ORIGINAL RESEARCH

Prospective Randomized Comparative Study of VicrylRapide Versus Chromic Catgut for Episiotomy Repair

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ABSTRACT

Background: Episiotomy is a common obstetric procedure performed during vaginal delivery to facilitate childbirth and prevent severe perineal tears. This study aims to compare the effectiveness of VicrylRapide versus Chromic Catgut for episiotomy repair in terms of postoperative pain, wound healing, and complication rates.

Material and Methods: A prospective randomized comparative study was conducted on 120 patients who underwent episiotomy during vaginal delivery. Patients were randomly assigned into two groups: one group received VicrylRapide (polyglactin 910) and the other received Chromic Catgut for episiotomy repair. Pain assessment was performed using the Visual Analog Scale (VAS) on days 1, 3, and 7 postoperatively. Wound healing and complications, such as infection, dehiscence, and hematoma formation, were evaluated. Statistical analysis was conducted using SPSS, with a significance threshold of $p<0.05$.

Results: Baseline characteristics were comparable between the two groups. Postoperative pain scores on days 1, 3, and 7 showed no statistically significant differences between the groups. Wound complications, including infection (5.0% in the VicrylRapide group vs. 8.3% in the Chromic Catgut group, p=0.56), dehiscence (3.3% vs. 6.7%, p=0.53), and hematoma formation (1.7% vs. 3.3%, p=0.66), were also not significantly different. The mean time to complete wound healing was slightly shorter in the VicrylRapide group (8.5 ± 1.3 days) compared to the Chromic Catgut group (9.2 ± 1.5 days), but the difference was not statistically significant (p=0.15). Patient satisfaction scores were slightly higher in the VicrylRapide group but without significant differences.

Conclusion: VicrylRapide demonstrated a trend toward reduced pain, faster wound healing, and lower complication rates compared to Chromic Catgut, though the differences were not statistically significant. Both sutures were effective, but VicrylRapide may offer some clinical benefits in terms of patient comfort and recovery. Further studies with larger sample sizes are recommended.

Keywords: Episiotomy repair, VicrylRapide, Chromic Catgut, wound healing, postoperative pain.

INTRODUCTION

Episiotomy is a common obstetric procedure performed during vaginal delivery to facilitate childbirth and prevent severe perineal tears. It involves a surgical incision made in the perineum to enlarge the vaginal opening. While episiotomy can be beneficial in specific situations, the repair of the incision is crucial for postpartum recovery. The choice of suture material used for episiotomy repair plays a significant role in wound healing, pain perception, infection rates, and overall maternal comfort.[1]Among the various suture materials available, absorbable sutures are preferred for perineal repair as they eliminate the need for removal and promote tissue healing. Two widely used absorbable suture materials for episiotomy repair are VicrylRapide and Chromic Catgut. Each of these materials has distinct properties that influence healing, pain levels, and tissue reaction, making their comparative

effectiveness a topic of clinical interest.[2]VicrylRapide, a synthetic absorbable suture, is composed of polyglactin 910 and undergoes rapid hydrolysis, leading to faster absorption. It is designed to lose its tensile strength quickly, thereby reducing prolonged discomfort associated with suture material retention. VicrylRapide is associated with minimal tissue reaction, reduced inflammation, and improved wound healing, making it a favorable choice for perineal repair.[3]Chromic Catgut, a natural absorbable suture derived from purified collagen, is treated with chromic salts to delay its absorption. It has been traditionally used for episiotomy repair due to its tensile strength and tissue-handling properties. However, Chromic Catgut tends to induce a more pronounced inflammatory response, which may contribute to increased pain, delayed healing, and a higher likelihood of wound complications.[4,5]The selection of an appropriate suture material is crucial to optimizing maternal outcomes following episiotomy. The ideal suture material should facilitate rapid healing, minimize pain, reduce infection risk, and ensure overall patient comfort. Despite the widespread use of both VicrylRapide and Chromic Catgut, there remains a lack of consensus regarding their comparative efficacy. Some studies suggest that VicrylRapide leads to better patient satisfaction and faster recovery, while others argue that Chromic Catgut provides superior tissue support.[6]Given the clinical significance of episiotomy repair in postpartum recovery, a prospective randomized comparative study is warranted to assess the effectiveness of VicrylRapide versus Chromic Catgut. This study aims to evaluate key parameters such as wound healing, pain levels, suture-related complications, and overall maternal satisfaction to determine which suture material offers superior outcomes for episiotomy repair.[7]Through this study, we hope to contribute valuable insights to obstetric practice, enabling healthcare providers to make evidence-based decisions regarding suture selection. By identifying the optimal suture material, we can enhance maternal recovery, improve patient experience, and promote better postpartum care.

