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Original Research Article

Comparison of mattress and continuous suturing techniques using polyglactin 910 and chromic catgut for episiotomy repair: an observational study

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ABSTRACT

Background: An episiotomy is an incision through the perineum to increase the vulvae outlet's diameter and assist childbirth. Despite the fact that episiotomy is proven to benefit mothers, it is responsible for a significant percentage of both short-term and long-term postpartum morbidities. This study compares two different suture materials, namely polyglactin and chromic catgut, for episiotomy repair and short-term maternal morbidity.
Methods: This was a prospective observational study conducted in the Department of Obstetrics and Gynaecology, Government Medical College, Thrissur. The data was collected and analysed using SPSS software.
Results: A total of 400 participants who fulfilled the inclusion and exclusion criteria were studied. The majority of 214 women (53.5%) included in this study were between 20-25 years. 17(4.3%) women had edema (1 cm) at 24-48 hours after delivery. 43 (10.8%) women had more than 99-degree temperatures at 24-48 hours. 6 (1.5%) women had wound dehiscence at 6 weeks of them, 4 belonged to group 4. 98.3% had episiotomy wounds healed by primary intention.
Conclusions: There was a reduction in wound dehiscence and more healing by primary intention in the polyglactin group than in the chromic catgut group. There was no significant reduction in short-term pain, temperature, induration and oedema between these groups. Hence, this study recommends a more rapidly absorbable form of polyglactin than traditional chromic catgut for perineal repair.

Keywords: Chromic catgut, Episiotomy, Polyglactin, Wound healing

INTRODUCTION

Episiotomy derives from the Greek word episton-pubic region, -tomy-to cut. Episiotomy is an incision in the vulvae outlet that will help enlarge the space for childbirth.[1] The incision may be midline or may also begin off the midline and directed laterally and downward away from the rectum, termed mediolateral episiotomy.[2] The maternal benefits include avoiding the risk of subsequent pelvic floor dysfunction, urinary incontinence, perineal tears and sexual dysfunction.[3] The potential benefits to the foetus included a shortened second stage of labour, resulting from a more rapid spontaneous delivery. Though episiotomy is known to have maternal benefits, a substantial portion of both short and long-term postpartum morbidities is attributed to perineal pain, which is secondary to episiotomy and lacerations and their repair. The immediate consequences include blood loss, perineal pain, oedema, infection, hematoma and wound dehiscence. Long-term complications include the formation of scar tissue, wound infections and dyspareunia.[4] During puerperium, perineal trauma affects the physical, mental

and social well-being of the women. Cochrane review of randomized trials showed lower rates of severe perineal/vaginal trauma in women managed with a restrictive, that is, selective use of episiotomy for spontaneous delivery rather than with routine episiotomy.[5]

Chromic catgut and polyglactin 910 are used for episiotomy wound repair. The present study is designed to study two different suture materials, polyglactin 910 and chromic catgut, for episiotomy repair in relation to short-term maternal morbidity.

METHODS

This prospective observational study was conducted in the Department of Obstetrics and Gynaecology at the Government Medical College, Thrissur, after getting ethical clearance B6-8772/2016/MCTCR. This hospital is a tertiary referral centre. Women who were admitted to the labour room and who underwent vaginal delivery were included in the study after getting written informed consent. This study was conducted over 12 months, from March 2017 to March 2018.

Inclusion criteria

The inclusion criteria include those women who had episiotomy during vaginal delivery and who were willing to participate in the study.

Exclusion criteria

The exclusion criteria include women with intrapartum fever, sepsis, episiotomy incisions extended by instrumental deliveries, third- and fourth-degree perineal tears, cervical tears, severe anaemia, diabetes mellitus, Body mass index (BMI>30) and women whose membranes had ruptured for more than 18 hours.

The sample size was calculated using the formula 7.84*2pq/d2. In this study, 400 women were included and equally distributed between the chromic catgut and polyglactin 910 groups. Again, these groups are subdivided into the mattress and continuous groups. Hence, there were four groups.

