

A Prospective Randomized Comparative Study of Episiotomy Repair: Vicryl Rapide Versus Chromic Catgut

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Abstract

Background And Objectives: Perineal trauma is the most commonly encountered surgery in the day-to-day practice of an obstetrician. The factors which may influence the extent of any subsequent maternal morbidity include the type of suture material which is used, the suturing technique and the skill of the operator. The use of synthetic materials in episiotomy repairs reduce the postpartum pain and provides a better wound healing. The present study was designed to study the two different suture materials, namely, vicryl rapide and chromic catgut for episiotomy repair, in relieving the postpartum morbidity associated with episiotomy repair.

Methods: This study is a prospective randomized comparative study conducted in the department of obstetrics and gynaecology in Meenakshi medical college, Enathur, Kanchipuram. In this study, two hundred women who were given episiotomies following spontaneous or instrumental deliveries, who were admitted to the labour rooms were included. The outcome measures which were assessed were perineal pain and wound healing at 24-48 hours, 3-5 days and 6 weeks postpartum

Results: When compared to chromic catgut group, vicryl rapide group women had less pain (25% vs 64%) at 3-5 days and at 6 weeks postpartum (69% vs 81%). Wound healing was better in women who were sutured with vicryl rapide. There was also reduction in wound indurations, feeling of stitches and wound dehiscence in vicryl rapide group. Wound resuturing (7%) was needed in women who were sutured with chromic catgut and none in vicryl rapide group.

Conclusion: This study concluded that vicryl rapide was the ideal suture material for episiotomy repair, in reducing some of the morbidity associated with perineal repair following childbirth. There was significant reduction in the short-term pain. The incidence of wound dehiscence was markedly reduced.

Keywords: Sutures, Episiotomy, Perineal pain, wound healing, maternal morbidity

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I. Introduction

Episiotomy refers to a surgical incision of the female perineum performed at the time of delivery. Perineal trauma can be either a spontaneous tear or a surgical (episiotomy) enlargement of the pelvic soft tissue outlet during the last phase of second stage of labour or delivery. The purpose of episiotomy is to increase the diameter of pelvic soft tissue outlet and hence to prevent perineal lacerations, reduce the time of expulsion of the foetus thereby facilitating the delivery. Maternal benefits were thought to include reduced risk of perineal trauma, subsequent pelvic floor dysfunction and uterine prolapse, urinary incontinence, faecal incontinence, and sexual dysfunction. The potential benefits to the foetus were thought to include a shortened second stage of labour, which would result from a more rapid spontaneous delivery or from an instrumental vaginal delivery. Though episiotomy is known to have maternal benefits the immediate consequences include blood loss, perineal pain, oedema, infection and hematoma and wound dehiscence. The long term complications include the formation of scar tissue, wound infections and dyspareunia. Factors which may influence the extent of any subsequent morbidity include the type of suture material used, suturing technique and skill of the operator. There is debate among the practitioners about the use of appropriate material for episiotomy. Use of vicryl rapide in perineal repairs reduces postpartum pain and it also helps in better wound healing.

Present study was designed to study the two different suture materials, namely, vicryl rapide and chromic catgut for episiotomy repair, in relieving the postpartum complications associated with episiotomy or perineal laceration repair.

II. Aim

This study was conducted to compare vicryl rapide and chromic catgut for episiotomy repair, namely in relation to a short term maternal morbidity, in terms of the perineal pain and the wound healing.

III. Material And Method

This study is a prospective randomized comparative study conducted in the department of obstetrics and gynaecology in Meenakshi medical college, Enathur, Kanchipuram from December 2015 to July 2017. In this study, two hundred women who were given episiotomies following spontaneous or instrumental deliveries, who were admitted to the labour rooms were included.

The patients were distributed in two groups. Group A: 100 patients who were sutured with vicrylrapide 2-0 and group B: 100 patients who were sutured with chromic catgut 1-0.

Inclusion Criteria:The women with episiotomies following spontaneous or instrumental deliveries, are to be enrolled for the study.

