

# Short Term Outcome Measures of Chromic Catgut Versus Vicryl Rapide for Episiotomy Repair

Misbah Naseer<sup>1</sup>, Humera Noreen<sup>2</sup>, Humaira Bilqis<sup>3</sup>, Shagufta Saeed Sial<sup>4</sup>

<sup>1</sup>Medical Officer, Benazir Bhutto Hospital, Rawalpindi, <sup>2</sup>Assistant Professor of Obs/Gynae, Rawalpindi Medical University, Benazir Bhutto Hospital, Rawalpindi, <sup>3</sup>Assistant Professor of Obs/Gynae, Rawalpindi Medical University, unit I, Holy Family Hospital, Rawalpindi, <sup>4</sup>Professor of Obs/Gynae, Rawalpindi Medical University, Benazir Bhutto Hospital, Rawalpindi

**Correspondence:** Dr Misbah Naseer

Medical Officer, Gynae/Obs Benazir Bhutto Hospital, Rawalpindi

Email address: misbahnaweed@yahoo.com

## Abstract

**Objective:** To compare the short term outcome measures of chromic catgut versus vicryl rapide for episiotomy repair, in terms of frequency of perineal pain and wound dehiscence.

**Place And Duration:** This study was conducted in the Department of Obstetrics and Gynaecology Benazir Bhutto Hospital, Rawalpindi, during a period of six months from December 2014 to May 2015.

**Methodology:** Total 220 patients who fulfilled the inclusion criteria of study were included in the study. Patients were divided into two groups by lottery method. In Group A episiotomies were sutured with chromic catgut 1-0 (30mm, ½ circle round bodied needle) and Group B with vicryl rapide 1-0 (36mm, ½ circle round bodied needle). All the episiotomies were right mediolateral and sutured by residents on call. The repair was done according to departmental protocols and suture material used according to randomization.

The main outcome measures were perineal pain and wound dehiscence. Perineal pain within 48 hours assessed by visual analogue scale (VAS) and wound dehiscence was recorded within 3 weeks postpartum. Chi-square test was applied and results tabulated. P-Value <0.05 was taken as significant.

**Results:** Among 220 total patients, majority of the patients between 21-30 years, seventy four percent (n=163) of patients were at gestational age of 31-40 weeks. Mostly patients were primigravida 67.3% (n=148).

Perineal pain was recorded in 68.6% (n=151), the pain was mild in 45% (n=68), moderate in 36.4 % (n=55) and severe in 18.5% (n=28). (P-value=0.000) Wound dehiscence was found in 20% and 9.1% of Group A and B respectively. (P-value=0.034)

**Conclusion:** Vicryl rapide was the better suture material for episiotomy repair, which resulted in less perineal pain and better wound healing as compared to chromic catgut.

**Keywords:** Episiotomy, perineal pain, wound dehiscence, dyspareunia, maternal morbidity, suture materials.

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## Introduction

Episiotomy is a surgical incision which is made in the perineum to enlarge the vaginal opening for child birth.<sup>1</sup> Although the current strategy is to reduce the incidence of episiotomy, even then it is the most common surgical procedure experienced by women,

worldwide. Most of the women experienced post-procedural perineal pain and about one-fifth have to suffer from long term problems like superficial dyspareunia. The related morbidity in the terms of pain can be very stressful and interferes with

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maternal daily activities such as sitting, walking, lying down, urinating and defecating and also disrupts breastfeeding, family life and sexual activity.<sup>2</sup>

The role of episiotomy, its effectiveness and indications are poorly established and its practice has remained controversial. Despite that the routine use of episiotomy is currently not recommended, its prevalence is still high. The recommended prevalence of episiotomy by the World Health Organization (WHO), is around 10%.<sup>3</sup>

The risks of pelvic floor injuries increase with episiotomies associated with operative vaginal deliveries (OVD). The mediolateral and median episiotomies increased the risk of obstetric anal sphincter injuries (OASIS).<sup>4</sup>

