



## Original Article

## Comparison of Vicryl Rapide versus Chromic Catgut for Episiotomy Repair

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## ABSTRACT

A significant proportion of women benefit from episiotomy, but it's also linked with short and long-term postpartum morbidities like perineal pain due to lacerations and scar formation after repair. The current study was designed to rule out the variations regarding pain and gesia requirement. **Objective:** To evaluate outcome of chromic catgut sutures versus vicryl rapide sutures for episiotomy repair in terms of ache and analgesia requirement. **Methods:** In this randomized control trial from March to September 2021, a total of 206 females (103 in each group) were enrolled and the data was collected after taking informed consent. Episiotomy in all females was done by a senior consultant. Subjects were randomly assigned one of two sutures. In Group-A females were managed by vicryl rapide 2-0 (36mm, 1/2 circle round bodied needle and double reverse cutting) females. in group-B were managed by chromic catgut 1.0 (30 mm, 0.5 circle round bodied needle). The comparison of both groups was in terms of pain and analgesic requirement. **Results:** Comparison of pain in chromic catgut versus vicryl rapide sutures after repair of episiotomy showed that 32% (n=33) in Group-A and 49.5% (n=51) in Group-B had pain after 48 hours (p value = 0.01). Analgesia requirement at day 7 was recorded in 20.4% (n=21) in Group-A and 66% (n=68) in Group-B (p < 0.000). **Conclusions:** We concluded that vicryl rapide has a better outcome as compared with chromic catgut in repair of episiotomy in terms of pain and analgesic requirements.

## INTRODUCTION

Trauma to perineum is defined as an injury to the genitals occurring during process of childbirth that can happen spontaneously or performed through a surgical incision termed as episiotomy [1]. A surgical incision is performed in episiotomy on to the perineum through the last phase of labor for facilitation of delivery [2, 3]. Episiotomy is always classified according to direction, length and timing and the location of the initial point. There are seven types of episiotomy-based on the classification described however, the midline, mediolateral, and lateral are the three types that are routinely performed by obstetricians [2]. Trauma to perineum can be anterior perineal trauma which can cause injuries to anterior vagina, clitoris and urethra. Anterior perineal trauma is associated with less morbidity

as compared to posterior perineal trauma in which there is injury to perineal muscles, anal sphincter, or posterior vaginal wall [4]. Spontaneous tears are classified according to depth of tear. First degree tears happen when only perineal skin is involved. In second-degree tears there is involvement of the skin and perineal muscles and in third degree tears there is complete involvement of anal sphincter which is additional classified as 3a when there is less than 50% tear of the sphincter ani externus, 3b when there is more than 50% tear of the sphincter ani externus and 3c when both external and internal anal sphincter ani is torn. The fourth-degree tears are defined as when there is involvement of anal sphincter complex along with anal epithelium [4, 5]. Globally around 70% of females who will

have a vaginal delivery will experience from perineal impairment to some level due to episiotomy requiring suturing [6]. The choice of suturing material for these episiotomy repair, along with the technique performed and surgical skills and experience of the obstetrician will determine short- and long-term morbidity of episiotomy. In some studies, the rapidly absorbed synthetic materials have shown a good outcome as compared to monofilament sutures in terms of wound healing and post episiotomy perineal pain. Vicryl rapide is an interlaced suture prepared from a copolymer of lactic acid and glycolic acid which is labeled as polyglactin 910. The chromic catgut is a type of catgut which is made by treating it with chromic salts which prevents its water absorbing property that in turns reduces the absorption time and hence attenuates the inflammatory response [6-9]. A study reported that 32.5% females in Vicryl Rapide Suture and 57% females in Chromic Catgut Suture had pain at 48 hours with significantly less pain in Vicryl rapide group,  $p$  value  $<0.05$ . They further reported that 15.5% females required analgesia in Chromic catgut groups and 5% females in Vicryl rapide group needed analgesia at 3-5 days [8]. A local study in 2018 reported that 57.3% females in Vicryl Rapide Suture and 80% females in Chromic Catgut Suture had pain with significantly less pain in Vicryl rapide suture group [7]. One more local study reported that 21.3% females had pain who had episiotomy closure with Vicryl rapide as compared to 52.0% females sutured with Chromic Catgut females after 48 hours ( $p = <0.05$ ) [6]. Another local study done on primigravida reported that 2% females in Vicryl rapide group and 98% females in Chromic Catgut Suture group needed analgesia at 7<sup>th</sup> day. [9]. Although local and international data exist and support Vicryl rapide but with variable results regarding pain i.e. pain was reported from 21.33%-57.3% and pain in Chromic Catgut was reported from 52%-80% [6, 7]. Also, analgesia requirement reported with wide range of chromic catgut suture group i.e. 15.5%-98% [9].