Exclusion Criteria:Intrapartum fever, severe anaemia, previous perineal surgery other than the primary repair after child birth.

Women who fulfilled the above inclusion and exclusion criteria underwent an episiotomy suturing, either with vicrylrapide 2-0 (36 mm ½ circle double reverse cutting and round bodied needle) or chromic catgut 1-0 (30mm,1/2 circle round bodied needle).

All the episiotomies were right mediolateral.

The episiotomies were repaired by a standard three-step approach.

Vaginal mucosa - continuous interlocking suture

Perineal muscle - intermittent suture.

The skin closure - mattress suture.

Both the groups were assessed at 24-48 hrs, on days 3-5 and at 6 weeks postpartum.

The outcome measures which were recorded were (1) 24 to 48 hours: Perineal pain, temperature, feeling of slight stitches swelling, retention of urine (2) Days 3 to 5: Pain, temperature,feeling of slight stitches,indurations, wound discharge, wound dehiscence(3) 6 weeks: Perineal pain, temperature,healing by primary, secondary and tertiary intentions, wound indurations, wound dehiscence The pain was measured by using an oral analogue scale. The absence of pain, presence of pain were rated as 0, 1 and 2 respectively.

The descriptive data were presented as number and percentages with mean and standard deviations, wherever required. The Chisquare test was used for analysing the categorical data. The “Z” test was used to compare the mean between the two groups. A p-value of 0.05 or less was considered to be statistically significant.

Outcomes were summarised into a master chart. The data collected were analysed with SPSS 21.0 version.

IV. Result

The comparable tabulations permit certain statistical inferences to be made which are displayed below.

Table 1: Distribution of cases in relation to gravidity.

Gravida	Vicryl Rapide n (%)	Chromic Catgut n (%)
G ₁	41(41)	39(39)
G ₂	40(40)	35(35)
G ₃	14(14)	20(20)
G ₄	5(5)	6(6)

In vicryl rapide group 41% were Primigravida, 40% were 2nd gravida, 14% 3rd gravida and 5% were 4th gravida. In chromic catgut group 39% were Primigravida, 35% were 2nd gravida, 20% were 3rd gravida and 6% were 4th gravida. Chi-square value of 1.53 with a p-value of >0.05, which is statistically not significant.

Table 2: Mode of Delivery.

Mode of Delivery	Vicryl Rapide n (%)	Chromic Catgut n (%)
Spontaneous	86(86)	86(86)
Forceps	4(4)	10(10)
Vacuum	10(10)	4(4)

86% of the cases in VR group had spontaneous delivery and 86% in CC group had spontaneous delivery. Forceps were used in 4% of cases in VR group and 10% in CC group. Vacuum was used in 10% of cases in VR and 4% in CC group. Chi-square test value $\chi^2 = 5.143$, $p > 0.05$, which is statistically not significant.

Table 3: 24 – 48 hrs observations

Parameters		Vicryl Rapide	Chromic Catgut	
Pain Score	1	8(8)	4(4)	p > 0.05, NS
	2	36(36)	36(36)	
	3	56(56)	60(60)	
Temperature	Mean ±2 SD	97.45 ± 0.65	97.39 ± 0.65	p > 0.05, NS
	Range	96 – 100	96.4 – 101	
Induration	Present	14(14)	21(21)	p > 0.05, NS
	Absent	86(86)	79(79)	
Retention of urine	Present	2(2)	4(4)	p > 0.05, NS
	Absent	98(98)	96(96)	
Feeling of slight stitches	Present	28(28)	53(53)	p < 0.05, S
	Absent	72(72)	47(47)	