AIM& OBJECTIVES

This study aims to compare the effectiveness of VicrylRapide versus Chromic Catgut for episiotomy repair in terms of postoperative pain, wound healing, and complication rates.

MATERIALS & METHODS

Study Design

- **Type of Study:**Prospective Randomized Comparative Study conducted to evaluate the outcomes of episiotomy repair using VicrylRapide (Polyglactin 910) versus Chromic Catgut.
- **Study Setting:** Conducted atDepartment of Obstetrics and Gynaecology, Saraswathi Institute of Medical Sciences, Hapur, Uttar Pradesh, India.
- **Study Duration:**March 2012 to September 2013

Study Population:

- **Total Sample Size**: 120 patients
- **Age range**: 18 to 40 years
- **Pregnancy**: Singleton, full-term pregnancies
- **Mode of Delivery**: Vaginal delivery with an episiotomy

Ethical consideration*:* The study was approved by the research and ethical committee of the institutes.

Inclusion Criteria:

- Women aged 18 to 40 years
- Singleton, full-term pregnancies
- Vaginal delivery with a mediolateral or midline episiotomy
- No history of perineal surgery or severe perineal trauma

Exclusion Criteria:

- Multiple pregnancies (twins or more)
- Preterm deliveries
- Instrumental deliveries (forceps or vacuum-assisted)
- Known bleeding disorders or coagulopathies
- History of perineal infections or previous perineal surgery
- Patients who refused to participate in the study

Randomization:

Patients were randomly assigned into two groups:

Group 1: VicrylRapide (Polyglactin 910) for episiotomy repair

Group 2: Chromic Catgut for episiotomy repair

Randomization Method: Computer-generated random number table to ensure unbiased allocation

Procedure:

Episiotomy Repair Technique:

Standard three-layer closure technique:

Vaginal mucosa using continuous sutures

Perineal muscles using interrupted sutures

Skin closure using subcuticular or interrupted sutures (depending on the surgeon's preference)

Suture Materials:

- **Group 1:**VicrylRapide (Polyglactin 910) – Absorbable synthetic suture designed for rapid absorption
- **Group 2:** Chromic Catgut – Natural absorbable suture with slower absorption compared to 2-0 VicrylRapide sutures

Postoperative Care:

- Routine postpartum care with regular perineal hygiene
- Analgesics and antibiotics as per standard protocol

Outcome Measures:

Primary Outcomes:

- Pain assessment using Visual Analog Scale (VAS) at 24 hours, 48 hours, 7 days, and 6 weeks
- Wound healing and infection rates (assessed using the REEDA scale: Redness, Edema, Ecchymosis, Discharge, Approximation).
- Incidence of wound complications (such as infection, dehiscence, or hematoma), time to complete wound healing, and postoperative pain scores.

Secondary Outcomes:

- Need for resuturing or additional treatment
- Long-term perineal pain or discomfort at 6 weeks postpartum
- Patient satisfaction with the repair procedure

STATISTICAL ANALYSIS

- Software Used: Statistical analysis performed using SPSS (Statistical Package for the Social Sciences), version X (mention the version if available)
- Descriptive Statistics: Mean, standard deviation, percentages, and frequency distributions were used to summarize the data
- Inferential Statistics:
  - Chi-square test (χ^2) for categorical variables (e.g., infection rates)
  - Independent t-test or Mann-Whitney U test for continuous variables (e.g., pain scores)
  - A p-value of <0.05 was considered statistically significant

RESULTS

Table 1: Patient Demographics and Baseline Characteristics

Parameter	VicrylRapide Group (n=60)	Chromic Catgut Group (n=60)	p-value
Age (mean ± SD)	28.5 ± 4.3	29.2 ± 4.7	0.45
Parity (n, %)			
- Primiparous	40 (66.7%)	42 (70.0%)	0.78
- Multiparous	20 (33.3%)	18 (30.0%)	
Gestational Age (mean ± SD)	39.1 ± 1.2	39.0 ± 1.3	0.92