Group 1–polyglactin 910 interrupted (skin mattress). Group 2–polyglactin 910 continuous. Group 3–catgut interrupted (skin mattress). Group 4–catgut continuous

Methodology

This study was conducted in the Department of Obstetrics and Gynaecology, Government Medical College, Thrissur. Those women who got admitted to the labour room and underwent vaginal delivery requiring episiotomy during this study period were counselled and written consent was obtained for being part of the study. Those who satisfied inclusion and exclusion criteria were enrolled in this study. Baseline data were collected. All episiotomies were repaired by the post-graduates or house surgeons. Mothers were reviewed at 24 to 48 hours, 3 to 5 days and 6 weeks regarding pain, oedema, hematoma, retention of urine, temperature, induration, wound discharge and healing by primary, secondary or third intention. The visual analogue scale was used for pain and the REEDA score was used for oedema. The local examination was done to analyze the nature of healing.

The collected data was coded and entered in MS Excel and analyzed using appropriate statistical procedures (SPSS software). Results are expressed as numbers (percentages) for categorical data and Mean and standard deviations for the continuous variables (VAS). The chi-square test was used to analyze categorical data to find out the difference between groups. One-way ANOVA was used for inter-group comparisons of VAS. A p value of 0.05 or less was considered for statistical significance. The data obtained were analyzed using SPSS software and results were obtained.

RESULTS

A total of 400 participants who fulfilled the inclusion and exclusion criteria were studied, 100 women in each group. Majority, 214 women (53.5%) included in this study were between 20-25 years , 8.5% were below 20 years and 2.8% were above 35 years. The majority of women, 52.3%, were primigravida and 23.5% were G2P1L1. 281 women (70.3%) belonged to APL, 28.5% were BPL and 1.3% belonged to tribal (Table 1).

310 (77.5%) of women were having normal BMI. 50 (12.5%) were having overweight. 95% of women underwent full-term normal delivery with RMLE and 5% of women underwent preterm vaginal delivery with RMLE. 47 (11.8%) women had hypothyroidism, 10 (2.5%) had bronchial asthma, 3 (0.8%) had seizure disorder and 3 (0.8%) had chronic hypertension. 72% had spontaneous onset of labour and 28% were induced.

17(4.3%) women had edema (1 cm) at 24-48 hours after delivery. Most women(6) were in group 4, 5 women in group 3 and 4 women in group 1. None had hematoma at 24 -48 hours.

43 (10.8%) women had more than 99-degree temperatures at 24-48 hours. Among them, 3 had more than 100 degrees temperature. 9 women belonged to group 4, 6 were in group 3 and 14 were in groups 1 and 2. One woman in group 1 had more than 99 temperatures at 3-5 days. Edema between the groups is mentioned in table 2.

6 (1.5%) women had wound dehiscence at 6 weeks of them, 4 belonged to group 4 and two belonged to group 3. 2 (0.5%) women in group 4 had wound discharge at 3-5 days. 98.3% had episiotomy wounds healed by primary intention. 7 (1.8%) women's episiotomies wounds healed by secondary intention. 5 women in group 4 and 2 women in group 3. This is statistically significant with a P value of

0.02. Pain incidence was measured using the visual analogue scale (Table 3). At 24-48 hours, the mean value was 4.09 in group 1, 4.10 in group 2, 4.21 in group 3 and 4.27 in group 4. At 3-5 days, the mean value was 1.08 in group 1, 1.15 in group 2, 1.15 in group 3 and 1.21 in group 4. At 6 weeks, none of the women had pain.

Table 1: Demographic details.

S. no	Demographic variables	Number (400)	%
1	**Age (years)**		
	<20	34	8.5
	20-25	214	53.5
	26-30	110	27.5
	31-35	31	7.8
	>35	11	2.8
2	**Primigravida**	209	52.3
3	APL	281	70.3
	BPL	114	28.5
	Tribal	5	1.3
4	**BMI**		
	<18.5	40	10
	18.5-24.9	310	77.5
	25-29.9	50	12.5
5	**Onset of labour**		
	Spontaneous	288	72
	Induced	112	28

Table 2: EDEMA.

EDEMA (reeda) at 24-48 hours						
	Suture material and technique				Total	%
EDEMA (reeda)	Gr 1	Gr 2	Gr 3	Gr 4		
Less than 1 cm	2	4	5	6	17	4.3
None	98	96	95	94	383	95.8
Total	100	100	100	100	400	100
X^2=2.15, p=0.54, ns						

Ns-Non significant

Table 3: Pain incidence.