From the above table it can be observed that the perineal pain score of 0 was seen in 8% of cases in VR group and 4% in CC group in first 24-48 hours. Pain score of 1 was seen in 36% of cases in VR group and 36% in CC group. Pain score of 2 was observed in 56% of cases in VR group and 60% in CC group. Chi-square test value was $\chi^2 = 1.47$, $p > 0.05$, NS, which is statistically not significant. It was also observed that temperature during 24-48 hours observation were in a range of 96-100 in VR group and 96.4-101 in CC group. The mean SD ranges from 97.45 ± 0.65 in VR group and 97.39 ± 0.65 in CC group. $Z = 1.03$, $p > 0.05$, NS. The presence of wound swelling or induration is 14% of cases in VR group and 21% in CC group. Chi square test value was $\chi^2 = 1.69$, $p > 0.05$, NS, which is not significant. It can also be observed that retention of urine was seen in 2% of cases in VR group and 4% of CC group. Chi-square test value $\chi^2 = 0.69$, $p > 0.05$, NS, which is not significant. Feeling of slight stitches were observed in 28% of cases in VR group and 53% in CC group. Chi-Square test value of $\chi^2 = 12.97$, $p < 0.05$, which is statistically significant.

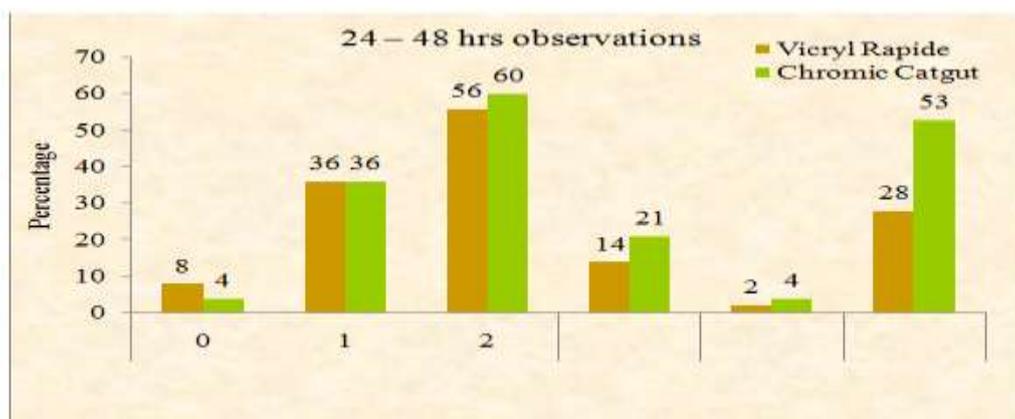


Table 4: 3 – 5 days of observations

Parameters		Vicryl Rapide	Chromic Catgut	
Pain Score	0	64(64)	25(25)	p < 0.05, S
	1	35(35)	58(58)	
	2	1(1)	17(17)	
Temperature	Mean ±2 SD	97.38 ± 0.55	97.50 ± 0.93	p > 0.05, NS
	Range	96.4 – 100	96 – 102	
Induration	Present	6(6)	15(15)	p < 0.05, S
	Absent	94(94)	85(85)	
Feeling of slight stitches	Present	11(11)	30(30)	p < 0.05, S
	Absent	89(89)	70(70)	
Wound Dehiscence	Present	4(4)	15(15)	p < 0.05, S
	Absent	96(96)	85(85)	
Wound Discharge	Present	2(2)	15(15)	p < 0.05, S
	Absent	98(98)	85(85)	

From table-4 it can be observed that the perineal pain score of 0 was present in 64% of cases in VR group and 25% in CC group in 3-5 days observation. Pain score 1 was observed in 35% of cases in VR group and 58% in CC group. Pain score of 2 was observed in 1% in VR group and 17% in CC group. Chi-square test value $\chi^2 = 37.0$, $p < 0.05$, S which is statistically significant. It can be observed that perineal pain was less on 3rd to 5th day compared to first 24-48 hours in VR group than in CC group, which is statistically significant. Temperature on 3rd to 5th day ranges from 96.4-100 in VR group and 96-102 in CC group. Mean SD ranges from 97.38 ± 0.55 in VR group and 97.50 ± 0.93 in CC group. The presence of wound swelling or induration in 6% cases in VR group and 15% in CC group. $\chi^2 = 4.31$, $p < 0.05$, S, which is significant. Wound induration was less in VR group than CC group on 3rd to 5th day as compared to 24-48 hours. Feeling of slight stitches were observed in 11% of cases in VR group and 30% in CC group. Chi-square test value $\chi^2 = 11.07$, $p < 0.05$, S which is statistically significant. The presence of wound dehiscence or disruption in 4% of cases in VR group and 15% of cases in CC group. Chi-square test value $\chi^2 = 7.04$, $p < 0.05$, S, which is significant. It can be observed that wound discharge was present in 2% of cases in VR group and 15% of cases in CC group. Chi-square test value $\chi^2 = 10.86$, $p < 0.05$, S, which is statistically significant.