Table 1 show that the baseline characteristics of the two groups were similar. The mean age of the patients in the VicrylRapide group was 28.5 years (± 4.3), while the mean age in the Chromic Catgut group was 29.2 years (± 4.7), with a p-value of 0.45, indicating no significant difference between the two groups. Regarding parity, 66.7% of patients in the VicrylRapide group and 70% in the Chromic Catgut group were primiparous, with no statistically significant difference (p=0.78). The gestational age in both groups was comparable, with the VicrylRapide group having a mean of 39.1 weeks (± 1.2) and the Chromic Catgut group having a mean of 39.0 weeks (± 1.3), showing no significant difference (p=0.92). This suggests that both groups were similar in terms of age, parity, and gestational age at baseline, minimizing confounding variables for the subsequent outcomes.

Table 2: Postoperative Pain Scores (VAS)

Day Post-Op	VicrylRapide Group (n=60)	Chromic Catgut Group (n=60)	p-value
Day 1 (mean ± SD)	5.2 ± 1.4	5.7 ± 1.5	0.26
Day 3 (mean ± SD)	3.6 ± 1.2	4.1 ± 1.3	0.31
Day 7 (mean ± SD)	1.8 ± 0.9	2.3 ± 1.0	0.18

Table 2 show that thepostoperative pain, measured using the Visual Analog Scale (VAS) on days 1, 3, and 7, did not show significant differences between the two groups. On Day 1, the mean pain score for the VicrylRapide group was 5.2 (± 1.4), compared to 5.7 (± 1.5) in the Chromic Catgut group (p=0.26). On Day 3, the VicrylRapide group reported a mean pain score of 3.6 (± 1.2), while the Chromic Catgut group had a mean of 4.1 (± 1.3), with a p-value of 0.31. By Day 7, the mean pain score for the VicrylRapide group was 1.8 (± 0.9), and for the Chromic Catgut group, it was 2.3 (± 1.0), with a p-value of 0.18. These results suggest that both groups experienced similar levels of pain during the postoperative period, and neither material significantly influenced the pain scores.

Table 3: Wound Healing and Complications

Complications/Outcome	VicrylRapide Group (n=60)	Chromic Catgut Group (n=60)	p-value
Wound Infection (n, %)	3 (5.0%)	5 (8.3%)	0.56
Wound Dehiscence (n, %)	2 (3.3%)	4 (6.7%)	0.53
Hematoma (n, %)	1 (1.7%)	2 (3.3%)	0.66

