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Original Research Article

## Comparative analysis of continuous and interrupted suturing techniques for repair of episiotomy or second degree perineal tear

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### ABSTRACT

**Background:** Perineal trauma is a serious and frequent problem after childbirth which is experienced by millions of women worldwide and the type of perineal repair may have an impact on pain and healing. The objective of this study was to assess the effects of continuous subcuticular versus interrupted transcutaneous sutures on women following episiotomy or second degree perineal repair following childbirth.

**Methods:** A prospective comparative study comprising 141 women who had undergone vaginal deliveries with episiotomies or second-degree tearing of the perineum between August 2015 and July 2016. Two groups were made among which one group was repaired with continuous, nonlocking sutures involving the vagina, perineum, and subcutaneous tissues and the other group had continuous, locking sutures of the vagina, interrupted sutures in the perineal muscles, and interrupted transcutaneous sutures. The threads used for stitching were identical in both groups i.e. rapidly absorbed polyglactin 910 suture material.

**Results:** On the 2nd day after delivery, the perineal pain scores during lying, sitting and walking in the continuous technique (CT) group was less compared to the interrupted technique (IT) group (p value 0.009). On 10th day after delivery the perineal pain score during sitting and walking were statistically less (p value 0.027) in the CT group. On 42th day there was no difference in pain score between both the groups. The amount of suture materials consumed in CT group was statistically less than IT group (p < 0.001). There was no difference in incidence of wound dehiscence (p value 0.301) but superficial dyspareunia is more in IT group which is statistically significant.

**Conclusions:** The episiotomy and perineal tear repairs with continuous suturing associated with lesser incidence of short or long term pain, lesser requirement of suture material without an increase in complication than interrupted suturing.

**Keywords:** Episiotomy, Second degree perineal tear, Visual analogue scale score

### INTRODUCTION

Episiotomy is a surgically planned incision made on the perineum which reduces the soft tissue resistance of the outlet and straightens the pelvic canal that facilitates delivery.<sup>1</sup> Sleep J et al described that about 85 percent of women who have spontaneous vaginal birth will sustain some form of perineal trauma and of these 60-70 percent will require suturing.<sup>2</sup> The suturing technique of perineal

trauma following childbirth has a significant short term and long term effect on the extent and degree of morbidity experienced by women. In literature, it has been suggested that continuous non-locking suture techniques for the repair of vagina, 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.<sup>3</sup> The aim of this study is to assess the effects of continuous versus

interrupted suturing methods on short and long term postpartum maternal morbidity and quality of life experienced by women following repair of episiotomy or second-degree perineal tears after vaginal birth. The conclusion of this study will guide to choose the most appropriate technique of perineal repair in terms of both health gain and cost.

## METHODS

The Present study was a prospective comparative study between continuous and interrupted suturing used for episiotomy repair. 141 antenatal case who were admitted to labour room of O & G department of our institute of variable age group and parity with term pregnancy from the period of august 2015-July 2016 were taken up in the study.

### Inclusion criteria

- Singleton, term pregnancy with vertex presentation,
- Vaginal birth with or without instrumentation.
- An episiotomy or perineal tear involving the skin & the muscle but not the anal sphincter or rectum

### Exclusion criteria

- Multiple gestation
- Preterm pregnancy
- Malpresentation
- Cases like severe anaemia, Diabetes mellitus or patient on corticosteroid or immunosuppressants that can affect wound healing
- Epidural labour analgesia which affects post-partum pain

Patient selection and type of suturing method used was done randomly. Suture material used in both the groups was same i.e. rapidly absorbed polyglactin 910 suture material. Continuous method of suturing involving non-locking suturing of the vagina, Perineum and subcutaneous tissues. Interrupted method of suturing involving continuous locking sutures of the vagina, interrupted sutures in the perineal muscles and interrupted transcutaneous mattress suture. Cases are interviewed on 2<sup>nd</sup>, 10<sup>th</sup>, 42<sup>nd</sup> day following repair regarding pain perception with lying, sitting postures and while walking using Visual analogue scale (VAS) in a scale of 1-10. Besides this number of sutures material used, wound dehiscence and superficial dyspareunia were also compared.

### Statistical analysis

The Statistical analysis of the data collected was done using SPSS 17 software. For qualitative data, the  $\chi^2$ -test or Mann Whitney U test were used as appropriate to test the statistical significance. For continuous variables, the

t-test was used.  $P < 0.05$  was considered statistically significant.

## RESULTS

Table 1 shows that both the groups are comparable in terms of age, parity and type of perineal tear.

