ORIGINAL RESEARCH PAPER

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COMPARISON OF FAST-ABSORBING POLYGLACTIN-910 AND CHROMIC CATGUT IN EPISIOTOMY REPAIR WITH RESPECT TO PAIN, WOUND HEALING, AND POSTOPERATIVE COMPLICATIONS.

KEY WORDS:

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ABSTRACT

Background: Episiotomy is a widely practiced obstetric intervention aimed at facilitating vaginal delivery by enlarging the vaginal orifice. The choice of suture material for episiotomy repair significantly impacts maternal outcomes such as pain, wound healing, and infection. Chromic catgut and fast-absorbing polyglactin-910 are commonly used absorbable sutures, but few studies have directly compared their efficacy and safety. **Objective:** To compare the clinical outcomes of fast-absorbing polyglactin-910 and chromic catgut in episiotomy repair with respect to pain, wound healing, and postoperative complications. **Methods:** A prospective, randomized clinical trial was conducted at Dr. RPGMC Kangra at Tanda over one year. A total of 240 primigravida women undergoing right mediolateral episiotomy during vaginal delivery were enrolled and randomly assigned into two groups: Group 1 received polyglactin-910 (2-0) and Group 2 received chromic catgut (1-0) for episiotomy repair. Baseline demographic and clinical parameters were recorded. Postoperative outcomes including perineal pain (measured using the Numerical Rating Scale), temperature, wound induration, discharge, gaping, dehiscence, and dyspareunia were assessed at 24–48 hours and at 6–8 weeks postpartum. **Results:** Both groups were comparable in terms of maternal age, gestational age, blood loss, delivery mode, and neonatal birth weight. However, suture site pain scores were significantly lower in the polyglactin-910 group at both time points ($p < 0.001$). All wound-related complications—including raised temperature, induration, gaping, discharge, and dehiscence—were observed only in the catgut group, with statistically significant differences ($p \leq 0.002$). Conclusion:Fast-absorbing polyglactin-910 is superior to chromic catgut for episiotomy repair in terms of reducing pain, infection, and wound complications, while promoting better healing and maternal comfort. It should be preferred over catgut for routine clinical use in episiotomy repair.

INTRODUCTION:

Episiotomy, or perineotomy, is a surgical incision made on the perineum and the posterior vaginal wall during the second stage of labor, just prior to fetal delivery, to facilitate childbirth by enlarging the vaginal opening.[1] Typically performed at crowning, the procedure is carried out under local anesthesia—usually 10 mL of 1% lidocaine—after which an incision is made while shielding the fetal scalp with fingers placed inside the posterior vaginal wall. Structures incised include skin, subcutaneous tissue, vaginal wall, perineal muscles (superficial and deep transverse perineal muscles, bulbospongiosus, part of levator ani), associated fascia, and branches of the pudendal vessels and nerves.There are four commonly recognized types of episiotomy: midline, mediolateral, lateral, and J-shaped.[2-4] Among these, the World Health Organization (WHO) recommends the mediolateral approach due to its lower risk of severe anal sphincter injuries compared to the median type.[5-7] However, mediolateral incisions are associated with increased blood loss, postoperative pain, and dyspareunia.[8,9] The decision to perform an episiotomy remains clinical and depends on the obstetrician's judgment, often in scenarios like non-reassuring fetal heart rate or operative vaginal deliveries.[10,11] In India, the prevalence of episiotomy is notably high, with an estimated rate of 63.2%[12]. Recognizing the overuse of this procedure, the WHO in 2018 recommended against its routine application, instead advocating for selective use based on clinical indications.[12] Despite being a commonly performed obstetric intervention, episiotomy carries risks. Short-term complications include pain, bleeding, infection, wound dehiscence, and anal sphincter damage; while long-term consequences may involve sexual dysfunction, urinary incontinence, and pelvic organ prolapse.[13]Optimal episiotomy repair is essential to minimize maternal morbidity. Traditionally, a three-step approach is employed: suturing the vaginal mucosa, followed by the perineal muscles, and finally the skin. The choice of suture material plays a crucial role in healing outcomes. An ideal suture material is sterile, minimally reactive, easily handled, securely knotted, suitably absorbable, and infection-resistant.[14,15]Common absorbable sutures for perineal repair include chromic catgut and synthetic materials such as polyglactin 910 and polyglycolic acid.[16] Catgut, derived from sheep or goat intestines, induces a relatively intense inflammatory response and is absorbed enzymatically. Chromic catgut, treated with chromium salts to slow absorption, retains tensile strength longer than plain catgut, but is associated with greater postoperative pain and inflammation.On the other hand, polyglactin 910, especially its fast-absorbing form, is a synthetic copolymer that undergoes hydrolytic degradation and causes less tissue reaction.[17] It offers advantages like better handling, reduced pain, faster healing, and lower rates of wound dehiscence and dyspareunia compared to catgut.[18]Despite its frequent use, few studies directly compare fast-absorbing polyglactin 910 and chromic catgut for episiotomy repair. Therefore, the present study was undertaken at Dr. RPGMC Kangra at Tanda to evaluate and compare the clinical outcomes of these two suture materials, with a focus on pain, wound healing, and maternal comfort.