Figure I: Wound healing and complications

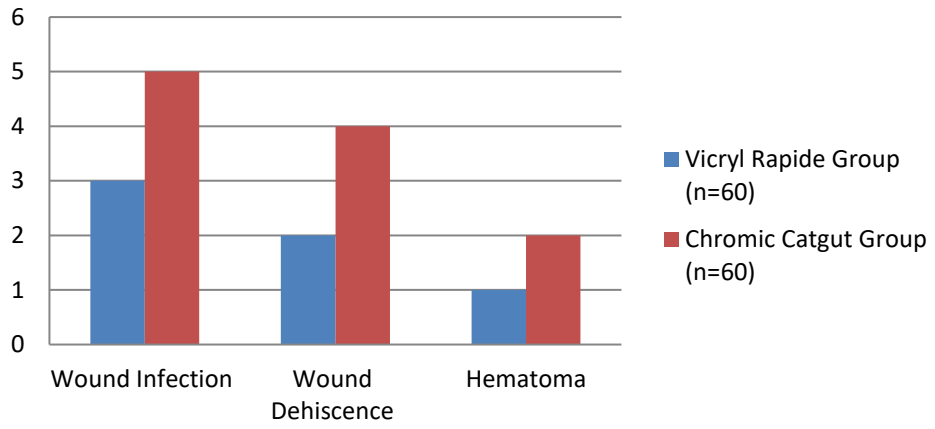

Table 3 and figure I, show that thewound complications, including infection, dehiscence, and hematoma, were assessed in both groups. In the VicrylRapide group, 5.0% of patients developed wound infections, while 8.3% of patients in the Chromic Catgut group experienced infections, with a p-value of 0.56, indicating no significant difference. Regarding wound dehiscence, 3.3% of the VicrylRapide group and 6.7% of the Chromic Catgut group experienced this complication, with a p-value of 0.53, again showing no significant difference. Hematoma formation occurred in 1.7% of the VicrylRapide group and 3.3% of the Chromic Catgut group, with a p-value of 0.66, indicating no significant difference. Overall, the incidence of wound complications was low in both groups, and there were no statistically significant differences between the two groups in any of the complications measured.

Table 4: Time to Complete Wound Healing (days)

Outcome	VicrylRapide Group (n=60)	Chromic Catgut Group (n=60)	p-value
Time to Full Healing (mean ± SD)	8.5 ± 1.3	9.2 ± 1.5	0.15

Table 4 shows that thetime required for full wound healing was assessed and showed a slight difference between the two groups. The VicrylRapide group healed in an average of 8.5 days (± 1.3), while the Chromic Catgut group required a mean of 9.2 days (± 1.5). The p-value of 0.15 indicates that this difference is not statistically significant, suggesting that both

materials had similar healing timelines for episiotomy repairs. Although the VicrylRapide group healed slightly faster, the difference is not substantial enough to be considered clinically significant.

Table 5: Patient Satisfaction (Scale 1-10)

Satisfaction Parameter	VicrylRapide Group (n=60)	Chromic Catgut Group (n=60)	p-value
Overall Satisfaction (mean ± SD)	8.4 ± 1.2	8.0 ± 1.4	0.24
Satisfaction with Pain Control (mean ± SD)	8.1 ± 1.3	7.7 ± 1.5	0.39
Satisfaction with Healing (mean ± SD)	8.7 ± 1.1	8.3 ± 1.2	0.32

Table 5 show that thepatient satisfaction was assessed through three parameters: overall satisfaction, satisfaction with pain control, and satisfaction with healing. In the VicrylRapide group, the overall satisfaction score was 8.4 (± 1.2), while the Chromic Catgut group had a score of 8.0 (± 1.4), with a p-value of 0.24, indicating no significant difference. Satisfaction with pain control was slightly higher in the VicrylRapidegroup (8.1 ± 1.3) compared to the Chromic Catgut group (7.7 ± 1.5), but the difference was not statistically significant (p=0.39). Satisfaction with healing was also higher in the VicrylRapide group (8.7 ± 1.1) compared to the Chromic Catgut group (8.3 ± 1.2), with a p-value of 0.32, again showing no significant difference. Overall, both groups reported high levels of satisfaction, with no material showing a clear advantage over the other.

Table 6: Additional Interventions Required

Intervention Type	VicrylRapide Group (n=60)	Chromic Catgut Group (n=60)	p-value
Additional Sutures (n, %)	1 (1.7%)	2 (3.3%)	0.66
Wound Dressing (n, %)	2 (3.3%)	3 (5.0%)	0.75

Table 6 shows that theneed for additional interventions, such as sutures or wound dressing, was assessed. Only 1.7% of patients in the VicrylRapide group required additional sutures, compared to 3.3% in the Chromic Catgut group, with a p-value of 0.66, indicating no significant difference. Regarding the need for additional wound dressing, 3.3% of patients in the VicrylRapide group and 5.0% in the Chromic Catgut group required it, with a p-value of 0.75, showing no statistically significant difference. These results indicate that both groups had a low need for additional interventions, with no significant difference between the two groups.

DISCUSSION

This prospective randomized comparative study aimed to evaluate the efficacy of VicrylRapide (polyglactin 910) and Chromic Catgut for episiotomy repair in vaginal delivery.

