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Original Research Article

Evaluating the effects of vicrylrapide (polyglactin 910) and chromic catgut for episiotomy repair

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ABSTRACT

Background: Objective of the study was to evaluate the effects of vicrylrapide (VR) (polyglactin 910) and chromic catgut (CC) for episiotomy repair.
Methods: A prospective, randomized, comparative study carried over a period of one year. 200 women were included in the study after taking informed consent and randomly allocated to repair with VR group and CC group (100 each). The outcome measures were assessed in terms of postpartum perineal pain, nature of wound healing, need for resuturing and resumption of sexual activity and dyspareunia at 24-hour, 7th day, 6th week and 12th week postpartum.
Results: The mean age was 24.39±2.95 (range: 19-31 years) for VR and 24.38±3.80 (range: 18-37 years) for CC group. The VR group was associated with less severe pain (31%) compared with CC group (74%) indicating higher pain intensity in CC group. There was also a significant difference in the uncomfortable stitches, urinary retention, defecation difficulty, wound indurations, and wound dehiscence (0% versus 7%) and a better wound healing (p=0.004) in the VR group. Insignificant statistical difference was noted at 6 weeks and 12 weeks (p=0.786 and 0.627) between two groups in terms of dyspareunia.
Conclusions: VR is an ideal suture material for episiotomy repair compared to CC as it is associated with less perineal pain, less uncomfortable sutures and a better wound healing.

Keywords: Episiotomy, Vicrylrapide, Chromic catgut, Perineal pain, Wound healing, Dyspareunia

INTRODUCTION

Episiotomy is a surgical incision made in the perineum to enlarge the vaginal opening for childbirth. The purpose of episiotomy is confirmed to be preventive against severe perineal tears (third and fourth-degree tears), preservation of future sexual functions and reduction in urinary and fecal incontinence.[1] Although the use of episiotomy remains a controversial topic in the obstetrics, when it is done, it has to be repaired with ideal suture material.[2] The type of suture material used for repair plays an important role as it can influence the extent of subsequent morbidity (i.e. the amount of pain, wound dehiscence and dyspareunia) experienced by mother after episiotomy repair. An ideal suture material should be absorbed once it has served its purpose of holding the tissue in apposition. It should be non-capillary, non-allergenic, non-electrolytic, non-carcinogenic, with minimal tissue reaction and doesn't favour bacterial growth. The perfect suture material for episiotomy repair should maintain its tensile strength up to 7-14 days and dissolve quickly thereafter with as minimal inflammation as possible.

Initially, non-absorbable sutures like silk and nylon were used for episiotomy repair, which required suture removal after one week of the procedure. Nowadays absorbable suture materials are used for suturing episiotomy. Chromic catgut (CC) has been widely used for episiotomy repair, but since it is a natural suture, its use is associated with some disadvantages like early loss of tensile strength,

more tissue reaction and inflammation which affect the wound healing procedure. So, search for new synthetic material was started and it was noted that fast-absorbing polyglactin 910 vicrylrapide (VR) was found to be better.[3] Although the most popular and most commonly used suture material for episiotomy repair in developing countries is CC, the increased incidence of perineal pain and wound dehiscence are its major drawbacks and thus there is a need for better suture material which can overcome these drawbacks.

Against the backdrop of prevalence rate of episiotomy and the problems faced by the women post-repair, this study-first-of-its-kind addresses these concerns in our department and in our area providing additional insights. The present study is aimed to compare and investigate the effect of two different suture materials i.e. VR and CC for episiotomy repair in terms of postpartum perineal pain and need of analgesia, nature of wound healing, need for resuturing and resumption of sexual activity and dyspareunia.

METHODS

A prospective, randomized, comparative study was conducted at the postgraduate department of obstetrics and gynaecology, Shri Maharaja Gulab Singh (S.M.G.S) Hospital, Government Medical College (GMC), Jammu for the duration of one year between November 2018 to October 2019; approved by Institutional ethics committee. Total two hundred women who were admitted to the labour room of the department of obstetrics and gynaecology were included in the study through simple random sampling. The randomization was done according to a list of random numbers generated from a random table.

