo perineal suturing after childbirth and the type of repair may have an impact on pain and healing. For more than seventy years, researchers have been suggesting that continuous non-locking suture techniques for repair of the vagina, perineal muscles and skin are associated with less perineal pain than traditional interrupted methods (*Sultan et al., 2017*).

Our findings agreed with those of *Kettle et al. (2010)* and *Kettle et al. (2012)*; showed that continuous suture techniques compared with interrupted sutures for perineal closure are not associated, with less perineal pain.

The results showed that there were no lower VAS scores in continuous groups than interrupted groups at, 48 hours, 10 days and 42 Days. So, there was a significant difference after 48 hours and after 10days, but there is no significant difference after 42 days.

CONCLUSION

The use of continuous knotless technique for perineal repair is associated with less number of units of sutures material used.

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تأثير الغرز المتقطعة مقابل الغرز المستمرة في إصلاح شق العجان بعد الولادة المهبلية في بكريات الحمل

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خلفية البحث: يعد إصلاح شق العجان جرح مخطط جراحياً في العجان و هذا يقلل مقاومة الأنسجة ويعيد استقامة قناة الحوض وهذا يسهل من عملية الولادة. يمكن أن تؤدي المراضة الأمومية قصيرة وطويلة الأمد المرتبطة بإصلاح العجان إلى مشاكل جسدية ونفسية واجتماعية كبيرة، مما يؤثر على قدرة المرأة على رعاية طفلها الجديد وأفراد الأسرة الآخرين. تعتمد المضاعفات على شدة الرضح العجاني وفعالية العلاج. نوع مادة الخياطة ومهارة المشغل وتقنية الإصلاح هي العوامل الرئيسية الثلاثة التي تؤثر على نتيجة الإصلاح العجاني.

الهدف من البحث: مقارنة تأثير الغرز المتقطعة مقابل الغرز المستمرة في اصلاح شق العجان بعد الولادة المهبلية في بكريات الحمل من على مدى اعاقه الام قصيرة وطويلة المدى بعد الولادة من حيث تلوث الجرح وكمية الدم المفقودة وعدد الخيوط المستخدمة في الإصلاح والألام أثناء التبرز.

المريضات طرق البحث: تم إجراء تجربة معشاة ذات شواهد في مستشفى المنيا العام ومستشفى الحسين الجامعي في وحدة التوليد، وشملت الدراسة 160 امرأة تتمتع بصحة جيدة مع الحمل المفرد الطبيعي القابل للحياة وتحقيق الولادة المهبلية الطبيعية عند أو بعد 37 فترة حمل من أبريل 2019 حتى ديسمبر. تم اختيار النساء بشكل عشوائي لعام 2019 لإصلاح الخيوط المتقطعة أو المستمرة بعد بضع الفرج الذي يتم إجراؤه عند التتويج في المرحلة الثانية من المخاض.

نتائج البحث: لم يكن هناك فرق معتد به إحصائياً يمكن اكتشافه بين المجموعات المستمرة والمتقطعة فيما يتعلق بعمر المشارك وتفزر الجرح والعدوى وتشكيل الورم الدموي ومقدار فقد الدم أثناء الإصلاح المقاس بعدد مناقش الشاش المنقوعة. أوضحت النتائج أنه يمكن الكشف عن فروق ذات دلالة إحصائية عالية بين المجموعات المستمرة والمتقطعة من حيث عدد وحدات مادة الغرز التي كانت أعلى في المجموعة المتقطعة مقارنة بالمجموعة المستمرة. أظهرت النتائج أنه لا يوجد فرق معتد به إحصائياً يمكن اكتشافه بين المجموعات المستمرة والمتقطعة فيما يتعلق بالألم العجاني بعد 48 ساعة و 10 أيام و 42 يوماً بواسطة درجات المقياس التناظري البصري على التعب.

الاستنتاج: يرتبط استخدام تقنية الخيوط المستمرة لإصلاح العجان بعدد أقل من وحدات خيوط الجروح المستخدمة.

الكلمات الدالة: خياطة متقطعة، خياطة مستمرة، إصلاح بضع الفرج، الولادة المهبلية.