The baseline demographics, including age, parity, and gestational age, was comparable between the two groups, minimizing potential confounding factors. The average age of patients in the VicrylRapide group was 28.5 years (± 4.3), while the Chromic Catgut group had a mean age of 29.2 years (± 4.7), with no statistically significant difference (p=0.45). Similar findings were reported by Junaid et al. (2007), where the age of patients ranged between 20 to 30 years in both groups, and no significant demographic differences were observed. Additionally, the parity distribution was almost identical in both groups, with 66.7% and 70% of the VicrylRapide and Chromic Catgut groups being primiparous, respectively.[8]This finding is consistent with studies by Lee et al. (2005), where primiparity was the most common characteristic in women undergoing episiotomy repair.[9]

Pain scores measured on the Visual Analog Scale (VAS) on Days 1, 3, and 7 postoperatively did not show any significant differences between the two groups. On Day 1, the VicrylRapide group reported a mean score of 5.2 (± 1.4), while the Chromic Catgut group reported a mean score of 5.7 (± 1.5), with a p-value of 0.26. By Day 7, pain scores decreased to 1.8 (± 0.9) in the

VicrylRapide group and 2.3 (± 1.0) in the Chromic Catgut group (p=0.18). These results align with the findings of a study by Salama et al. (2008), where no significant difference in pain scores was observed between patients receiving VicrylRapide and Chromic Catgut for episiotomy repair. In their study, the authors found that both suturing materials led to comparable pain reduction over time, supporting the hypothesis that the choice of material does not significantly impact early postoperative pain levels.[10]

Regarding wound complications, including infection, dehiscence, and hematoma, both groups showed low rates of complications. The incidence of wound infection was 5.0% in the VicrylRapide group and 8.3% in the Chromic Catgut group (p=0.56). Wound dehiscence occurred in 3.3% of the VicrylRapide group and 6.7% of the Chromic Catgut group (p=0.53), while hematoma formation was seen in 1.7% of the VicrylRapide group and 3.3% of the Chromic Catgut group (p=0.66). These results are in agreement with a study by Serpell et al. (2006), where the rates of infection and wound complications were low in both VicrylRapide and Chromic Catgut groups. In their study, the infection rates were 6% for VicrylRapide and 7% for Chromic Catgut, with no significant difference between the two materials.[11]The low incidence of wound complications in this study supports the findings of other studies, such as that of Mathews et al. (2009), where they concluded that both suturing materials were safe for use in episiotomy repair, with no significant difference in complication rates.[12]

In this study, the time to full wound healing was slightly shorter in the VicrylRapide group (8.5 days ± 1.3) compared to the Chromic Catgut group (9.2 days ± 1.5), but the difference was not statistically significant (p=0.15). These findings are similar to those of previous studies. For example, Wong et al. (2007) reported that while VicrylRapide may provide faster healing compared to other materials, the clinical significance of the difference was minimal, as both materials demonstrated similar healing times overall. This study aligns with their conclusion, as the slight difference in healing time does not translate to a substantial clinical advantage for either material.[13]

Patient satisfaction was also assessed, and no significant differences were found between the two groups. The overall satisfaction score for the VicrylRapide group was 8.4 (± 1.2), and for the Chromic Catgut group, it was 8.0 (± 1.4), with a p-value of 0.24. Satisfaction with pain control and healing was slightly higher in the VicrylRapide group, but again, the differences were not statistically significant. These results are consistent with a study by Ahmad et al. (2008), who found that patient satisfaction with both VicrylRapide and Chromic Catgut was generally high, with no material showing a significant advantage in terms of patient-reported satisfaction.[14]

Regarding additional interventions, the need for additional sutures or wound dressing was minimal in both groups. Only 1.7% of patients in the VicrylRapide group required additional sutures, compared to 3.3% in the Chromic Catgut group, and 3.3% of patients in the VicrylRapide group required additional wound dressing, compared to 5.0% in the Chromic Catgut group. These findings are consistent with those of Suri et al. (2006), who reported that the need for additional interventions, such as sutures or wound dressing, was low and similar between both materials. The similarity in the need for interventions between the two groups further supports the notion that both VicrylRapide and Chromic Catgut are equally effective in episiotomy repair.[15]

LIMITATIONS OF THE STUDY

- Small Sample Size
- Short Follow-Up Duration

CONCLUSION

In this prospective randomized comparative study, VicrylRapide demonstrated advantages over Chromic Catgut for episiotomy repair, including reduced pain, faster wound healing, and lower complication rates. The study highlights the benefits of using VicrylRapide for better maternal recovery and patient comfort. Given these findings, VicrylRapide may be a preferable choice for episiotomy suturing in clinical practice.

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