



Episiotomy Repair in Poor Resource Settings, is It Justifiable to Recommend the Fast Absorbing Polyglactin 910 Suture (Vicryl Rapide) as the Suture of Choice? – A Randomized Controlled Trial

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Authors' contributions

This work was carried out in collaboration between both authors. Author IEH designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Author IJA managed the literature searches. Both authors read and approved the final manuscript.

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ABSTRACT

Background: Episiotomy is a deliberate incision on the perineum during childbirth, with the intent to expedite delivery and to prevent perineal tear. It is often complicated with perineal pain, wound dehiscence and vulva hematoma. Some of the risk factors associated with these complications include poor surgical technique, sepsis and the type of suture material used. Chromic catgut suture has been abandoned in developed countries, but it is still used frequently in poor resource settings, especially in West Africa.

Objective: The objective of this study is to determine whether the use of fast-absorbing polyglactin 910 suture (vicryl rapide) to repair episiotomy would result in less postpartum morbidity, when compared to chromic catgut suture. The morbidity parameters include perineal pain, wound dehiscence, wound resuturing, vulva hematoma and dyspareunia.

Methods and Materials: This is a parallel randomized controlled trial of 400 booked parturients

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who delivered and had episiotomy repair in the labour ward, department of obstetrics and gynaecology, Niger Delta University Teaching Hospital, Southern Nigeria. The subjects were allocated into two groups via a double-blind randomization method. In 200 of the women, the episiotomies were repaired with fast-absorbing polyglactin 910 suture, while chromic catgut suture was used in the other 200 subjects as control. All the episiotomies were mediolateral, and only size 0 sutures were used.

A patient's information sheet (the research protocol) was filled for each patient by the researcher or the doctor on labour ward call, this commences about 6 – 12 hours after an episiotomy repair to avoid the effect of the local anesthetic drug on pain perception and to accommodate patients who wish to rest. Relevant information concerning immediate complications such as: Perineal pain, difficulty in micturition and vulva hematoma was obtained. Patients were re-evaluated at 7 days postpartum for perineal pain, wound healing, wound dehiscence and need for secondary wound suturing. The final evaluation was at 6 weeks postpartum for complete wound healing, perineal pain and dyspareunia. Data was analyzed using SPSS version 22 and EPI Info version 7.

Results: There was no significant difference in immediate postoperative complication (within 24 hours) between the test and control groups. Episiotomy repair with polyglactin 910 suture resulted in more satisfactory wound healing at 7 days postpartum than chromic catgut suture. $P = 0.001$, $\chi^2 = 10.05$. Odds ratio = 0.57[CI, 0.40 – 0.80]. Repair with chromic catgut suture resulted in more perineal pain $P = 0.006$, more wound breakdown $P = 0.02$, Odds ratio = 1.62[CI, 1.09 – 2.44] and were twice more likely to have wound resuturing than polyglactin 910, Odds ratio = 2.24 [1.12, 4.49], $P = 0.01$. At 6 weeks postpartum, there was no significant difference in wound healing, perineal pain and dyspareunia between the test and control groups.

Conclusion: Episiotomy repair with polyglactin 910 mitigates postpartum morbidity via reduced perineal pain, more satisfactory wound healing, and less need for secondary wound suturing when compared with chromic catgut suture. It is hereby recommended as the suture of choice for episiotomy repair in West Africa, because of the high rate of puerperal sepsis, perineal wound infections and wound dehiscence in this region.

Keywords: Episiotomy repair; chromic catgut suture; vicryl rapide suture; outcome.

1. INTRODUCTION

Episiotomy is one of the most common surgical procedures in obstetrics [1]. It is defined as a surgical incision of the perineum made to increase the diameter of the vulva outlet during childbirth. Reported episiotomy rates in Nigeria were 41.4% in Kano [2], 40.4% in PH [3] and 62.1% in Enugu [4].

Though the intent of giving episiotomy is to expedite delivery and prevent perineal tear, complications are not uncommon [5,6]. These include: primary postpartum hemorrhage, vulva hematoma, perineal pain and wound dehiscence [7,8]. Some of the risk factors to these complications include: Poor surgical technique, sepsis, poor perineal hygiene and the type of suture material used [1,6,8].

The suture material most commonly employed to repair episiotomy in West Africa is chromic catgut, and it is the suture of choice in many centers in Nigeria. This may be attributed to the fact that it is readily available, absorbable and cheap, therefore suitable for the economically disadvantaged.

Chromic catgut suture is derived from sheep intestinal intima and unlike plain catgut suture, it is treated with chromium salt to give good tensile strength, but knot security is poor [9]. Chromic catgut suture is completely absorbed by hydrolysis in approximately 14-21 days; therefore, it is very suitable for repair of episiotomy [10]. However it causes tissue reaction, inflammation, increased risk of postoperative pain, and the need for analgesia. Chromic catgut suture is less resistant to infection, and it easily degrades when there is wound sepsis [2,9,10]. This may increase the rate of episiotomy wound dehiscence.