Through this study we were able to rule out these variations regarding pain and analgesia requirement, so that in future preoperative management could be ensured for early discharge, that would help in reducing hospital stay and female's better satisfaction. The study focused on the evaluation of comparative outcomes of chromic catgut and vicryl rapide sutures for repair of episiotomy in terms of pain and analgesia requirement.

## METHODS

We performed a randomized controlled trial at Department of Obstetrics and Gynecology, Lady Wallington Hospital, Lahore from March - September 2021. A total of 206 (103 in each group) females were taken through a consecutive

sampling technique (non-probability sampling technique). The subjects were randomly allocated into two equal groups. (Group A and B). In Group-A females were managed by vicryl rapide 2-0 (36mm, 1/2 circle double reverse cutting and round bodied needle) females in group-B were managed by chromic catgut 1.0 (30mm, 0.5 circle round bodied needle). The sample size was estimated using percentage of females requiring analgesia in chromic catgut group (15.5%) and in vicryl rapide group (5%) [8]. We used 80% power of test and 5% margin of error. Subjects with age: 18-45 years requiring episiotomies following spontaneous or instrumental deliveries were selected. Women with intra-partum fever ( $>98.80$ ), diagnosed cases preeclampsia, anemic females ( $Hb < 11.5$ ), history of perineal surgery in past were excluded. After approval from the hospital ethical committee the study was started. Data was collected after getting informed consent. Their demographic history (name, age, contact), contact details, and obstetric history was taken. Episiotomy in all females was done by a senior consultant. Episiotomies were performed with the right mediolateral approach and a standard three-step approach was used to repair these episiotomies. A continuous interlocking suture was used initially then perineal muscle suturing was done with an intermittent suture and finally the skin closure was done with a mattress suture. Outcome was evaluated among both the groups in terms of pain and analgesic requirement (as per operational definition). In cases of analgesia requirement, diclofenac sodium was used. Pain was measured at 48 hours and labeled if a female has pain on Visual Analogue Scale ( $VAS > 3$ ). Analgesia requirement was defined when female need medication to control pain ( $VAS > 3$ ) at 7th day after episiotomy. Data entry and statistical analysis was performed using SPSS version 24.0 ( $p$  value  $< 0.05$  was taken as statistically significant). Frequency and percentage were calculated for qualitative variables like pain and analgesia requirement. Parity was presented as frequency. The mean and standard deviation for numerical variables were calculated such as age, gestational age, and body mass index. Outcome pain and analgesic requirement among two groups was assessed using the Chi-square test.

## RESULTS

The Demographic and clinical outcomes of patients are demonstrated in table 1. The mean age in Group A was  $31.15 + 4.92$  and in Group B was  $31.15 + 4.92$  years. In Group A 47.57% ( $n=49$ ) and in Group B 46.61% ( $n=48$ ) were between 18-30 years of age. Additionally, 52.43% ( $n=54$ ) in Group A and 53.39% ( $n=55$ ) in Group B were between 31-45 years of age. Mean gestational age in Group-A was  $38.39+1.60$  weeks and  $38.38+1.55$  weeks in Group-B. Parity distribution shows that  $1.57+1.03$  in Group-A and  $1.55+0.99$  para in Group -B. Mean body mass index in Group-A and B was  $28.99+2.61$

and 28.86±2.66. Residential status showed that 43.69% (n=45) in Group A and 51.46% (n=53) in Group B were urban and 56.31%(n=58) in Group-A and 48.54%(n=50) in Group-B belonged to rural area. Socioeconomic status shows that 44.66% (n=46) in Group A and 51.46 % (n=53) in Group B were lower socioeconomic class and 55.34%(n=57) in Group-A and 48.54%(n=50) in Group-B fall in middle class socioeconomic class. Frequency of type of delivery shows that 39.81%(n=41) in Group-A and 41.75%(n=43) in Group-B were delivered spontaneously whereas 60.19%(n=62) in Group A and 58.25%(n=60) in Group B were delivered with the help of instruments.