After taking informed consent, patients were randomly allocated into two groups, A and B. Group A included 100 women who were sutured with VR (1-0) and group B included 100 women who were sutured with CC (1 number).

The demographic details and details of mode of delivery, parity, gestational age, presentation, duration of the second stage of labour, birth weight of the baby and time taken for suturing were noted. All episiotomies were right mediolateral and were repaired under local anaesthesia (1% lignocaine) using three-layer approach. Participants were interviewed at 24-hour, 7th day, 6 weeks and 12 weeks postpartum regarding perineal pain, discomfort at suture site, analgesia requirement, urinary retention, difficulty in defecation. History regarding the resumption of sexual activity and dyspareunia was asked at 6week and 12week. The pain was measured by using a numerical rating scale (0-10) and classified as mild (1-3), moderate (4-6) and severe (7-10). Routinely, all women were administered oral antibiotic i.e. amoxicillin 500 mg thrice a day for 5 days and oral analgesic as and when required.

Statistical analysis was done by statistical package for the social sciences (SPSS), version 22.2. The descriptive data were expressed as mean±standard deviation (SD) or percentage, whichever was appropriate for the patient's characteristic description. Group differences were compared using the Pearson Chi-square or Fisher's exact test for analyzing the categorical variables, data, for continuous variables were analyzed by student t-test or Mann-Whitney U, Wilcoxon W, and z tests. Test of normality used was Kolmogorov-Smirnov and Shapiro-Wilk. Levene's test was used for equality of variances. All values were calculated as 2-tailed and a p value of 0.05 or less was considered to be statistically significant.

RESULTS

Both the groups, VR and CC were statistically comparable in terms of age, parity, presentation, period of gestation, duration of the second stage of labour and birth weight (Table 1). The time taken for suturing with VR was slightly higher compared with CC ($p<0.05$). The quantity of local anaesthesia used was comparable in both groups with no statistically significant difference.

Table 1: Comparison details of two groups.

Particulars	Vicryl rapide (n=100)	Chromic catgut (n=100)	P value
Age (year)			
Mean±SD	24.39±2.95	24.38± 3.80	0.984
Range	19-31	18-37	
Gravida			
Primi	69	62	0.298
Multi	31	38	
Presentation			
Cephalic	95	97	0.233
Breech	5	3	
Gestational age (in weeks)			
Mean±SD	38.65±1.74	38.72±1.54	0.748
Range	32.6-42.0	31.5-42.1	
Second stage duration (in mins)			
Mean±SD	28.67±2.74	27.85±2.65	0.133
Range	24-39	24-39	
Birth weight (kg)			
Mean±SD	2.79 ±0.41	2.83±0.37	0.528
Range	2-4.25	2-4	
Time taken for suturing (min)			
Mean±SD	17.85±3.02	12.80±2.87	0.001
Range	11-27	8-20	
Quantity of local anaesthetic (ml)			
Mean±SD	8.86±0.98	8.62±1.28	0.140
Range	6-10	5-10	

At the end of 1st day, 69% of women in VR group experienced moderate pain compared to 26% women in CC group. However, the majority of women (74%) in CC

group had experienced severe pain compared with 31% in VR group (Table 2).

Women who experienced severe pain were administered thrice a day analgesic tablet of diclofenac and those who experienced moderate pain were given twice a day analgesic tablet. Women with mild pain received analgesic as and when required. A statistically significant difference was found in pain perception between two groups at 24 hours. More pain was experienced by women in CC group (p<0.001).

At 7th day, 82% of women in VR group were pain-free compared to 37% in CC group. Mild pain was experienced by 14% of women in VR group and 32% women in CC group. Moderate pain was felt by 4% and 31% of women in VR and CC group respectively. However, none of the women in either group experience severe pain. There was a statistically significant difference between the two groups in terms of pain perception at 7 days. More pain was experienced by women in CC group (p<0.001).