Polyglactic acid suture (vicryl) is a synthetic absorbable suture material first introduced by Ethicon in 1974. It is made up of a polymer consisting of lactic acid and glycolic acid, and it is coated with polyglactin 370 and calcium to enhance visibility [11,12]. Polyglactic acid suture has a higher tensile strength, higher knot strength (the force required for a knot to slip), with minimal memory (suture stiffness) [12,13]. Besides, it causes less tissue reaction than chromic catgut; therefore, post-operative pain

and the need for analgesia are reduced [14]. Polyglactic acid sutures are more expensive than chromic catgut suture; In Nigeria the cost is equivalent to \$1.81 vs. \$0.78 (US dollars) respectively. It's expected that some patients may not afford it in low resource setting, especially in rural communities. Vicryl is completely absorbed by hydrolysis in 60-90 days, because of the long period it takes for vicryl suture to absorb, it may require removal if used for soft tissue approximation.

To avert the problem of suture removal, polyglactin 910 suture or vicryl rapide was designed. According to the manufacturer, it was made to degrade more rapidly; it loses all its tensile strength by 10-14 days post operatively and gets completely absorbed by 42 days [14,15]. Typically, it falls off in 7-10 days and removal of stitches is not required [14]. The characteristic loss of strength was achieved by using a polymer material with a low molecular weight (Polyglactin 910), instead of polyglactin 370 in the regular vicryl.

Polyglactin 910 or vicryl rapide was reported as ideal for use in soft tissue approximation where short term wound support and rapid absorption of the suture material is required [9,16], such as repair of episiotomy. In a systematic review comprising 8 randomized controlled trials on episiotomy repair, the need for suture removal was less common with the fast absorbing polyglactin 910 (vicryl rapide) than polyglactic acid suture [13].

Studies from various centers indicate that fast absorbing sutures are superior to chromic catgut sutures when used to repair episiotomy. In a randomized controlled trial, vicryl rapide was found to be associated with less postpartum pain (32.5% vs. 57%), less need for analgesia (0.5% vs. 15.5%), and less wound dehiscence (4.0% vs. 13.5%). In addition, the rate of wound healing was more significant [17].

Similar findings were obtained from a meta-analysis involving 18 randomized controlled trials comparing the use of chromic catgut suture with the fast absorbing polyglactin 910 for repair of episiotomy. The fast absorbing sutures significantly resulted in less perineal pain within 3 days postpartum, Risk Ratio (RR) = 0.83, [CI 0.76 to 0.90]. There was also less need for analgesia, RR = 0.71, [CI 0.59 to 0.87]. It was also observed that far more women 1,201 who used chromic catgut sutures required re-suturing, compared with only 15 women who

used vicryl rapide, RR = 0.25, [CI 0.08 to 0.74] [18].

Even though chromic catgut suture has been largely abandoned globally because of its complications, it is still widely used in many poor resource countries. Most centers in Nigeria use chromic catgut and vicryl sutures to repair episiotomy, and little attention has been paid to the fast absorbing polyglactin 910 sutures. This study therefore intends to determine whether episiotomy repair with polyglactin 910 suture would result in a better postoperative outcome in our environment, so that appropriate recommendations could be made.

2. METHODOLOGY

2.1 Study Site

The study was carried out in the delivery ward of department of obstetrics and gynaecology, the Niger Delta University Teaching Hospital, Yenagoa in Southern Nigeria. The hospital is located about 2 kilometers off the city of Yenagoa in Bayelsa state and serves as a referral center. It also receives patients from parts of the neighboring states, such as: Rivers, Delta, Edo and Imo state in Igbo land.

2.2 Study Design

This is a parallel randomized controlled trial of 400 booked parturients who delivered and had episiotomy repair in the labour ward, department of obstetrics and gynaecology. It was carried out from 4th of February 2020 to 4th of July 2020.

2.3 Objective

This objective of this study is to determine whether the use of fast-absorbing polyglactin 910 suture for episiotomy repair would result in significant difference in postpartum morbidity when compared to chromic catgut suture. The specific morbidity parameters include perineal pain, acute urinary retention, wound dehiscence, wound resuturing, vulva hematoma and dyspareunia.

2.4 Patients' Selection

Subjects were selected among booked parturients who had episiotomy at the Niger Delta University Teaching Hospital during the study period. Detailed information about the study, its objectives and follow-up protocol was

given to the patients who had episiotomy after delivery. They were also given the opportunity to ask questions, and relevant areas of concern were streamlined. The patients were also informed that inclusion into this study would not pose any risk or complication as vicryl suture is not known to be harmful; they are at will to withdraw any time. The subjects were randomly selected by a double-blind randomization method after delivery by allocation of sealed opaque envelopes containing numbers randomly assigned to each suture material. Half of the subjects (200 women) were assigned to have episiotomy repair with fast-absorbing polyglactin 910 suture, while the other half (200 women) were to have episiotomy repair with chromic catgut suture. Both the patients and the doctors had no pre-knowledge or influence on the type of suture material to be used.