According to the International Classification of Diseases, 9<sup>th</sup> Revision (ICD-9) diagnosis and procedure codes; episiotomy is the most common "pelvic floor morbidity" women having during the child birth.<sup>5</sup> The routine approach to episiotomy did not reduce or greatly increase the risk of anal sphincter injury and is associated with greater maternal morbidity.<sup>6</sup>

For episiotomy repair, the choice of suture material, suture technique and surgical skills can influence the short and long term morbidity. Rapidly absorbed synthetic materials are reported to be better than mono-filament sutures when perineal pain and wound healing are to be evaluated.<sup>7</sup>

Plain catgut is manufactured from collagen, which is derived from the intestines of healthy mammals. It causes inflammatory reaction in the tissues because it is broken down by proteolytic enzymes and phagocytosis. It is an unstable material and its absorption time is variable. Chromic catgut is a catgut which is treated with chromic salts to prevent its water absorbing property as plain catgut, which slows down its absorption time and decreases the inflammatory response.<sup>8</sup>

Vicryl rapide is a braided suture made from a copolymer of glycolic acid and lactic acid named polyglactin 910. It is produced by irradiating vicryl, which accelerates its bioabsorption. In the body, this suture material is rehydrolyzed into glycolic acid and lactic acid in about 7-10 days after surgery. Vicryl rapide is used widely in skin suturing. It is also suitable for use in children because of its soft feel on

the skin and best cosmetic. Vicryl is a braided suture and possess better handling characteristics than chromic catgut, however, the drawback of braided suture is that the bacteria can easily colonize among the braided interstices and this pose an infection risk, when used in vivo. To avoid these drawbacks, vicryl is irradiated to make vicryl rapide, the fast absorbing synthetic suture.

As compared to vicryl (a standard polyglactin 910), vicryl rapide is a rapidly absorbable polyglactin 910 used for perineal repair now a days. This suture material degrades more rapidly and absorb completely in 40 days but it takes about 60 days for standard polyglactin 910.<sup>9</sup>

Episiotomy has both short term and long term complications, which may resulted in maternal morbidity.

Short term complications include perineal pain for 24-48 hours after episiotomy repair, wound infections and wound dehiscence.

Perineal trauma during child birth and related pain is very common and have a negative impact on the psycho-social, physical and family life of a mother.<sup>10</sup>

The development of chronic pain after episiotomy is really a health problem. An incidence of 12.8% of women having chronic pain in episiotomy was noted in a prospective cohort observational study.<sup>11</sup>

Wound dehiscence in an episiotomy can be seen in first week till three weeks postpartum. Most significant factors causing wound break down are mediolateral episiotomy, especially with adjunct to operative vaginal delivery, third and fourth degree lacerations and meconium.<sup>12</sup>

Techniques of episiotomy repair, suture material and surgical skills may have an impact on perineal pain and wound dehiscence. A retrospective analysis show the use of vicryl rapide for episiotomy repair is better than chromic catgut<sup>13</sup>. A conflicting data from a study of Karachi suggest chromic catgut as effective as vicryl rapide in low resource country like Pakistan.<sup>14</sup>

The purpose of this study is to compare the short term outcome of chromic catgut versus vicryl rapide for episiotomy repair, in terms of frequency of perineal pain and wound dehiscence.

## Methodology

The study was conducted in the Department of Obstetrics and Gynaecology, Benazir Bhutto Hospital, Rawalpindi. It was Randomized Controlled Trial. Study was conducted over period of six months. Non-probability Consecutive Sampling technique was used. Sample size was calculated by using WHO sample size calculator for two proportions

- Anticipated populations proportions =  $P_1 = 4\%$ <sup>15</sup>
- Anticipated populations proportions =  $P_2 = 13.5\%$ <sup>15</sup>
- Power of test  $(1-\beta) = 80\%$
- Level of significance  $(\alpha) = 5\%$
- Sample size = 220 (110 in each group)

All women undergoing episiotomy following spontaneous vaginal delivery with gestational age > 37 weeks were included in the study. Age ranges between 18-40 years.