The observation after the 6 weeks postpartum period showed that none of the women in VR group experience any degree of pain, although 7% of women in CC group experienced mild pain which was statistically significant (p<0.007). At week 12, none of the women in either group experienced any degree of pain.

At 24 hours, 40% of women in VR group felt discomfort compared to 59% of women in CC group, which is highly significant (p=0.007). At 7th day, 12% of women in VR group experienced uncomfortable stitches compared to 26% in CC group which is statistically significant (p=0.012). This shows that significantly a greater number of women in CC group experienced short term discomfort. Uncomfortable stitches were felt by 2% and 3% of women in VR and CC groups respectively (p=0.651). No statistically significant difference was found at 6weeks in the degree of discomfort between two sutures. None of the women in either group experience uncomfortable suture at 12 weeks (Table 3).

In addition, four percent of women had urinary retention in VR group compared to six percent women in CC group at 24 hours, this difference was of no statistical significance (p=0.516). None of the women had urinary retention in either group on day 7 and onwards.

Three percent of women in VR group had difficulty in defecation compared to 5% of women in CC group at 24 hours (p=0.470). At day 7, one percent and 2% women in VR and CC group respectively had defecation difficulty (p=0.561). There was no statistically significant difference found in defecation difficulty between two suture materials at 24 hours and day 7. None of the women in either group had any difficulty in defecation at 6 weeks and 12 weeks.

Induration was found in 19% of women in VR group compared to 26% of women in CC group at 24 hours. Although there was a difference in induration at 24 hours between two groups, however of no statistical significance (p=0.236). At day 7, there was a statistically significant difference in induration, six percent of women had induration in VR group compared to 16% of women in CC group (p value=0.024). Two percent and 6% of women had induration at 6 weeks in VR and CC group respectively (p=0.149) which is not significant. None of the women had induration at 12 weeks in either group, as represented in Table 3.

As regards to nature of the wound, whether healthy or infectious, none of the women had an infectious wound at 24 hour and 12 weeks in either of the group. Five percent of women had infected episiotomy wound in VR group at 7 days compared to 10% women in CC group (p=0.621). One percent and 3% of women had an infectious wound at 6 weeks in VR and CC group respectively (p=0.312). Insignificant statistical difference was noted at 7 day and 6 weeks between two groups in the nature of wound as shown in Figure 1a.

Better wound healing was found in VR group than CC group early in the course at 7 days with high statistically significant difference (p value=0.004)). However, no statistically significant difference was observed at 6 weeks and 12 weeks. Seven patients had wound dehiscence in CC group compared to none in VR group which is highly significant (p value=0.007), as shown in Figure 1b. No residual suture material was seen in any women at 6 week and at 12 weeks.

On interviewing about the resumption of sexual activity, 32 women had resumed sexual activity at 6 weeks in VR group and dyspareunia was experienced in 10 women (31.2%), compared to 9 women (34.6%) in CC group out of 26 women who had resumed sexual activity. At week 12, 11 out of 79 women (13.9%) who resumed sexual activity experience dyspareunia in VR group compared to 14 out of 84 women (16.6%) in CC group. As depicted in Table 4, no statistically significant difference was found between two groups in terms of dyspareunia at 6 weeks and 12 weeks (p=0.786 and 0.627 respectively).

Table 2: Assessment of perineal pain in both groups at 24-hour, 7-day, 6-week, 12-week intervals.

Perineal pain	Vicryl rapide (n=100)	Chromic catgut (n=100)	Chi-square	P value
24 hours				
No	0	0		
Mild	0	0	37.073	<0.001
Moderate	69	26		

Continued.