The most senior doctor or nursing staff on duty was responsible for opening the envelopes and dispensing the suture materials to the doctor who would carry out the repair. Episiotomy repair was carried out only by house officers, between 08:00 hours and 16:00 hours by the labour ward team, and from 16:00 - 08:00 hours and weekends by the team on call. A workshop was organized to train the house officers on the technique of episiotomy repair, to ensure that a uniform method of repair was used for this study. In line with hospital management policy, only mediolateral episiotomy was used.

2.5 Exclusion Criteria

Patients with pre-existing conditions that could affect wound healing were excluded from the study. These include un-booked patients, prolonged rupture of fetal membranes, chorioamnionitis and women with immune-compromised conditions like HIV/AIDS. Also excluded were women who had medical conditions that could impair wound healing, such as diabetes mellitus, and severe anemia.

2.6 Procedure for Repair of Episiotomy

With the patient in lithotomy position, the episiotomy wound was inspected with a good light source, and the apex was located. Those who were not given anaesthesia before the episiotomy incision were given 5 ml of 1% lignocaine as local infiltration. A top up of another 5 ml may be necessary if adequate anaesthesia was not achieved. A vaginal pack was placed above the episiotomy wound when necessary, to keep blood away from the operation field.

Repair of episiotomy was carried out in three layers. Beginning from the apex, the vaginal skin was repaired with continuous sutures and the perineal muscles and skin were repaired with interrupted sutures respectively. Only size 0 chromic catgut sutures on cutting needle, and size 0 polyglactin 910 suture on cutting needle were used.

Following repair, a thorough inspection of the wound was carried out to ensure that hemostasis was achieved, the vaginal pack was removed, and a rectal examination was carried out to ensure that the anal canal was patent.

2.7 Postoperative Management and Follow-up

In line with the NDUTH labour ward and episiotomy protocols, immediately after delivery, it is mandatory for patients to be observed first in the labour ward, and then postnatal ward for at least 24 hours for possible delivery complications. Thereafter, those without complications are discharge.

With respect to this study, the women were monitored for postoperative episiotomy complications such as: Hemorrhage, vulva hematoma, perineal pain and acute urinary retention. During this period, patients were given health education on perineal hygiene, and counseling on compliance with postoperative management. They were taught how to prepare sitz bath and instructed to have regular sitz bath twice daily for 1 week. Patients were placed on oral cefuroxime 500 mg 12 hourly for 7 days, metronidazole 400 mg 3 times daily for 5 days, ferrous sulphate 200 mg daily and folic acid 5 mg daily for 6 weeks. They were also placed on oral diclofenac sodium 50 mg 8 hourly for 1 week.

In concordance with the labour ward protocol, on completion of the 24 hours mandatory observation period, the patients without complications were given 6 weeks appointment for postnatal assessment. However, those who enrolled for this study were given 1-week appointment for assessment of wound healing. While at home, they were instructed to watch out for offensive vaginal discharge, wound sepsis, and wound dehiscence. They were also advised to report back to hospital whenever they develop complications that warrant hospital treatment.

At 1-week assessment, patients were assessed for perineal pain, wound dehiscence and compliance with postoperative treatment. Those

with complications were treated accordingly, including wound resuturing.

The final assessment was at 6 weeks postnatal visit. Patients were assessed for complete wound healing, perineal pain and dyspareunia for those who have resumed sexual intercourse.

2.8 Sample Size

A total of 400 women who had episiotomy in labour were enrolled for this study. An appropriate sample size was calculated using Epi Info statistical software version 7, based on an annual delivery rate of 800, an episiotomy rate of 30%, and confidence interval was set at 95%. Statistical significance was a p value < 0.05.

2.9 Collection of Data

A patient's information sheet (the research protocol) was filled for each patient by the researcher or the doctor on call, this commences about 6 hours after an episiotomy repair. The researchers name and phone number were given to each patient so that complaints would be promptly attended to. In addition, the patients were called and reminded of their appointments when due, to enhance compliance.

Data obtained during the 24 hours inpatient monitoring period include: Perineal pain, acute urinary retention, and vulva hematoma. Other data collected include patient's biodata, indications for episiotomy, fetal demographic characteristics, and compliance with operative management.

At 1-week follow-up visit, data collected include perineal pain, wound dehiscence, and secondary wound suturing for those treated for severe episiotomy breakdown. At six weeks, data collected include: wound dehiscence, perineal pain, and dyspareunia.