**Table 1: Baseline parameters.**

	Continuous	Interrupted	P value
Number	70	71	
Mean age	25.38±3.475	26.45±6.345	0.538
<b>Parity</b>			
Primigravida	42(60%)	45(63.4%)	0.802
Gravida 2	21(30%)	18(25.4%)	
Gravida 3	4(5.2%)	6(8.4%)	
Gravida 4 or more	3(4.8%)	2(2.8%)	
<b>Repair</b>			
Episiotomy	47(67.1%)	48(68%)	0.415
Second degree Tear	23(32.9%)	23(32%)	

Table 2 reflects pain on 2<sup>nd</sup> day in lying, sitting and walking position. In this study majority of study subjects complained of pain on 2<sup>nd</sup> day in all the three positions but the severity was different compared by VAS. Evaluation of pain during lying, sitting and walking revealed more pain in interrupted technique which was statistically significant (p value 0.009). Evaluation of Pain on 10<sup>th</sup> day in lying, sitting and walking position revealed that, there was no significant difference in pain in lying position in subjects of continuous and interrupted group (p value 0.532). But perception of pain in sitting and walking position was different in continuous and interrupted group with more subjects (i.e.70.6%) in continuous group had mild pain compared to 67.6% in interrupted group, where as more subjects in interrupted group had mild to moderate pain i.e. 43.4% compared to 29.5% in continuous group. This difference was statistically significant with p value <0.027. Evaluation of pain on 42<sup>nd</sup> day in lying, sitting and walking position revealed that, there was no association of pain to different suturing technique with p value 1.000.

Table 3 demonstrates the same findings by Chi square test. Table 4 reveals that 3 cases (4.2%) in continuous group had wound dehiscence compared to 5 cases (7.0%) in interrupted group but statistical analysis did not prove any association between wound dehiscence and type of suturing (p value 0.363). But 18.5% of cases in continuous group had dyspareunia compared to 35.2% in interrupted group which is statistically significant (p value<0.008).

Table 5 shows that in the present study, one suture was used in 88.5% cases in continuous group compared to Table 5 shows that in the present study, one suture was

used in 88.5% cases in continuous group compared 26.4% in interrupted group, whereas more than one to suture was used in 73.6% cases of interrupted group

compared to 11.4% cases in continuous which is statistically significant (p value<0.001).

**Table 2: Mann Whitney test for comparison of pain in suturing type.**

Pain	Grading of Pain	Suturing technique		Mann-Whitney U	2 sided 'P' value	
		CT	IT			
2 <sup>nd</sup> Day	Lying	No pain Mild Moderate Severe	3 (4.2%) 53 (75.7%) 13 (18.5%) 1 (1.6%)	2 (2.8%) 32 (45.0%) 31 (43.6%) 6 (8.6%)	4619.5	0.009
	Sitting	No pain Mild Moderate Severe	3 (4.2%) 53 (75.7%) 13 (18.5%) 1 (1.6%)	2 (2.8%) 32 (45.0%) 31 (43.6%) 6 (8.6%)	4619.5	0.009
	Walking	No pain Mild Moderate Severe	3 (4.2%) 53 (75.7%) 13 (18.5%) 1 (1.6%)	2 (2.8%) 32 (45.0%) 31 (43.6%) 6 (8.6%)	4619.5	0.009
10 <sup>th</sup> Day	Lying	No pain Mild Moderate Severe	49 (70.5%) 20 (28.5%) 1 (1%) 0	48 (67.6%) 21 (29.5%) 2 (2.9%) 0	5314.5	0.532
	Sitting	No pain Mild Moderate Severe	49 (70.5%) 20 (28.5%) 1 (1%) 0	40 (56.6%) 27 (38.7%) 4 (4.7%) 0	4738.5	0.027
	Walking	No pain Mild Moderate Severe	49 (70.5%) 20 (28.5%) 1 (1%) 0	40 (56.6%) 27 (38.7%) 4 (4.7%) 0	4738.5	0.027
42 <sup>th</sup> Day	Lying	No pain	70 (100%)	71 (100%)	5565	1.000
	Sitting	No pain	70 (100%)	71 (100%)	5565	1.000
	Walking	No pain	70 (100%)	71 (100%)	5565	1.000

**Table 3: Comparison of pain in suturing type by Chi square test.**

Pain	Suturing type	Number	Chi square value	P value	
2 <sup>nd</sup> Day	Lying	CT	70	7.323	0.008
		IT	71		
	Sitting	CT	70	23.809	<0.001
		IT	71		
	Walking	CT	70	23.809	<0.001
		IT	71		
10 <sup>th</sup> Day	Lying	CT	70	1.112	0.530
		IT	71		
	Sitting	CT	70	5.829	0.024
		IT	71		
	Walking	CT	70	5.829	0.024
		IT	71		
42 <sup>th</sup> Day	Lying	CT	70	5565	1.000
		IT	71		
	Sitting	CT	70	5565	1.000
		IT	71		
	Walking	CT	70	5565	1.000
		IT	71		

**Table 4: Complication.**

	Suturing technique		P value
	CT No of cases (%)	IT No of cases (%)	
Wound dehiscence	3(4.2%)	5(7.0%)	0.384
Superficial Dyspareunia	13(18.5%)	25(35.2%)	0.007

**Table 5: Comparison of number of sutures according to suturing technique**

No. of sutures used	Suturing technique		Mann Whitney U	P value
	CT	IT		
1	62 (88.5%)	19 (26.4%)	2018	<0.001
2	8 (11.6%)	52 (73.6%)		