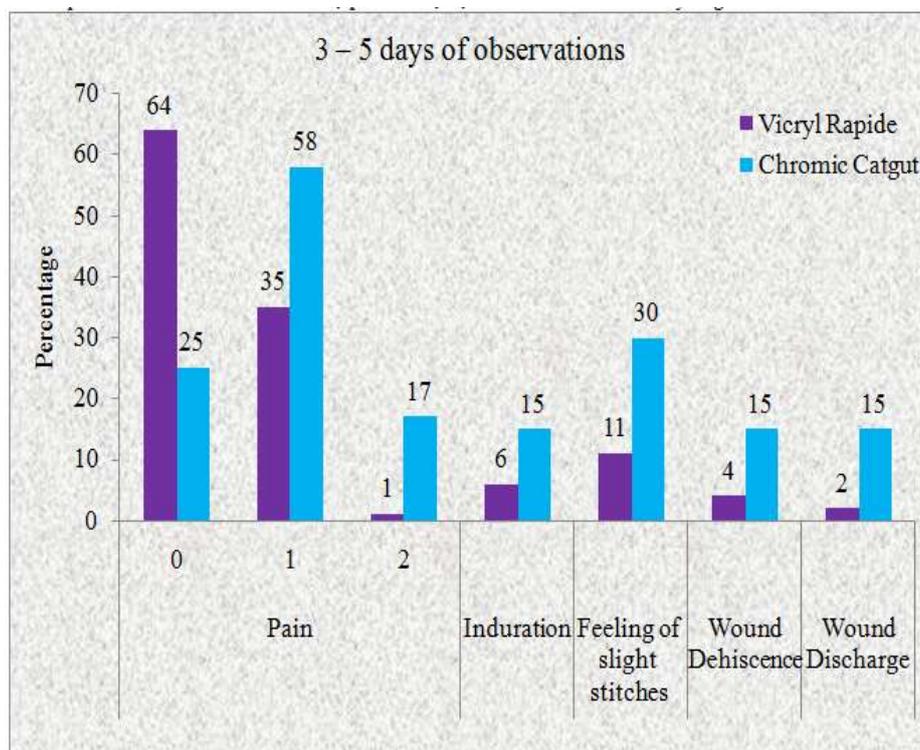


Table 5: Observation of 6 weeks postpartum

Parameters		Vicryl Rapide	Chromic Catgut	
Pain Score	0	81(81)	69(69)	$p < 0.05$, S
	1	0(0)	8(8)	
	2	0(0)	0(0)	
Temperature	Mean \pm 2 SD	97.39 ± 0.54	97.32 ± 0.54	$p > 0.05$, NS
	Range	96.4 – 98.2	96.4 – 98.2	
Induration	Present	2(2)	5(5)	$p > 0.05$, NS
	Absent	98(98)	95(95)	
Wound Healing	Primary	84(84)	67(67)	$p < 0.05$, S
	Secondary	3(3)	8(8)	
	Tertiary	0(0)	2(2)	

From the above table it can be observed that pain score 0 was seen in 81% of cases in VR group and 69% of CC group. Pain score 1 was seen in 8% of CC group and none in VR group. Chi-square test value $\chi^2 = 9.34$, $p < 0.05$, S which is statistically significant. The range of temperature is about 96.4-98.2 in VR group and 96.4-98.2 in CC group. The mean SD 97.39 ± 0.54 was observed in VR group and 97.32 ± 0.54 in CC group. It can be observed that induration was seen in 2% of cases in VR group and 5% in CC group. Chi-square test value $\chi^2 = 1.33$, $p > 0.05$, NS, which is statistically not significant. Wound healing by primary intention was observed in 84% of cases in VR group and 67% in CC group. Wound healing by secondary intention was observed in 3% in VR group and 8% in CC group. Tertiary type was seen in 2% in CC group and none in VR group. Chi-square test value $\chi^2 = 8.964$, $p < 0.05$, S, which is statistically significant. 13% of cases were lost in follow up in VR group and 23% cases were lost in CC group follow up.