2.10 Objective Evaluation of Main Outcome Measures

The main outcome measures in this study were perineal pain and wound dehiscence. For pain perception, the severity was evaluated using a visual analogue scale, calibrated in centimeters. At the time of assessment, the patients were asked to determine the level of pain perceived, with the assumption that at 0 cm there was no pain, and at 10 cm the pain was at its extreme. It was scored as mild (1 – 3 cm), moderate (3.1 - 6.0 cm) and severe (6.1 – 10 cm). Perineal pain

was assessed between 6 and 12 hours after the episiotomy repair, this was necessary to avoid the effect of lignocaine on postoperative pain, and to accommodate patients who prefer to rest, especially those delivered at night. None of the patients in this study had epidural anesthesia.

Wound dehiscence was assessed by inspecting the episiotomy wound for break down, which could be partial or total separation of the sutures. In partial separation, only the vaginal skin was involved. In total separation, dehiscence involves all the layers, including the perineal muscles.

2.11 Timeline for Recruitment and Follow-up

Recruitment of participants into this study commenced on 4th of February 2020 and follow-up commenced a week after discharge, from 11th of February 2020. This did not include women who developed complications; they were seen earlier. The recruitment process ended on 20th of May 2020.

Follow-up at 6 week postpartum commenced on the 18th of March 2020, and ended on 4th of July 2020. Women who still had complaints were attended to, but documentation of the findings was beyond the scope of this study.

2.12 Estimated Blood Loss

At present, there is no accurate and objective way of measuring the exact blood loss attributed to episiotomy incision and repair, because from the third stage of labour, there is continues bleeding from the placenta bed, and this passes through the episiotomy incision to the outlet. Therefore the blood loss used in this study was estimated subjectively; as a result, it was excluded from the main outcome measures. A more accurate result would be obtained if a method is designed to isolate blood loss exclusively due to episiotomy incision. This calls for further studies.

2.13 Acute Urinary Retention

In this study, the diagnosis of acute urinary retention was made when a participant complain of inability to pass urine despite having the urge of a full bladder. Following delivery, it's mostly attributed to perineal pain, most probably secondary to the episiotomy incision and repair. These women were treated with urethral catheterization, and analgesics. Acute urinary retention was excluded as main outcome

measure because it is not a very common complication of episiotomy.

2.14 Data Analysis

Data was fed on SPSS statistical software version 22 for windows, and Epi Info version 7 software. Data was analyzed and presented as mean with standard deviation, rates, and proportions in tables and figures. The chi-square and Fisher Exact were used to compare data as appropriate. Statistical significance was set at p values ≤ 0.05, at 95% confidence interval.

3. RESULTS

The mean maternal age was 28.39 ± 4.4 years, the minimum age was 18 years and the maximum was 41 years.

Most of the women 179(44.8%) who had episiotomy repair were aged 25-29 years, a great majority of these women 277(69.3%) attained

tertiary education. Majority of the women 108(27.0%) were self-employed and most 208(52.0%) were multiparous.

Rigid perineum was the commonest indication for episiotomy, accounting for 370(92.5), and mento-anterior face presentation and shoulder dystocia were the least, accounting for only 0.3% and 0.1% respectively.

The mean birth weight was 3.38 ± 0.48 kilograms, the minimum birth weight was 1.9 kilograms and the maximum weight was 5.3 kilograms.

Most of the babies delivered in this study 346(86.5%) were of average weight 2501- 4000 grams, and fetal macrosomia (birth weight of ≥ 4000 grams) accounted for only 9.0%. Episiotomies were not done for very low birth weight babies (< 1500 grams). Majority of the babies 207(51.8) were female.

Table 1. Bio-data

Bio-data	Chromic catgut (n = 200)	Polyglactin 910 (n = 200)	Total (n = 400)
Maternal age			
≤19 years	1(0.3)	6(1.5)	7(1.8)
20-24 years	30(7.5)	26(6.5)	56(14.0)
25-29 years	100(25.0)	79(19.7)	179(44.8)
30-34 years	50(12.5)	67(16.8)	117(29.3)
≥35 years	19(4.8)	22(5.5)	41(10.3)
Educational level			
Non formal	1(0.2)	1(0.3)	2(0.5)
Primary	6(1.5)	5(1.3)	11(2.8)
Secondary	45(11.3)	65(16.3)	110(27.5)
Tertiary	148(37.0)	129(32.3)	277(69.3)
Occupation			
Unemployed	45(11.3)	25(6.3)	70(17.5)
Self-employed	51(12.8)	57(14.3)	108(27.0)
Student	41(10.5)	54(13.5)	96(24.0)
Civil servant	53(13.3)	47(11.6)	100(25.0)
Company staff	9(9.0)	17(4.3)	26(6.5)
Parity			
Para 0	108(27.0)	74(18.5)	182(45.5)
Para1-4	85(21.3)	123(30.8)	208(52.0)
≥ Para 5	7(1.8)	3(0.8)	10 (2.5)