**Table 1:** Demographic and clinical outcome of patients

Variables		Group-A (Vicryl Rapide) (n=103)	Group-B (Chromic Catgut) (n=103)
		Frequency (%)	Frequency (%)
Age (years)	18-30	49 (47.57)	48 (46.61)
	31-45	54 (52.43)	55 (53.39)
Gestational Age (weeks)	<37	16 (15.53)	15 (14.56)
	>37	87 (84.47)	88 (85.44)
Parity	0-2	83 (80.58)	86 (83.50)
	>2	20 (19.42)	17 (16.50)
Residential status	Urban	45 (43.69)	53 (51.46)
	Rural	58 (56.31)	50 (48.54)
Socio-economic status	Lower	46 (44.66)	53 (51.46)
	Middle	57 (55.34)	50 (48.54)
Type of delivery	Spontaneous	41 (39.81)	43 (41.75)
	Instrumental	62 (60.19)	60 (58.25)

In table 2 Comparison of outcome of vicryl rapide versus chromic catgut for episiotomy repair shows that 32.04% (n=33) in Group-A and 49.51% (n=51) in Group B had pain at 48 hours (p value = 0.01), analgesia requirement at day 7 was recorded in 20.39% (n=21) in Group A and 66.02% (n=68) in Group B (p value < 0.00001).

**Table 2:** Outcome of vicryl rapide versus chromic catgut

Outcome (n=206)		Group-A (n=103)	Group-B (n=103)	p-value
		Frequency (%)	Frequency (%)	
Pain at 48 hours	Yes	33 (32.04)	51 (49.51)	0.01
	No	70 (67.96)	52 (50.49)	
Analgesia requirement at day 7	Yes	21 (20.39)	68 (66.02)	<0.0001
	No	82 (79.61)	35 (33.98)	

## DISCUSSION

A significant proportion of women benefit from episiotomy, but it's also associated short and long-term postpartum morbidities like perineal pain due to lacerations and scar formation after repair. The immediate and short-term concerns is loss of blood, edema, pain in perineum, hematoma formation and infection resulting in wound dehiscence leading to a 3rd or 4th degree lacerations. A lot of women complain about dyspareunia as

a sequelae of scar formation and infection of wound. The influencing factors of these complications include type of suture used and experience and skill of obstetrician. There is no consensus among obstetricians regarding the type of suture to be used but these newer sutures made of polyglycolic acid materials elicit less inflammatory reaction than a chromic catgut suture [10]. Studies have shown that there is less postpartum pain and faster healing of wounds with use of sutures [11, 12]. The current study was designed to rule out the variations regarding pain and analgesia requirement, so that in future pre-operative management can be ensured for early discharge, that may help in reducing hospital stay and female's better satisfaction. In our study, we compared two suturing technique vicryl rapide versus chromic catgut for pain and analgesia as outcome for episiotomy repair shows that 32.04% (n=33) in Group A (vicryl rapide) and 49.51% (n=51) in Group B (chromic catgut) had pain at 48 hours (p value = 0.01), analgesia requirement at day 7 was recorded in 20.39% (n=21) in Group-A and 66.02% (n=68) in Group-B, p value was < 0.00001. Bharathi *et al.*, also used vicryl rapide and chromic catgut for repair episiotomy with these two absorbable suture materials and outcome measured for immediate complications was pain in perineal area and healing of wound [12]. Contrary to our results, this study findings suggest that the outcome among two groups were similar at the start of the trial but vicryl rapide group experienced less discomfort (32.5% vs 57%) and need for analgesia was also less (15.5% vs 0.5) at 3-5 days. In the vicryl rapide group there was a significant reduction for pain in stitches wound dehiscence and induration, (4% vs 13.5%), along with a improved wound healing (p = 0.05). The results were statistically non-significant for perineal pain after 6 weeks. Wound infections were noted in 3.5% of cases with chromic catgut repair but not in the vicryl rapide suturing. They found that episiotomy repair with vicryl rapide is better suturing material for and subjects experience a rapid healing of wound with less perineal pain. Another trial, conducted by Shah *et al.*, found that the polyglactin 910 group experienced higher discomfort (61.1% vs 55.1%) and required more analgesics (88.1% vs 86.9%) as compared to chromic catgut group after 48 hours [13]. Less discomfort was noted on day 5 (19.5% vs 24.6%) and day 20 (5.6 vs 16%) and used fewer analgesics on day 5 (68.5% vs 61%), and day 20 (3.3 vs 18%) in polyglactin 910 group compared to chromic catgut group. There was no discernible change in perineal pain among the two groups three months after delivery was noted. Greenberg *et al.*, in their study found a significant pain reduction in the fast-absorbing polyglactin group as compared to chromic catgut at 24-48 hours in pain (25% vs 34%) (P < .05) [14]. There was no statistically significant reduction in pain was