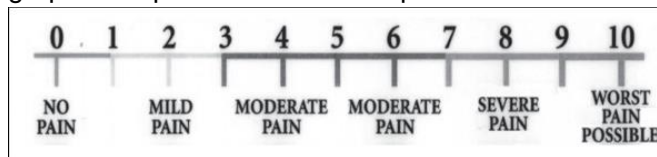
The women with perineal or vaginal tears, extension of episiotomy, delivery of dead fetus, dai handled cases and the patients with intrapartum fever and co-morbid diseases like diabetes mellitus, severe anemia and use of steroid drugs will be excluded from the study.

A total of 220 cases fulfilling the inclusion and exclusion criteria were enrolled from the Department of Obstetrics and Gynaecology, Benazir Bhutto Hospital, Rawalpindi. An informed consent of the patients were taken to include their data in the study. Approval certificate was obtained from ethical committee. History, physical examination and demographic information of all the patients were recorded. Patients were divided into two groups by lottery method.

Group A: were allotted for chromic catgut 1-0 (30mm, ½ circle round bodied needle) Group B: for vicryl rapide 1-0 (36mm, ½ circle round bodied needle). All the episiotomies were right mediolateral. All episiotomies were sutured by residents on call according to departmental protocols. Suture material was used according to randomization.

Both the groups were assessed for 2 main outcome measures: perineal pain and wound dehiscence.

Perineal pain was assessed within 48 hours by Visual Analogue Scale (VAS). It was determined by graphical presentation on pain scale where,



0 means no pain, 1-3 = mild pain. 4-6 = moderate pain and 7-10 = severe pain

Wound dehiscence was recorded within 3 weeks postpartum.

Data were analyzed in SPSS version 16.0. Mean and Standard deviation was calculated for quantitative variable like age, gestational age of the patients. Frequencies and percentage was calculated for qualitative variables i.e perineal pain and wound dehiscence.

Effect modifiers like age and gestational age of the patient was controlled by stratification. Post stratification Chi-square test was applied, keeping p-value  $\leq 0.05$  as significant.

## Results

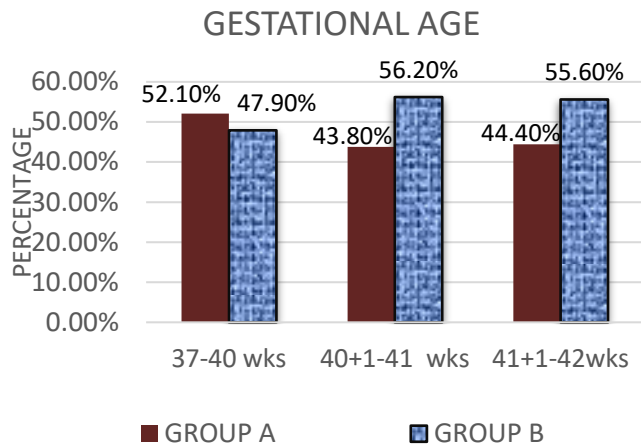
The total vaginal deliveries in last one year were 4487 (66%) out of total annual maternities of 6,741. The total episiotomy rate was calculated as around 35%. A total number of 357 patients were included in the study and there was a dropout of 137 patients who lost the follow-up, and the rest of 220 patients fulfilling the inclusion and exclusion criteria and completing the follow up were enrolled to compare the short term outcome of chromic catgut and vicryl rapide in episiotomy repair.

Age distribution of the patients were done where most of the patients recorded were between 21-30 years in both groups, mean and standard deviation was calculated as  $23.98 \pm 4.113$  in Group A and  $24.40 \pm 3.980$  in Group B.

Majority of the patients had gestational age of up to 40 weeks, about 74.1% ( $n=163$ ). The mean and standard deviation was calculated as  $39.29 \pm 1.067$ . The distribution of gestational age in both study groups is given in a bar chart. (Figure no. 1)

Overall 67.3% ( $n=148$ ) patients were primigravida while 32.7% ( $n=72$ ) were multigravida. Primigravida in Group A were 68.2% ( $n=75$ ) and in Group B were

66.4% (n=73). Multigravidas were 31.8% (n=35) in Group A, while 33.6% (n=37) in Group B.