Table 2. Indication for episiotomy

Indication	Chromic catgut (n = 200)	Polyglactin 910 (n = 200)	Total (n = 400)
Rigid perineum	188(47.0)	183(45.8)	371(92.8)
Breech delivery	4(1.0)	8(2.0)	12(3.0)
Vacuum extraction	4(1.0)	4(1.0)	8(2.0)
Forceps delivery	2(0.5)	5(1.3)	7(1.8)
Face presentation	1(0.1)	1(0.1)	2(0.3)
Shoulder dystocia	1(0.1)	nil	1(0.1)

Table 3. Baby's demographic characteristics

Characteristic	Chromic catgut (n = 200)	Polyglactin 910 (n = 200)	Total (n = 400)
Birth weight			
< 1500 grams	-	-	-
1500-2500 grams	8(2.0)	10(2.5)	18(4.5)
2501-3999 grams	171(42.3)	175(43.8)	346(86.5)
≥ 4000 grams	21(5.3)	15 (3.8)	36(9.0)
Fetal sex			
Male babies	106(26.5)	87(21.8)	193(48.3)
Female babies	94(23.7)	113(28.3)	207(51.8)

Table 4. Postoperative complications of episiotomy

Characteristic	Chromic catgut (n = 200)	Polyglactin 910 (n = 200)	Total (n = 400)	p value
Immediate complications (within 24 hours)				
No complication	79(19.8)	84(21.0)	163(40.8)	0.47
Mild perineal pain	76(19.0)	74(18.5)	150(37.5)	0.82
Moderate pain	30(7.5)	27(6.8)	57(14.3)	0.61
Severe pain alone	2(0.5)	6(1.5)	8(2.0)	0.07
Severe pain with acute urinary retention	9(2.3)	6(1.5)	15(3.8)	0.07
Vulva hematoma	4(1.0)	3(0.7)	7(1.7)	0.78
Complications at 7 days postpartum				
Wound healing				
Satisfactory wound healing	147(28.5)	166(33.8)	313(78.3)	0.001
Partial wound dehiscence	35(8.8)	23(5.8)	58(14.5)	0.02
Total wound dehiscence	18(4.5)	11(2.8)	29(7.3)	0.07
Wound resuturing	27(6.8)	13(3.2)	42(10.5)	0.03
Perineal pain				
No perineal pain	114(28.5)	135(33.8)	249(62.3)	0.13
Mild perineal pain	33(8.3)	31(7.8)	64(16)	0.77
Moderate pain	45(11.3)	26(6.5)	71(17.8)	0.006
Severe pain	8(2.0)	8(2.0)	16(4.0)	0.85
Complications at 6 weeks postpartum				
Satisfactory wound healing	171 (42.9)	165(41.3)	336(84.0)	0.28
Wound dehiscence with	23(5.8)	23(5.8)	46(11.5)	0.91
Mild perineal pain				
Superficial dyspareunia	6(1.5)	12(3.0)	18(4.5)	0.06

Women whose episiotomies were repaired with polyglactin 910 suture did not have less post-operative complications within 24 hours than those who had episiotomy repair with chromic catgut suture. $P = 0.47$, $X^2 = 0.42$, Odds ratio = 0.90[CI, 0.68 – 1.20]. There was no statistically significant difference in the rate of postoperative pain, acute urinary retention and vulva hematoma between women whose episiotomies were repaired with chromic catgut, and those repaired with polyglactin 910.

Episiotomy repair with polyglactin 910 suture resulted in more satisfactory wound healing at 7 days post-partum than repair with chromic catgut suture. $P = 0.001$, $X^2 = 10.05$. Odds ratio = 0.57[CI, 0.40 – 0.80]. Repair with chromic catgut resulted in more wound breakdown but are mainly superficial. $P = 0.02$, $X^2 = 5.73$, Odds ratio = 1.62[CI, 1.09 – 2.44].

A total of 42 women (10.5%) had secondary wound suturing, 6.8% for chromic catgut and

3.2% for vicryl. Episiotomies repaired with chromic catgut suture were twice more likely to result in secondary wound suturing than those repaired with polyglactin 910, Odds ratio = 2.24 [1.12, 4.49]. P = 0.01.

Women whose episiotomies were repaired with chromic catgut suture experienced more moderate post-operative pain at 7 days postpartum. P = 0.006, X² = 11.72, Odds ratio = 1.94[CI, 1.33 – 2.82].