MATERIAL AND METHODS:

This prospective, randomized clinical trial was conducted over one year in the Department of Obstetrics and Gynaecology at Dr. RPGMC Kangra at Tanda, after obtaining approval from the Institutional Protocol Review and Ethical Committee. Women aged 18–45 years undergoing vaginal delivery with a right mediolateral episiotomy (RMLE) were screened for eligibility. Inclusion criteria were primigravida with singleton pregnancy between 37 and 42 weeks of gestation, vertex presentation, and an expected fetal weight of less than 4 kg by ultrasound. Exclusion criteria included intrapartum fever, anemia, perineal tear, previous perineal surgeries, intrauterine fetal death, HIV or HBV infection, delivery conducted outside the hospital, and instrumental delivery. Written informed consent was obtained from all participants. Eligible women were randomly allocated into two groups using a computer-generated randomization table with allocation concealment ensured through sealed opaque envelopes. Group 1 underwent episiotomy repair using fast-absorbing polyglactin-910 (2-0), and Group 2 using chromic catgut (1-0).The sample size of 200 (100 per group) was based on detecting a difference in pain incidence (10% vs. 25%), with 80% power and 5% significance level; 240 subjects were enrolled to account for a potential 10% dropout rate, though no dropouts occurred. Detailed demographic and clinical history was recorded, including obstetric and medical background. All episiotomies were performed under local infiltration of 10–15 ml of 1% lignocaine during crowning using a standard technique. The repair involved a three-step method: continuous interlocking suture for vaginal mucosa, interrupted sutures for perineal muscles, and mattress sutures for skin. Antibiotics were administered per institutional protocol. Post-episiotomy care instructions included frequent pad changes, maintaining hygiene, warm water perineal cleansing, and hydration. Outcomes were assessed at 24–48 hours postpartum for perineal pain, temperature, stitch sensation, swelling, and urinary retention, and again at six to eight weeks during OPD follow-up for perineal pain, dyspareunia, wound healing (by primary, secondary, or tertiary intention), wound induration, and dehiscence. Pain was measured using the Numerical Rating Scale (NRS), where 0 represented no pain and 10 represented the worst imaginable pain. Wound infection was assessed clinically by the presence of throbbing pain, swelling, or discharge. No blinding was done in this study. All complications during and after episiotomy were recorded and managed as per institutional guidelines.

RESULTS:

The distribution of participants across age groups, gestational age, mode of delivery, estimated blood loss, time taken for suture closure, and neonatal birth weight was comparable between the groups. There was no statistically significant difference observed in age distribution ($p = 0.300$), gestational age ($p = 0.057$), mode of delivery ($p = 0.093$), blood loss ($p = 0.967$), suture time ($p = 0.796$), or birth weight categories ($p = 0.149$), indicating that the two groups were demographically and clinically well-matched. (Table 1)