**Figure 1: Gestational Age Distribution(n=220)**

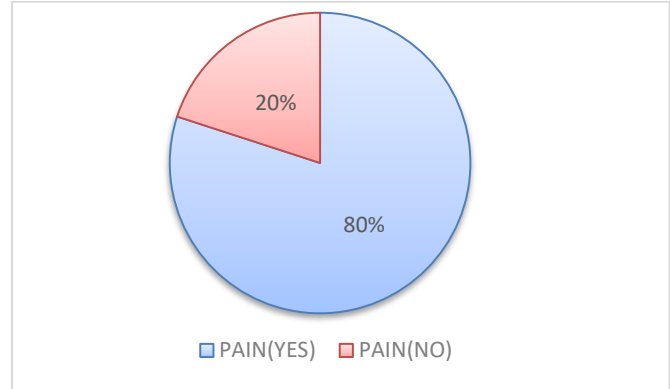
**Perineal pain:** In overall 220 patients, 31.4%(n=69) patients had no perineal pain, while 68.6%(n=151) patients did experience post-procedural pain.

Amongst 151 patients who experienced pain, 45%(n=68) had mild pain, 36.4%(n=55) had moderate pain while 18.5%(n=28) had severe pain. The distribution of pain according to the study group is given in Table no. I. When both the study groups were compared with each other based on the categories of pain score, Chi-square test was applied which shows value of 21.842 and p-value as 0.000, showing that the difference in both groups is highly statistically significant.

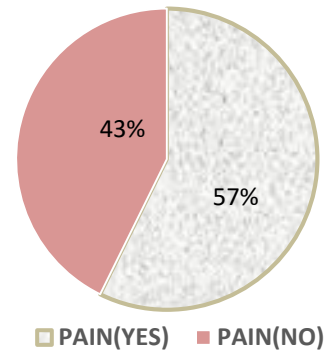
The status of presence and absence of pain was also compared in both study groups and the difference observed was that in Group A(chromic catgut) 20% (n=22) have no pain at all and pain is present in 80% (n=88) patients (Figure no 2), while in Group B (vicryl rapide) 42.7% (n=47) had no pain and presence of pain was noted in 57.3% (n=63) of

patients. (Figure no 3)

When both the study groups were compared in terms of presence or absence of pain, chi-square test was applied showing value of 13.197 and p-value of 0.000, showed that this difference is highly statistically significant.



**Figure 2: Percentage of perineal pain in Group A (chromic catgut) (n=110)**



**Figure 3. Percentage of perineal pain in Group B(vicryl rapide) (n=110)**

**Wound dehiscence:** In overall 220 patients wound dehiscence was found in 14.5% (n=16) of Group A and 6.4% (n=07) in Group B while no dehiscence

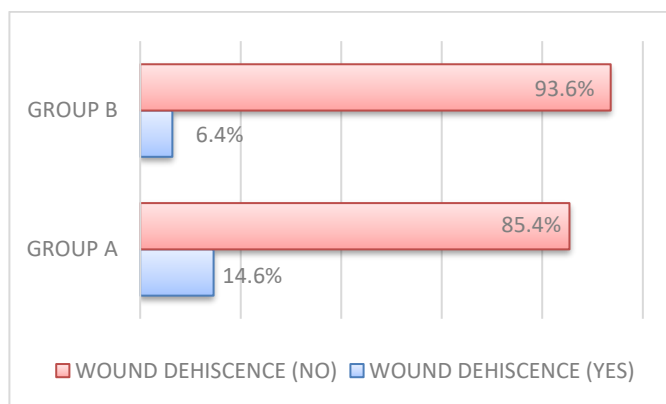
**Table I: Distribution of perineal pain (n=220)**

Perineal pain	Group A (chromic catgut) (n=110)		Group B (vicryl rapide) (n=110)		Total	
	No. of patients	% age of study groups	No. of patients	%age of study groups	No. of patients	%age
No pain	22	20%	47	42.7%	69	31.4%
Mild pain	31	28.2%	37	33.6%	68	30.9%
Moderate	36	32.7%	19	17.3%	55	25%
Severe	21	19.1%	07	6.4%	28	12.7%
<b>Total</b>	<b>110</b>	<b>100%</b>	<b>110</b>	<b>100%</b>	<b>220</b>	<b>100%</b>



was seen in 85.4% (n=94) of Group A and 93.6% (n=103) of Group B patients. (Figure no. 4)

When both groups were compared in terms of presence or absence of wound dehiscence, chi-square test was applied which showed value of 5.266 and p-value of 0.034, showing that difference is statistically significant.