Perineal pain	Vicryl rapide (n=100)	Chromic catgut (n=100)	Chi-square	P value
Severe	31	74		
7 days				
No	82	37	44.889	<0.001
Mild	14	32		
Moderate	4	31		
Severe	0	0		
6 weeks				
No	100	93	7.254	0.007
Mild	0	7		
Moderate	0	0		
Severe	0	0		
12 weeks				
No	100	100	*	*
Mild	0	0		
Moderate	0	0		
Severe	0	0		

*No statistics are computed as the parameter is constant

Table 3: Uncomfortable suture, urinary retention, defecation difficulty, induration at 24 hours, 7 days, 6 weeks and 12 weeks in VR and CC groups.

Parameter	Time	Vicrylrapide (n=100)	Chromic catgut (n=100)	P value
Uncomfortable suture	**24-hour**			
	Yes	40	59	0.007
	No	60	41	
	7 day			
	Yes	12	26	0.012
	No	88	74	
	6 week			
	Yes	2	3	0.651
	No	98	97	
	12 week			
	Yes	0	0	*
	No	100	100	
Urinary retention	**24 hour**			
	Yes	4	6	0.516
	No	96	94	
	7 day			
	Yes	0	0	*
	No	100	100	
	6 week			
	Yes	0	0	*
	No	100	100	
	12 week			
	Yes	0	0	*
	No	100	100	
Defecation difficulty	**24 hour**			
	Yes	3	5	0.470
	No	97	95	
	7 day			
	Yes	1	2	0.561
	No	99	98	
	6 week			
	Yes	0	0	*
	No	100	100	

Continued.

Parameter	Time	Vicrylrapide (n=100)	Chromic catgut (n=100)	P value
	12 week			
	Yes	0	0	*
	No	100	100	
Induration	**24 hour**			
	Yes	19	26	0.236
	No	81	74	
	7 day			
	Yes	6	16	0.024
	No	94	84	
	6 week			
	Yes	2	6	0.149
	No	98	94	
	12 week			
	Yes	0	0	*
	No	100	100	

*No statistics are computed as the parameter is constant

Table 4: Dyspareunia at 24 hours, 7 days, 6 weeks and 12 weeks in VR and CC groups.

Dyspareunia	Vicryl rapide (n=100)	Chromic catgut (n=100)	Chi-square	P value
6 week				
Yes	10	9		
No	22	17	0.074	0.786
Total	32	26		
12 week				
Yes	11	14		
No	68	70	0.236	0.627
Total	79	84		

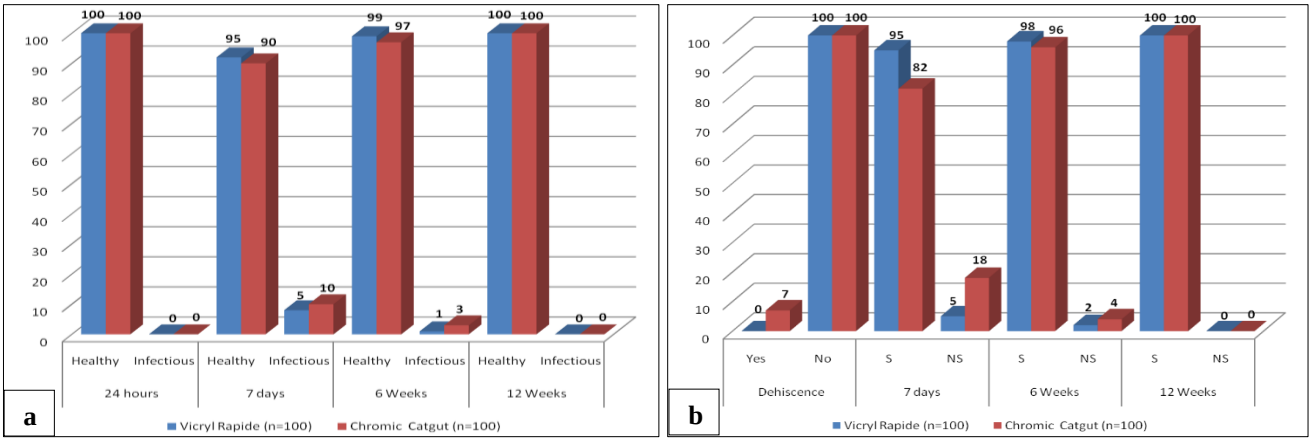

Figure 1: (a) Nature of wound and (b) wound healing at 24 hours, 7 days, 6 weeks and 12 weeks in VR and CC groups.