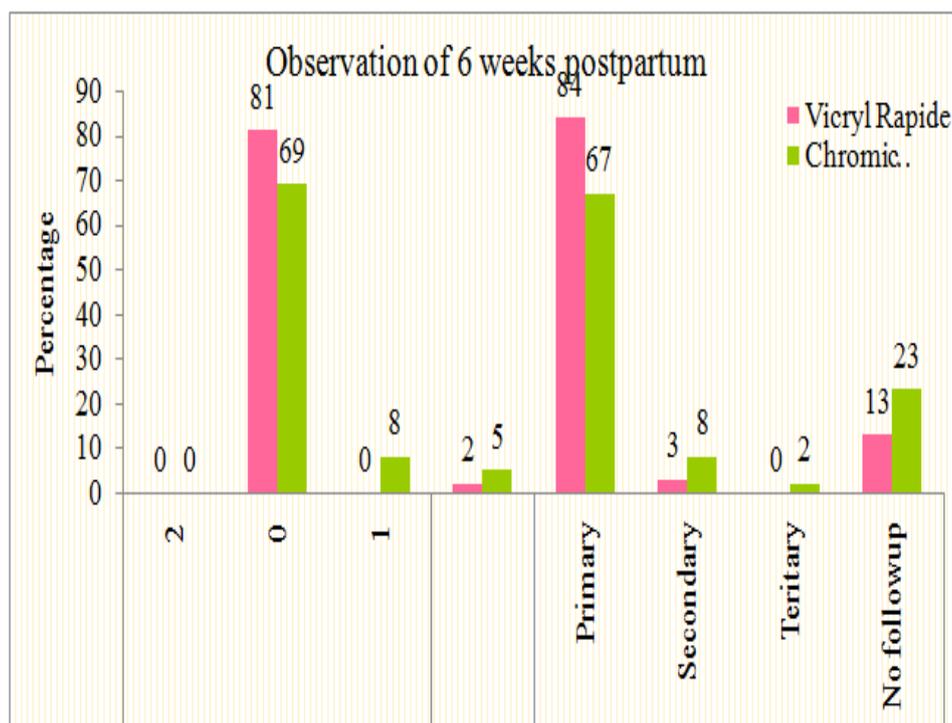
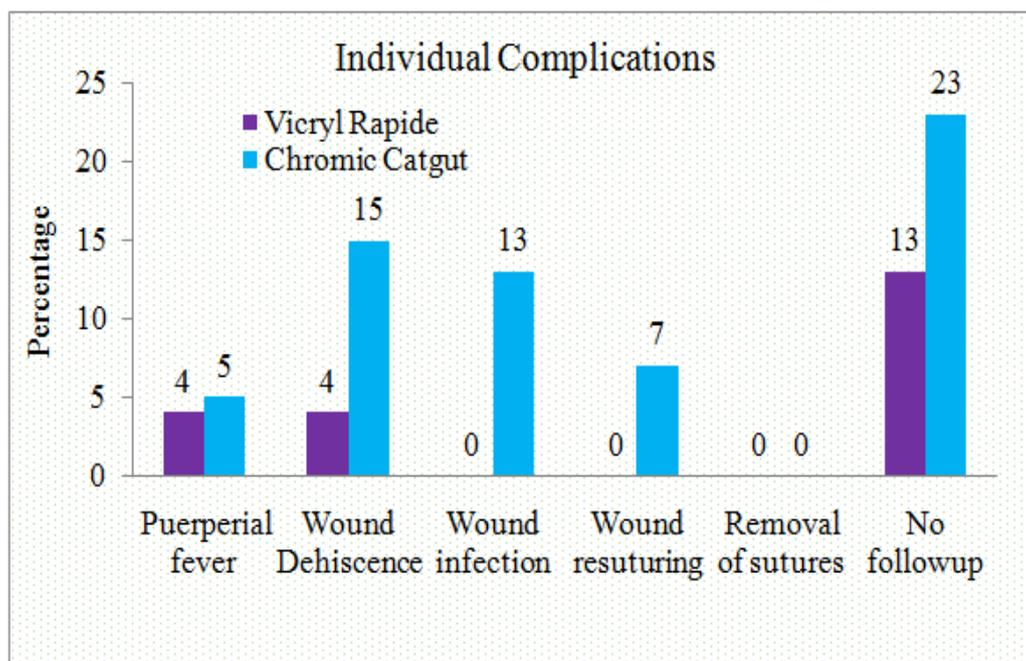