Suture site pain scores at both 24–48 hours and at 6 weeks were significantly lower in the Polyglactin-910 group ($p< 0.001$), with higher pain scores observed more frequently in the Catgut group. Postoperative complications such as raised temperature, induration, wound gaping, discharge, and dehiscence were also observed exclusively in the Catgut group, with statistically significant differences noted across all parameters ($p \leq 0.002$). Overall, the findings indicate that Polyglactin-910 is associated with better postoperative comfort and fewer wound-related complications compared to Catgut in this cohort. (Table 2)

Table 1. Comparison Of Baseline And Clinical Characteristics Between Study Groups (n = 240)

Parameter	Category	Catgut n (%)	Polyglactin -910 n (%)	p-value
Age (years)	19–25	66 (51.6)	62 (48.4)	0.300
	26–30	51 (50.5)	50 (49.5)	
	>30	3 (27.3)	8 (72.7)	
Gestational Age (weeks)	37	37 (55.2)	30 (44.8)	0.057
	38	29 (48.3)	31 (51.7)	
	39	37 (59.7)	25 (40.3)	
	40	17 (36.2)	30 (63.8)	
	41–42	0 (0.0)	4 (100.0)	
Mode of Delivery	Induction	53 (44.5)	66 (55.5)	0.093
	Spontaneous	67 (55.4)	54 (44.6)	
Blood Loss (ml)	250	62 (49.2)	64 (50.8)	0.967
	260	56 (50.9)	54 (49.1)	
	270	2 (50.0)	2 (50.0)	
Suture Time (minutes)	25	54 (49.1)	56 (50.9)	0.796
	30	66 (50.8)	64 (49.2)	
Birth Weight (g)	<2500	33 (51.6)	31 (48.4)	0.149
	2500–2999	62 (56.4)	48 (43.6)	
	3000–3499	21 (38.9)	33 (61.1)	
	≥3500	4 (36.4)	7 (63.6)	

Table 2. Comparison Of Postoperative Outcomes Between Catgut And Polyglactin-910 Groups (n = 240)

Parameter	Category	Catgut n (%)	Polyglactin-910 n (%)	Total n (%)	p-value
Suture site pain (24–48h)	Score 6	2(2.8)	70(97.2)	72(30.0)	<0.001
	Score 7	11(19.0)	47(81.0)	58(24.2)	
	Score 8	51(94.4)	3(5.6)	54(22.5)	
	Score 9	53(100.0)	0(0.0)	53(22.1)	
	Score 10	3(100.0)	0(0.0)	3(1.2)	
Suture site pain (6 weeks)	Score 1	14(50.0)	14(50.0)	28(11.7)	<0.001
	Score 2	57(50.0)	57(50.0)	114(47.5)	
	Score 3	39(44.3)	49(55.7)	88(36.7)	
	Score 5	10(100.0)	0(0.0)	10(4.2)	
Temperature at 24h	Normal	110(47.8)	120(52.2)	230(95.8)	0.001
	Raised	10(100.0)	0(0.0)	10(4.2)	
Temperature at 6 weeks	Normal	111(48.1)	120(51.9)	231(96.2)	0.002
	Raised	9(100.0)	0(0.0)	9(3.8)	
Induration at 24h	Absent	111(48.1)	120(51.9)	231(96.2)	0.002
	Present	9(100.0)	0(0.0)	9(3.8)	
Induration at 6 weeks	Absent	111(48.1)	120(51.9)	231(96.2)	0.002
	Present	9(100.0)	0(0.0)	9(3.8)	
Wound healing at 6 weeks	Gaped	10(100.0)	0(0.0)	10(4.2)	0.001
	Normal	110(47.8)	120(52.2)	230(95.8)	
Wound discharge at 6 weeks	Present	10(100.0)	0(0.0)	10(4.2)	0.002
	Absent	110(47.8)	120(52.2)	230(95.8)	
Wound dehiscence at 6 weeks	Present	10(100.0)	0(0.0)	10(4.2)	0.002
	Absent	110(47.8)	120(52.2)	230(95.8)	

DISCUSSION;