At 6 weeks postpartum, there was no significant difference in wound healing between episiotomies repaired with chromic catgut suture and those repaired with polyglactin 910. P = 0.2, X² = 1.13, Odds ratio = 1.25[CI, 0.86 – 1.83]. Perineal pain was mild, and there was no difference between the test and control groups. P = 0.91, X² = 0.01, Odds ratio = 1.00[CI, 0.65 – 1.54]. Superficial dyspareunia was also not significantly different between the two groups. P = 0.06, X² = 3.52, Odds ratio = 0.48[CI, 0.24 – 0.48].

Among the women whose episiotomies were repaired with chromic catgut suture, 22(5.5%) did not comply with the post-operative treatment, while 187(94.5%) complied. Also, 32 women

(8.0%) who had repair with vicryl suture did not comply, while 184(92.0%) complied.

Noncompliance with post-operative management did not significantly affect the study as there was no statistically significant difference between the study group and control. P = 0.20, X² = 1.61, Odds ratio = 0.67[CI, 0.38 – 1.17].

4. DISCUSSION

Chromic catgut suture, being a byproduct, of sheep intestinal intima is largely regarded as a potential source of infection with bovine spongiform encephalopathy (mad cow disease) [19]. As a result, it was abandoned in most parts of the world over a decade ago, especially in the western countries. However, because mad cow disease is not common in West Africa, chromic catgut sutures are still very much in use in this part of the Globe.

Since the advent of bovine spongiform encephalopathy, polyglactic acid sutures have taken the center stage in surgical procedures globally, including the West African sub region, partly because of its superior qualities. Various studies have reported polyglactic acid sutures as having superior tensile strength, knot security,

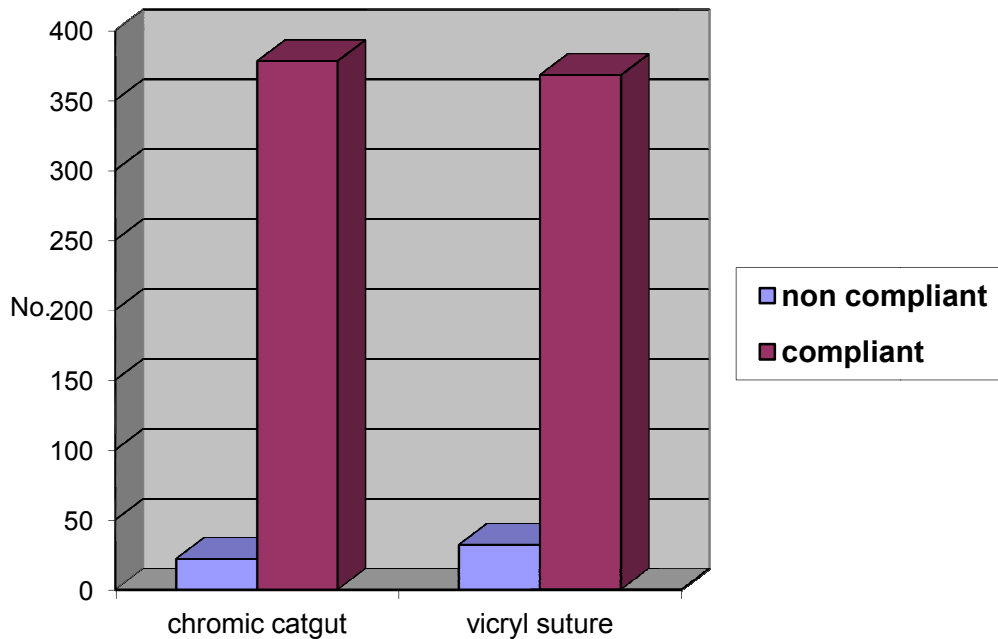
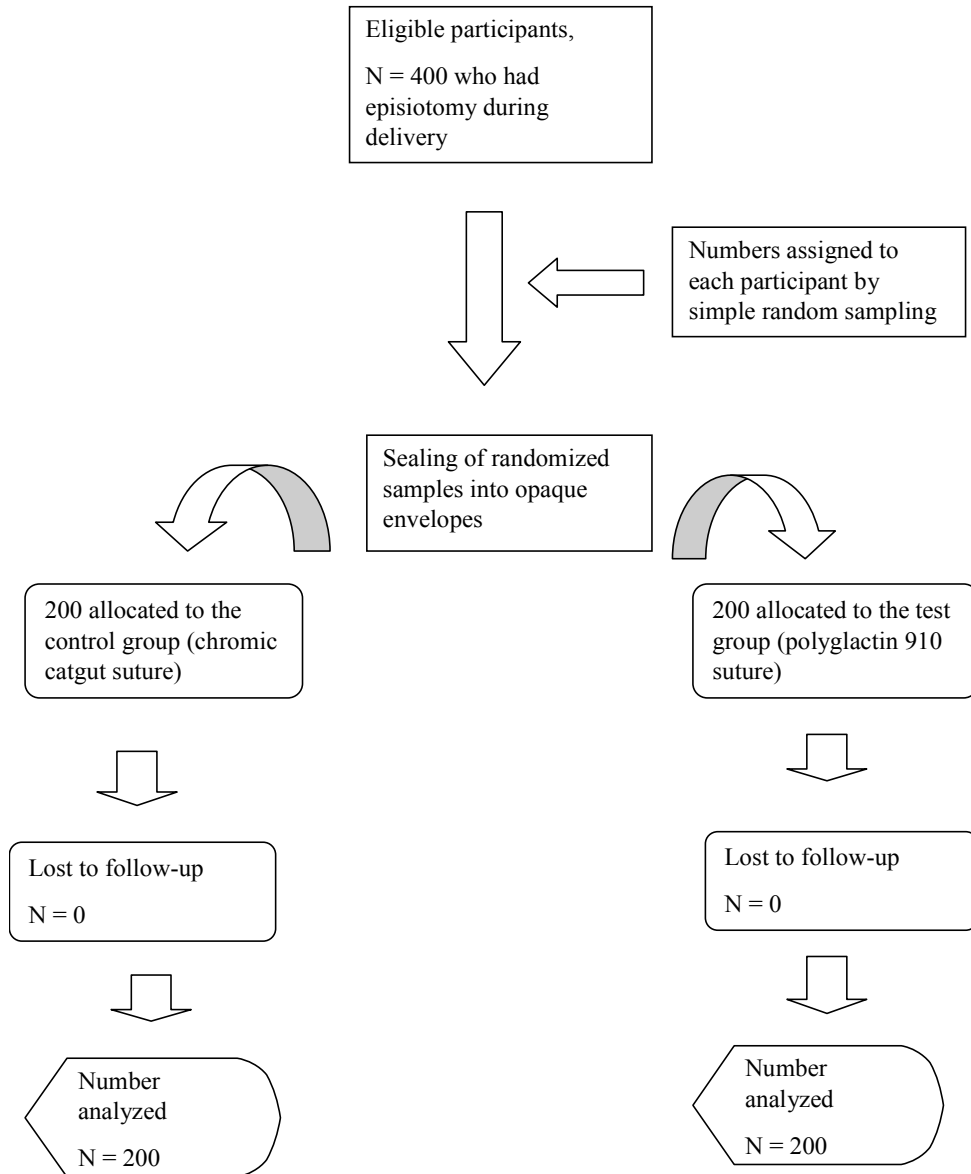