noted at 10-14 days, among two groups. In another study by Leurox *et al.*, there was a significant reduction in pain (1% vs 4%) and significant decrease in analgesic use (5% vs 10%) at 6-8 weeks ( $p < .05$ ) [15]. They showed that polyglactin 910 (fast-absorbing) for perineal repair is linked with earlier resumption of sexual intercourse when associated with chromic catgut for second-degree perineal laceration or uncomplicated episiotomy. Almost similar results were found by Monis *et al.*, in his study on effectiveness of vicryl rapide suture versus chromic catgut suture in episiotomy repair, he evaluated pain score and wound healing found at that vicryl rapide has efficacy of 78.67% as compared to chromic catgut of 48.0% ( $p < 0.000$ ) [16]. The need for sutures and postpartum healing difficulties such as loss of blood, oedema, hematoma, infections, wound dehiscence, and perineal pain is associated with episiotomy is a standard obstetric procedure [17, 18]. Odijk *et al.*, found vicryl rapide 3-0 less self-reported dehiscence after tissue-layer closure of the skin in mediolateral episiotomies [19]. Chaudhri *et al.*, extensively studied continuous suture techniques compared with interrupted sutures for perineal closure (all layers or perineal skin only) with both sutures and found vicryl rapide suture a better option [20]. Another study was conducted by Bidri *et al.*, at Patil Medical College Vijayapura, India and showed that at 24-48 hours 18% had severe pain in chromic catgut group while 6% in rapid vicryl group. On subsequent follow up, 54% were uncomfortable in catgut group while no such complaints in vicryl group ( $p$  value  $< 0.0001$ ) [21]. A study conducted by Shahgheibi *et al.*, compared three sutures for episiotomy repair and found out that 15.4% patients who used vicryl rapid reported no pain ( $p$ -value  $< 0.001$ ). Severity of moderate and severe pain and inflammation was also significantly lower in this group [22]. Another study conducted by Gupta *et al.*, concluded that use of vicryl rapide thread to repair perineum to reduce perineal pain ( $p$  value 0.035) and improve wound healing ( $p$  value 0.000) was better than the use of chromic catgut [23]. Ours study also validate findings of national and international studies that episiotomy closure with vicryl rapide suture are better option as there is significant less pain along with the enhance of wound healing compared to wound closure with chromic gut suture.

## CONCLUSIONS

We concluded that vicryl rapide is better as compared with chromic suture for episiotomy repair with respect to pain and analgesic requirements.

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## Authors Contribution

Conceptualization: SZS, MA

Methodology: SZS, NA1, NA2

Formal analysis: AS, SM

Writing-review and editing: SZS, MA, NA1, NA2, AA, SM

All authors have read and agreed to the published version of the manuscript.

## Conflicts of Interest

The authors declare no conflict of interest.

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