DISCUSSION

In this study, there was a significant difference observed in pain perception both short term and at week 6 between two sutures, thereby favouring the use of VR suture for episiotomy repairs. Only 31% of women in VR group experienced severe pain, compared to 74% women in CC group. However, the majority of women in VR group had moderate pain comprising 69% compared to 26% in CC group at 24 hours which is highly significant (p value <0.001). This shows that the intensity of pain was higher in the CC group. Subsequently, pain improved, none of the women in either group experienced severe pain 7 days onwards. On 7th day, 82% women in VR group were pain-free compared to 37% in CC group, however, 14% and 4% experienced mild and moderate pain in VR group compared to 32% and 31% in CC group (p value <0.001). Only 7% of women experienced mild pain in the CC group in comparison to none in the VR group at 6week (p value 0.007). However, all the women in both groups were pain-

free at 12 weeks. The data from the present study were comparable with those of other international studies. These study results were consistent with the study done by Perumal et al.[2] As far as long-term pain is concerned, our data is consistent with data reported by Perumal et al and Dasgupta et al (82% versus 40% at 6-week, p=0.0001).[2,4]

One of the common complaints to outpatient department (OPD) in the postpartum period is uncomfortable stitches which affect the quality of life, reduction of which results in a better quality of life. Our study shows that uncomfortable stitches were less in the VR group compared to the CC group. This is due to less tissue reaction and rapid absorption of VR suture. The results are consistent with Abhinayaa et al (28% versus 53% at 24-48 hour, 19% versus 26% at 10th day).[5]

Statistically, a significant difference was found between VR and CC group in term of induration at 7 days in our study (6% versus 16% with p value 0.024) which is in consistent with Abhinayaa et al (6% versus 15% on 3-5 days).[5] However, no significant difference was noted between two groups in long term induration i.e. at 6 week and 12 week.

Wound dehiscence was found in 7% of CC group however, none of the women in VR group had wound dehiscence (p value=0.007), consistent with the data from other studies. Perumal et al showed a higher incidence of wound dehiscence in the CC group compared to rapidly absorbing polyglactin 910 (15% versus 0%).[2] The results of wound dehiscence in our study were also similar with the study done by Naseer et al with more dehiscence in CC group (14.6% versus 6.4% with p value <0.05).[6]

In the present study, the infection was seen in 5 women in the VR group and 10 women in the CC group (p value=0.621). Wound infection, gaping and dehiscence (2% versus 24%) requiring resuturing was less in VR group than CC group in Dasgupta et al study.[4]

Wound resuturing was required in 7 women in CC group and none in VR group. No residual suture material was seen in either of VR or CC group at 6 week and 12 weeks in the present study. A study by Perumal et al is in agreement with the present study.[2] No statistically significant difference were noted in terms of dyspareunia in the present study at 6 week and 12 week (31.2% versus 34.6% and 13.9% versus 16.6% in VR and CC group respectively), consistent with Perumal et al (12.4% versus 10.7% at 12 week.[2] Our study supports the use of VR over CC for episiotomy repair which is consistent with the data shown by other studies. However, it is wise to point out certain limitations of the study. The sample size of present study was small. So, the result cannot be generalized and need large randomized trials to further strengthen the validity.

CONCLUSION

To conclude, VR is a promising suture material for episiotomy repair as compared to CC. Uncomfortable stitches were less in VR group. Wound dehiscence was markedly reduced and subsequent need for resuturing was less in VR group than in CC group. Wound healing was more certain in VR group. Hence, this study stipulates the potential benefits of VR over CC as it is associated with less perineal pain, less uncomfortable sutures, better wound healing, less dehiscence and less resuturing.

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