Table 6: Individual Complications.

Complications.	Vicryl Rapide n (%)	Chromic Catgut n (%)
1. Puerperal fever	4(4)	5(5)
2. Wound Dehiscence	4(4)	15(15)
3. Wound infection	0(0)	13(13)
4. Wound resuturing	0(0)	7(7)
5. Removal of sutures	0(0)	0(0)
6. No follow-up	13(13)	23(23)

The above table shows individual complication in each group. Puerperal fever was seen in 4% of cases in VR group and 5% in CC group. Wound dehiscence was observed in 4% of cases in VR group and 15% in CC group. Wound infection of 13% were seen in CC group and none in VR group. Wound resuturing was done in 7% of cases in CC group and none in VR group. Chi-square test value $\chi^2 = 6.74$, $p < 0.05$, S, which is statistically significant.



V. Discussion

Postpartum pain is the most distressing factors for a nursing mother. Identifying even a modest amount of improvement would be important. Since vicrylrapide elicits less inflammatory tissue response than chromic catgut, it reduces the postpartum pain.

perineal pain:

In the present study, no pain was observed in 8% of cases in Vicryl rapide group and 4% in Chromic Catgut group in first 24-48 hours, which was statistically not significant. However it can be observed that 64% of cases in Vicryl Rapide group had no pain compared to 25% in Chromic Catgut group after 3-5 days of observation which is statistically significant. On followup no pain was observed in 81% of cases in Vicryl Rapide group compared to 69% of cases in Chromic Catgut which is statistically significant. In a study by Leurox N et al¹ it was reported that fast absorbing polyglactin 910 is associated with significantly lower consumption of narcotics in first 36 to 48 hours after delivery and with a decrease in pain scores ($p < 0.05$). No difference was found at 6 weeks postpartum (p value 0.68). No difference was found at 3 months postpartum.

In another study by Mackrodt C et al² it was found that fewer women in polyglactin 910 group had pain at 24 to 48 hours (59% vs 67%, $p < 0.01$) and so also at 10 days postpartum (24% vs 29%, $p < 0.01$) and there was no clear difference between the two groups at 3 months postpartum.

In a study by Perumal D et al³ only 19.2% of the study group experienced severe pain, compared to 80.8% of the control group. Pain started to improve from third day onwards. 49% in the control group while, none in the study group experienced moderate pain on day seven. On the 15th day, none of the women in the polyglactin group complained of pain, compared to 53 of the chromic catgut group who experienced mild pain, which was statistically significant. In a study done by Kettle et al⁴, it was reported that there was less pain in first 3 days and was also less need for analgesia when sutured with polyglactin than chromic catgut. There was no significant difference in long term pain. Vicryl rapide elicit less inflammatory tissue response than chromic catgut, so reduces postpartum pain.

Swelling or induration of wound:

In the present study, the presence of wound swelling or induration is 14% of cases - in VR group and 21% in CC group, which is not significant in first 24-48hrs. It was observed in 6% cases in VR group and 15% in CC group on 3-5 days which is significant. At 6 weeks postpartum induration was seen in 2% of cases in VR group and 5% in CC group, which is statistically not significant.