The present randomized clinical trial aimed to compare Fast Absorbing Polyglactin-910 (2-0) and Chromic Catgut (1-0) for episiotomy repair among 240 postpartum women. The study groups were well matched with respect to baseline maternal characteristics, indicating effective randomization and minimal risk of selection bias.No significant differences were noted in the time required for suturing or intraoperative blood loss between the two groups, echoing similar observations by Bharathi A et al[19] and Kalita R et al.[20] This confirms that the suture material type does not influence the technical aspects of episiotomy repair, allowing the focus to remain on postoperative outcomes.The mean age of participants in this study (25.51±3.3 in polyglactin group and 25.2±3 in catgut group) was similar across both arms, and aligns well with age distributions reported in previous Indian studies such as Bharathi A et al. and Meena BS et al.[21] This reflects the demographic consistency of episiotomy candidates across different regions.The type of delivery, nearly equally divided between spontaneous and induced in this study, differed from other Indian studies where spontaneous delivery rates exceeded 80%. However, the absence of instrumental deliveries across all participants in this study eliminated a potential confounding variable that may influence wound outcomes.Pain perception post-episiotomy repair differed significantly between the groups. In the present study, a notably higher proportion of women in the chromic catgut group experienced severe pain at both 24–48 hours and six weeks postoperatively compared to those in the polyglactin-910 group.These results align with findings from Patel A et al,[22] Deshpande H et al,[23] and Perumal D et al,[24] all of whom observed higher pain levels among patients receiving chromic catgut sutures.While some studies, such as those by Bharathi A et al[19] and Abhinaya SS et al,[25] did not report significant differences at early time points, they did note increasing disparities in pain scores as healing progressed, reinforcing the long-term benefits of polyglactin-910 in minimizing discomfort.The incidence of raised temperature and suture site induration was exclusively observed in the chromic catgut group in the current study.Notably, 10 patients developed fever and 9 exhibited induration at both 24 hours and six weeks. No such complications occurred in the polyglactin group. These findings are consistent with Kalita R et al,[20] who also reported a significantly higher proportion of puerperal fever in patients sutured with chromic catgut. Similarly, other studies, including those by Bharathi A et al[19] and Abhinaya SS et al,[25] documented higher rates of induration in the catgut group, although the incidence varied in magnitude. Wound gaping, a key indicator of suboptimal healing, was reported in 10 patients from the catgut group at six weeks in the present study, with no such cases in the polyglactin group. This difference was statistically significant and supports the notion that polyglactin-910 promotes better wound healing. Several studies corroborate this finding. Bharathi A et al,[19] Abhinaya SS et al[25] and Kalita R et al.[20] each reported significantly higher rates of gaping or delayed healing in catgut recipients. Though Deshpande H et al[23] and Meena BS et al[26] found lower rates overall, the trend remained consistent in favor of polyglactin. Wound discharge and dehiscence are important markers of infection and poor tissue integration. In the present study, 10 patients in the chromic catgut group experienced wound discharge and an equal number had wound dehiscence at six weeks, whereas no such cases were observed in the polyglactin group. These findings reached statistical significance and echo observations made by Abhinaya SS et al,[25] Bharathi A et al,[19] and Gupta K et al,[27] who consistently reported higher rates of discharge and dehiscence with chromic catgut. Kalita R et al[20] also documented elevated rates of these complications in the catgut group within the first postoperative week. A major strength of this study was the adequate sample size, derived from proper sample size calculations, which enhanced the statistical power and generalizability of findings. Moreover, the prospective randomized design minimized bias and strengthened the validity of comparative outcomes. However, a limitation lies in the unassessed adherence to episiotomy wound care instructions. While randomization likely distributed this variable evenly across both groups, patient compliance could have influenced wound healing and infection rates. Future studies may benefit from incorporating standardized postnatal wound care education and tracking compliance to control for this variable.

CONCLUSION:

The results of this study demonstrate a clear advantage of fast-absorbing polyglactin-910 over chromic catgut in terms of postoperative pain, infection rates, wound healing, and overall patient comfort following episiotomy repair. While both materials are technically similar during application, polyglactin-910 offers superior clinical outcomes and fewer complications, making it a more favorable choice for routine use in episiotomy repairs.

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