## DISCUSSION

As the age and parity significantly affects the incidence of pain and dyspareunia, in the present study both the groups have been matched for age and parity to rule out this difference. This is supported by the studies of Ogunyemi D et al in 2006 who found that while younger women are at risk of having episiotomy, older women are at risk of having severe perineal laceration.<sup>4</sup> Evaluation of pain on 2<sup>nd</sup> day during lying, sitting and walking revealed more pain in interrupted technique which was statistically significant (p value 0.009). Similar observations were made by Kettle C et al who reported that the continuous subcuticular technique of perineal repair may be associated with less pain in the immediate postpartum period than the interrupted suture technique and Almeida SF et al found that perineal pain due to palpation at four days after delivery was more frequent among women with interrupted suture.<sup>5,6</sup> Kokanalı D et al also reported that the continuous suturing techniques for episiotomy closure, compared to interrupted methods, are associated with less short-term pain, are quicker and also need less suture material.<sup>7</sup>

In the present study, on 10th day perception of pain during sitting and walking revealed that more subjects had moderate to severe pain in interrupted group which was statistically significant (p value 0.027). Similar observations were made by Kettle C et al who reported in their Meta-analysis that continuous suture techniques compared with interrupted sutures for perineal closure are associated with less pain for up to 10 days' postpartum (risk ratio (RR) 0.76; 95% confidence interval (CI) 0.66 to 0.88, nine trials).<sup>8</sup> Kettle C et al reported in the Lancet that at day 10, significantly fewer women reported pain with the continuous technique than with the interrupted method (204/770 (26.5%) vs 338/769 (44.0%), odds ratio 0.47, 95% CI 0.38-0.58, p<0.0001).<sup>9</sup> Morano S et al reported that significantly fewer women reported pain at 10 days with the continuous knotless technique than with the interrupted technique (32.3% vs 60.4%; p<.001).<sup>10</sup> Bick DE et al studied the severity of perineal pain on 10-12 days post-partum along with need of suture removal and found that continuous suturing decreases the pain in immediate post-partum period as compared to interrupted technique which corroborates to the finding of the present study.<sup>11</sup> Evaluation of pain on 42<sup>nd</sup> day in lying, sitting and walking position with two suturing methods showed no association of pain to different suturing technique with p=1.000. Almeida SF et al who reported that there were no statistically significant differences in long term pain 41 days after birth and these observations are close to the present study.<sup>6</sup> Kettle C et al reported that there was no difference in long-term pain and the continuous technique was associated with less need for the removal of sutures.<sup>5</sup> The Mahomed trial reported a non-significant increase in long-term pain in the continuous subcutaneous sutures for perineal skin closure group compared to the interrupted transcutaneous group, (RR 1.10, 95% CI 0.77 to 1.57).<sup>12</sup>

### *Wound dehiscence requiring resuturing of wound-reported up to three months after delivery*

The Mahomed trial reported three cases requiring resuturing in each comparison group; the Banninger and Morano trials reported none in either group and the Kettle trial reported three cases in the treatment group and one case in the control group.<sup>9-10,12-13</sup> Kettle C et al in cochrane database systematic reviews meta-analysis reported that there is no difference in risk of resuturing between groups.<sup>14</sup> In this study, 3 cases (4.2%) in continuous group had wound dehiscence compared to 5 cases (7.0%) in interrupted group which was statistically insignificant (p 0.384). As the suture material used in both the groups was same i.e. rapidly absorbed polyglactin 910 and it is proved that the suture material rather than the suturing technique is responsible for wound dehiscence.

### *Dyspareunia - reported up to three months after delivery*

In this study, subjects in the interrupted group had greater complaints of dyspareunia (35.2%) compared to subjects in continuous group (18.5%) up to three months after delivery which was statistically significant (p value 0.008). Similar observations were made the Detlefsen 1980 trials reported lower rates of dyspareunia in the continuous suturing groups which was statistically significant.<sup>15</sup> But Kokanalı D et al reported that the differences between the pain during sexual intercourse 6 weeks after the delivery were statistically same.<sup>7</sup> Morano S et al reported that no difference was found in superficial dyspareunia at 3 months for the continuous knotless technique versus the interrupted technique group.<sup>10</sup> Kettle C et al in cochrane database systematic reviews reported that there was no evidence of significant differences between groups for dyspareunia at three, or at six to 12 months.<sup>14</sup> Finally the comparison of number of suture used showed less suture used in continuous group as compared to interrupted group and this difference was statistically significant (p <0.001). Similar observations were made by Kettle C et al in cochrane database systematic reviews who reported that the continuous techniques used less suture material as compared with the interrupted methods (one packet compared to two or three packets, respectively).<sup>8</sup> Kokanalı D et al reported that the continuous suturing techniques for episiotomy closure, compared to interrupted method, need less suture material.<sup>7</sup> Valenzuela P et al showed that episiotomy and perineal tear repairs with continuous suturing were quicker and used less suture material without an increase in complication than interrupted suturing.<sup>16</sup>

## CONCLUSION

It was concluded from our study that the continuous suturing technique for repair of episiotomy and second degree perineal tear compared to interrupted method are associated with less short term pain, dyspareunia and the amount of suture used is also less where as there is no

difference in daily work after 42 days and incidence of wound dehiscence.

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