In a study done by Shah PK et al⁵, it was reported that wound swelling was seen in 6.5% in VR group and 7.6% in CC group in first 24-48 hours and 2.8% in VR group and 3.4% in CC group on 5th day, which is statistically significant.

Feeling of slight stitches or uncomfortable stitches:

In the present study uncomfortable stitches were observed in 28% of cases in VR group and 53% in CC group at 24-48 hours which is statistically significant. Uncomfortable stitches were observed in 11% of cases in VR group and 30% in CC group at which is statistically significant.

Study done by Mackradt C et al ⁴⁵	Vicryl Rapide	Chromic Catgut	
24-48hrs	33	40	P<0.003
10 days	19	26	P<0.001

The above study shows that uncomfortable stitches were less in VR group compared to CC group. The lower rate of uncomfortable stitches were related to less tissue reaction of vicryl rapide and rapid absorption.

Wound dehiscence or disruption:

In the present study wound dehiscence was observed in 4% of cases in VR group and 15% in CC group at 3-5 days which was statistically significant. In a study done by Bose E et al⁷ wound gaping (Dehiscence) was recorded in five women sutured with CC, whereas, none of the women sutured with VR showed gaping of their episiotomy wound. Out of five women with wound dehiscence in CC group, three required re-suturing. The complications were significantly less ($P < 0.001$) in VR group compared to CC group. In a study conducted by Sleep Jet et al⁸ it was reported that no difference in the wound breakdown at 6 weeks postpartum for fast absorbing polyglactin 910 (4 of 175) and chromic catgut (3 of 134). p value was 0.959 which is statistically not significant. In a Mackrodt Cet al² it was reported that wound gaping was found less often with polyglactin 910 (16% vs 26%, $p \leq 0.001$) than with CC group, there was no detectable difference in the rate of wound breakdown at 10 days. In a Kettle Cet al⁴ it was reported that wound gaping at 10 days occurred about twice as often with interrupted sutures and rapidly absorbed suture material.

Wound discharge and wound infection:

In the present study, wound discharge was present in 2% of cases in VR group and 15% of cases in CC group. It was statistically significant with $p < 0.05$.

In a study conducted by Leurox N et al¹ it was reported that there was no infection at the site of perineum repair in both groups. In a study done by Upton et al⁶ it was reported one woman in each group had an infection at the repair site.

Wound healing:

In the Present Study, Wound healing by primary intention was observed in 84% of cases in VR group and 67% in CC group. Wound healing by secondary intention was observed in 3% in VR group and 8% in CC group. Tertiary type was seen in 2% in CC group and none in VR group. Results were statistically significant.

Study	Wound healing	Vicryl group (%)	Chromic catgut (%)	
Shah PK et al., ⁵	Fair	7.7	12	
	Good	83.5	78	
	Excellent	8.8	10	
Mackrodt C et al., ²	1st Intention	84	74	2p < 10 ⁻⁵
	2 nd Intention	15	25	
	3 rd Intention	1	1	
Leurox N et al., ¹	Incomplete healing	3.4	1.9	p<0.75

The results of the present study were comparable to above studies listed in the table.

Wound resuturing:

In the present study, wound resuturing was required in 7% of cases in CC group and none in VR group. In a study conducted by Shah PK et al⁵ it was reported that one patient in CC' group required resuturing. In a study done by Bowen ML et al⁹ it was reported that 3 women in polyglactin- 910 group had required resuturing compared with ten in CC group. The results of the present study were comparable with the above studies.

VI. Conclusion

It can be concluded that vicryl rapide rather than chromic catgut for episiotomy repair leads to less perineal pain and better healing. In Vicryl rapide group the incidence of wound dehiscence was markedly reduced and hence the need for resuturing. There was no need for suture removal. Wound healing was more secure with vicryl rapide. As this study did not have long term follow up, the long term beneficial effects of the type of suture material used for episiotomy repair cannot be concluded. Present study indicates clear advantages of vicryl rapide over chromic catgut as far as subjective pain perception, wound healing, wound dehiscence and re-suturing are concerned. Hence this study recommends use of vicryl rapide for episiotomy repair in the care of parturient women.

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