**Figure 4. Comparison of Wound Dehiscence in Group A and Group B (n=220)**

## Discussion

The present study supports the use of vicryl rapide over chromic catgut for episiotomy repair. The women with vicryl rapide has less short-term pain and wound dehiscence.

The results of the study are in agreement with Kettle C and workers who recorded that the chromic catgut has more short-term perineal pain as compared to synthetic suture like vicryl rapide.<sup>13</sup>

One study which was done by Bharathi A et al<sup>15</sup> reported no statistically significant reduction in the perineal pain for first 48 hours. However, the difference was found among use of analgesics that is, only 0.5% of the women complained of perineal pain which required analgesics in the vicryl rapide group as compared to 15.5% women in the chromic catgut group, which was statistically significant. The study also showed the statistically significant reduction in the long-term perineal pain in the vicryl rapide group.

Study by Greenberg JA and colleagues reported that there was a statistically significant reduction in pain (25 vs 34%) in the vicryl rapide group and chromic catgut respectively at 24 to 48hrs. At 6 to 8 weeks there was again a statistically significant reduction in

the pain and decrease in analgesic use (5% vs 10%).<sup>16</sup>

Conflicting results were also found in one study by Perveen F<sup>14</sup> and colleague that the outcome measures like perineal pain and wound healing are similar in both groups and they suggest chromic catgut to be still effective suture material for perineal repair in resource poor countries like Pakistan, as vicryl rapide has more expense. Although the sample size of the study was only slightly less than this current study, and they also compared different suturing techniques which may be another confounding variable affecting the results. Apart from suture material the other reasons of pain include threshold of patient, technique, skill of operator and presence of infection.<sup>17</sup>

Wound dehiscence is one of the important causes of the resuturing and the prolong hospital stay in the postpartum period, which has a significant effect on the maternal mental and physical health. In this study the wound dehiscence was observed in 14.6% of chromic catgut group and 6.4% of vicryl rapide group with p-value of  $\leq 0.05$  which is statistically significant. Bharathi A et al reported wound dehiscence in 4% of the cases of vicryl rapide group while in 13.5% of cases in chromic catgut group, which is nearly equal to this study.

The results of wound dehiscence in this study were also similar with the study done by Kettle C et al<sup>13</sup> that less wound dehiscence was found in the vicryl rapide group than in the chromic catgut group.

The better results of wound healing in vicryl rapide are due to its fast absorbing properties as it is processed by irradiation. It retains 50% of its tensile strength at 5 days, by which most of the skin heals. These physical characteristics of suture cause less visible stitches 2 weeks after repair, thus causing less discomfort to the patient.<sup>18</sup>

## Limitations

Like some other studies, the results of this study were not able to demonstrate any differences in overall perineal pain perception between two groups and it was difficult to compare pain tolerance among women. In addition, the mean pain score in this study was around 4 at even 24-48hrs of perineal repair assessed by visual analogue scale (VAS).

The sample size of the study was small and not enough for subgroup analysis like repair by senior versus junior doctors and operative vaginal deliveries versus spontaneous vaginal deliveries. Therefore, larger studies are required to be conducted to estimate the outcome measures of vicryl rapide suture material after operative vaginal deliveries and by operators with different experience.

## Conclusion

The study reveals that the vicryl rapide as compared to chromic catgut used for episiotomy repair, leads to less perineal pain up to 48hrs. The wound healing is found to be more secure in vicryl rapide, resulting in fewer wound dehiscence.

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