Fig. 1. Compliance with postoperative treatment

Randomization flow diagram



with greater capacity to withstand infections, [2,9,20] Polyglactin 370 (vicryl) and chromic catgut are the suture materials mostly employed for episiotomy repair in west Africa. However, because chromic catgut is much cheaper than vicryl suture, it is preferred in many of our health facilities for obvious financial reasons, especially in rural communities in Nigeria.

The major setback with chromic catgut suture in episiotomy repair is its potential to cause tissue

reaction, with increased risk of perineal pain and discomfort [21]. For vicryl suture, the main issue is that it takes too long (2-3 months) to absorb, this sometimes creates anxiety, and some women may opt for removal [13].

Evidence from Cochrane database systematic review revealed that more women whose episiotomies were repaired with vicryl suture required suture removal, compared with those that used the rapidly absorbed suture (RR 0.24,

95% CI 0.15 to 0.36 [13]. In clinical practice, our women often complain of seeing suture materials several weeks or months after episiotomy repair, but with assurance that it would subsequently get absorbed, most of them accepts the condition. However, literature search has revealed absence of publications on this issue in our environment, and the rate is largely unknown, this calls for further studies.

To avert these short falls of polyglactin 370 (vicryl suture), Ethicon introduced the fast absorbing suture material polyglactin 910 (vicryl rapide), which retains the tensile strength of vicryl, but gets absorbed in 7-10 days. Though vicryl rapide has been in use for episiotomy repair in many countries for several years, it is not popular in most parts of West Africa, including Nigeria. Inappropriate advocacy and poor marketing may be strong reasons for this, as the cost price of both sutures are almost the same.

In this study, the choice of suture material does not seem to play a significant role in pain perception within 24 hours after episiotomy repair; there was no significant difference between the test and control groups. This is not surprising because post-operative pain secondary to the type of suture material used depends largely on its ability to cause inflammation and tissue reaction, which hardly manifest within 24 hours. On the contrary, findings from a previous study revealed that polyglactin acid sutures were associated with less pain up to three days after delivery, Risk ratio (RR) = 0.83 [0.76 to 0.90] [18]. It is also been reported to be associated with less need for analgesia [22].

Two salient findings from this study are the lack of significant variation in the rates of acute urinary retention and vulva hematoma, which usually manifest within 24 hours after delivery. With respect to acute urinary retention, the lack of variation in pain perception between the 2 groups may be responsible; difficulty in micturition following episiotomy depends largely on the severity of perineal pain. For vulva hematoma, the absence of significant variation in the rate did not raise eyebrow, as this complication exclusively depends on poor surgical technique, rather than the type of suture material used.