Groups	Pain (VAS) at 24-48 hours		Pain (VAS) at 3-5 Days	
	Mean	**SD**	**Mean**	**SD**
Gr 1	4.09	0.67	1.08	0.27
Gr 2	4.10	0.64	1.15	0.41
Gr 3	4.21	0.77	1.15	0.41
Gr 4	4.27	0.72	1.21	0.52
One-way ANOVA	F=1.55, p=0.20, ns		F=1.66, p=0.18, NS	

Ns-Non significant

DISCUSSION

Four hundred women who underwent vaginal delivery with episiotomy were included in the study. Two hundred women had episiotomy wound repair using polyglactin and 200 women had episiotomy wound repair using catgut.

In a study by Bose et al, vicryl rapide produced less pain among women following episiotomy wound repair at 24 hours, 48 hours and 6 weeks compared to chromic catgut.[6] However, in our study, there was no significant reduction in pain among these groups. In our study, pain in all the groups was comparable, which was measured using a visual analogue scale. The data was comparable to the study by Abdullah et al, 50 patients required analgesic treatment and 49 appeared from the chromic catgut group.[7] Similarly, a study by Leroux et al, compared the impact of chromic catgut versus Polyglactin versus fast-absorbing Polyglactin for perineal repair on short-term pain and the resumption of sexual intercourse in 192 patients. The analgesic requirement was significantly decreased with

fast-absorbing polyglactin than with standard polyglactin. However, there was no difference between the chromic catgut and the standard polyglactin group (56%, p=0.23).[8] Also, in a study by Joseph et al, the polyglactin (vicrylrapide) group was found to be associated with less pain and lesser need for analgesia (p<0.05) than chromic catgut in perineal repair postpartum.[9] Similarly, a study by Kettle et al, compared eight trials that included absorbable synthetic with plain or chromic catgut sutures for perineal repair. It was concluded that absorbable synthetic suture material appears to decrease women's short-term pain (odds ratio 0.62, 95% confidence interval 0.54 to 0.71).[10]

Also, in a study by McElhinney et al, compared vicryl with vicrylrapide. There was no difference between the two groups in pain perception in 24 hours and day 3. However, at 6 weeks, the rate of dyspareunia was significantly higher in the Vicryl group.[11] One study, which was done by Shah et al, reported more pain and requirement of analgesics in the polyglactin 910 group than in the chromic catgut group (61.1% vs 55.1%) and (88.1% vs 86.9%) respectively, at 48 hours. At 3 months postpartum, there was no clear difference between the two groups in terms of the perineal pain.[12] In our study, pain was comparable in all the groups.

In a study by Bharathi et al, there was also a significant reduction in wound indurations, uncomfortable stitches, wound dehiscence and better wound healing in the vicrylrapide group. Wound infections and wound resuturing were seen in chromic catgut and were absent in the vicrylrapide group.[13] In our study, wound dehiscence was only seen in the chromic catgut group, comparable to this study.

A study by Kalita et al, found that more complaints of uncomfortable stitches (27% vs 11%), wound dehiscence (23% vs 11%) and wound discharge (19% vs 8%) with chromic catgut group than polyglactin 910 and in the study of Masson et al, who analyzed the use of fast absorbing polyglactin (vicrylrapide) using continuous technique on all planes. Vicrylrapide was found to have excellent tissue compatibility and all sutures were in place on the sixth day.[14,15]

This data is comparable to our study 6 (1.5%) women had wound dehiscence at 6 weeks; of them, 4 had episiotomy wound repair using catgut continuous type and 2 had episiotomy wound repair using catgut interrupted type. None of the women who had episiotomy repair using Polyglactin had any wound dehiscence. 2 (0.5%) women with wound repair using catgut continuous type had wound discharge at 3-5 days. This is statistically significant, with a p value of 0.05.

In our study, we had subgroups in both catgut and polyglactin, which were episiotomy repair by continuous and mattress groups this helped us to know which suture material and the type of suturing has a good maternal outcome. We found that there was a reduction in wound dehiscence and more healing by primary intention in the polyglactin group than in the chromic catgut group. In the catgut subgroups, repair using interrupted sutures was better than in the continuous group. There was no significant difference between continuous and interrupted sutures in the polyglactin group. There was no significant reduction in short-term pain, temperature, induration, oedema and hematoma between these groups.

This study was done in a single centre. Hence, multicentric studies with large sample sizes are required to confirm this data.

CONCLUSION

There was a reduction in wound dehiscence and more healing by primary intention in the polyglactin group than in the chromic catgut group. There was no significant reduction in short-term pain, temperature, induration, edema or hematoma in these groups. In this study, we concluded that a fast-absorbing form of Polyglactin effectively reduces some of the short-term morbidity associated with perineal repair following childbirth.

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