At 5-7 days after episiotomy repair, there is little doubt that the fast absorbing suture (vicryl

rapide) has an edge over chromic catgut suture, with respect to wound dehiscence and perineal pain. This superiority has been vindicated by various studies, including randomized controlled trials [13,18,20]. Evidence from a systematic review encompassing 8 randomized controlled trials (comparing chromic catgut with polyglactin acid for episiotomy repair) indicates that chromic catgut suture was associated with more postpartum pain, need for analgesia and wound dehiscence [18]. It was also reported from another randomized controlled trial that repair of episiotomy with vicryl rapide was associated with less pain perception compared with chromic catgut suture ($P < 0.001$) [21].

The above findings were similar to those obtained in this study; women whose episiotomies were repaired with polyglactin 910 suture experienced less postoperative pain at 7 days postpartum than chromic catgut, $P = 0.006$, and more satisfactory wound healing $P = 0.001$.

Though most of the episiotomy wound breakdown recorded in this study were superficial and were managed conservatively, quite a hand full (10.0%) required secondary suturing. It was observed that episiotomies repaired with chromic catgut suture were twice more likely to result in secondary wound suturing than those repaired with polyglactin 910, Odd Ratio = 2.24 [1.12, 4.49]. The 10.0% resuturing rate was slightly higher than the 7.0% reported in Meenakshi Medical College [23]. This most probably resulted from the fact that in that study, none of the patients in the vicryl group had secondary suturing, compared to the 3.2% obtained in this study. Another study done elsewhere reported a much lower resuturing rate of 2% [18]. The wide disparity may be a product of chance.

The much-publicized superiority of polyglactin acid suture over chromic catgut does not seem to manifest in this study at 7 days postpartum, as there was no significant difference in pain perception between the test and control groups. However, this was in conformity with a similar study done in Zagazig University Hospital in Egypt [24]. On the contrary, a study reported a higher rate among women who had episiotomy repair with chromic catgut suture (81% vs. 69%) [17]. This may be because in their study, more women were still on treatment for wound dehiscence at 6 weeks postpartum.

A salient finding in this study was the low rate of dyspareunia at 6 weeks postpartum. This most probably resulted from the fact that most of the women in this study have not resumed sexual intercourse at the time of assessment. This concept is buttressed by findings from a study where assessment at a later date (8 weeks postpartum) yielded highly significant rate of dyspareunia between the test and control groups, $P = 0.001$ [25]. A much higher rate was obtained in another study when assessment was extended to 12 weeks postpartum [26].

The absence of significant difference in other variable at 6 weeks postpartum: Wound healing ($P = 0.2$), and Perineal pain ($P = 0.91$) was not suppressing. This is because at 6 week postpartum, wound healing adequate enough to surmount perineal pain would have occurred in most women.

It is obvious from this study that polyglactin 910 suture is superior to chromic catgut when used to repair episiotomy, as it results in less postpartum morbidity. However, it is more expensive than chromic catgut and affordability could be an issue among the low social class, especially in poor resource setting like the West African sub region.

Taking into cognizance the high rate of perineal wound infections in West Africa, the postpartum perineal pain and trauma our women experience from episiotomy wound dehiscence, and the cost of treatment (including wound resuturing), it would be a good idea if polyglactin 910 is considered as the first line suture material for episiotomy repair in West Africa. This would go a long way to mitigate the short and long-term complications of episiotomy associated with the use of chromic catgut suture. Also, the issue of suture removal associated with vicryl would be averted. After all, the cost of vicryl suture and vicryl rapide is at par with each other.

5. CONCLUSION

Episiotomy repair with polyglactin 910 mitigates postpartum morbidity via more satisfactory wound healing, less need for secondary wound suturing, and reduced perineal pain when compared with chromic catgut suture. It is hereby recommended as the suture of choice for episiotomy repair in West Africa because of the high rate of puerperal sepsis, perineal wound infections and wound dehiscence in this region.

DISCLAIMER

The products used for this research are commonly and predominantly use products in our area of research and country. There is absolutely no conflict of interest between the authors and producers of the products because we do not intend to use these products as an avenue for any litigation but for the advancement of knowledge. Also, the research was not funded by the producing company rather it was funded by personal efforts of the authors.

CONSENT

Include in this study were women who consented to participate in this study, among pregnant women who registered for antenatal care in NDUTH, had vaginal delivery and were given episiotomy. Informed (written) consent was obtained from those who accepted to participate in the study.

ETHICAL APPROVAL

Approval to carry out this study was granted by the Research and Ethical Committee of the Niger Delta University Teaching Hospital, with reference number NDUTH/REC/0002/2020. Approval was granted by the NDUTH ethical committee.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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