Original Article

Review of Episiotomy and the Effect of its Risk Factors on Postepisiotomy Complications at the University of Port Harcourt Teaching Hospital

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Abstract

Aim: This study aimed to determine the prevalence of episiotomy and postepisiotomy complications and to assess the relationship between the risk factors and postepisiotomy complications in the University of Port Harcourt Teaching Hospital. **Methodology:** This was a descriptive longitudinal study, in which 403 consecutive women who had episiotomy in the labor ward were recruited for the study. They were followed up and reviewed at the postnatal clinic on the 1st and 6th weeks postdelivery. Data regarding age, marital status, occupation, educational status, address, parity, booking status, postepisiotomy complications, and the associated risk factors were entered adequately into a prestructured pro forma, and statistical analysis was done using statistical software (SPSS for Windows® version 19.0). *t*-test was used to explore the association of risk factors to postepisiotomy complications. **Results:** The episiotomy rate was 22.1%. The prevalence of postepisiotomy complications was 52.1%. The mean age of the women was 23.8 (standard deviation ± 3.2) years. Seventy-two (34.3%) patients had perineal pain, which lasted for 72 h or more; 61 (29.1%) had difficulty in walking, while 37 (17.6%) had perineal discomfort. Four (1.9%) had wound infection and only one (0.4%) had wound dehiscence. The development of postepisiotomy complications was not statistically significantly associated with risk factors such as gestational age ($T = 1.4$, $P = 0.1$), packed cell volume on admission ($T = 1.0$, $P = 0.2$), duration of first stage of labor ($T = 0.5$, $P = 0.1$), duration of second stage of labor ($T = 0.7$, $P = 0.3$), duration of rupture of fetal membranes ($T = 0.8$, $P = 0.4$), delivery repair interval ($T = 0.6$, $P = 0.2$), estimated blood loss ($T = 0.9$, $P = 0.2$), duration of Sitz bath ($T = 1.0$, $P = 0.2$), duration of analgesic ($T = 1.2$, $P = 0.1$), duration of antibiotics ($T = 1.3$, $P = 0.1$), or the operator who performed or repaired the episiotomy ($P = 0.2$). **Conclusion:** The prevalence of episiotomy and postepisiotomy complications in this study was high. Necessary attention should be given to ensure adequate pain relief for all parturients who had episiotomy, and the policy of restrictive use of episiotomy should be fully implemented in the department in line with the best practices and evidence-based recommendations. This will further reduce the incidence of episiotomy rate as well complications that may arise from it and ensure a positive pregnancy experience for pregnant women.

Keywords: Postepisiotomy complications, risk factors, UPTH

Introduction

Episiotomy is a surgical incision made on the perineum to enlarge the vaginal orifice during the last part of the second stage of labor to aid vaginal delivery.[1,2] As it was first described in the 10th century, it has become one of the most practiced obstetric procedures worldwide.[3,4] It helps to facilitate delivery and prevent the complications of labor in the mother and her neonate.[4]

The WHO recommends an episiotomy rate of 10% for all normal deliveries.[5] A selective episiotomy policy has resulted in worldwide downward trend of episiotomy rate.[6] However, efforts are needed currently to reduce the episiotomy rates, particularly in the developing countries.[7] The episiotomy rate of 35.2% has been reported in Ethiopia.[8] The episiotomy rates reported in various centers in Nigeria was 9.3% at the Federal

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Medical center Owo,[9] 20.8% at Jos University Teaching Hospital,[10] 34.3% at the Bowen University Ogbomosho,[11] 35.4% at the Ahmadu Bello University Teaching Hospital Zaria,[1] 40.1% at the University of Port Harcourt,[12] 45% at the Abia State University Teaching Hospital,[13] and 54.9% at the University of Benin Teaching Hospital.[14] Although the use of episiotomy is common in the practice of obstetrics in Nigeria; many of our women have very minimal knowledge of it; while the majority have a strong aversion to it.[15] Episiotomies are recommended electively for women who had a past history of lower genital tract surgeries and for women who require assisted vaginal deliveries.[16] It may be administered on an emergency basis, especially when there is presumed imminent perineal tear.[1,17] There are three types of episiotomies: midline, lateral, and mediolateral.[1,18] At this center, mediolateral episiotomies are preferred. Risk factors associated with episiotomy include operative vaginal delivery, primiparity, inexperience and distress of the health-care provider, and fetal macrosomia.[2,8,19]

The indications of episiotomy can be fetomaternal. Fetal indications include nonreassuring fetal testing in the expulsive phase of the second phase of labor, preterm delivery, and vaginal breech delivery and to aid delivery in shoulder dystocia. Maternal indications include maternal exhaustion and prolonged second stage or to facilitate operative vaginal delivery, thus preserving the relaxation of pelvic muscles and reducing the incidence of perineal lacerations and fecal and urinary incontinence.[20-22] These beneficial effects are now being challenged as they are not backed by strong scientific evidence, and current evidence advocates restrictive use of episiotomies over routine use, as the former is associated with less posterior perineal trauma, less need for suturing, and fewer complications associated with healing.[23,24]

The complications of episiotomies include accidental extension into the anal sphincter or rectum, damage to the Bartholin's gland, unsatisfactory anatomic results such as skin tags, asymmetry or excessive narrowing of the introitus, difficulty in breastfeeding, rectovaginal fistula, and fistula in ano; it may increase the risk of vertical transmission of human immunodeficiency virus.[24,25] Other complications include increased hospital stay, delay in the patients' resumption of sexual activity, perineal pain, edema, hemorrhage, hematoma, infection, and wound dehiscence.[26,27] Psychological trauma and dyspareunia may also occur and may last for months after delivery.[3,28] Other complications that can occur though rare include endometriosis in the episiotomy scar and nonhealing of the episiotomy.[29]

Risk factors that have been suggested for the development of complications from episiotomies include the skill of the operator that may account for cutting too laterally and damaging other structures such as the Bartholin's gland, or making a ragged incision, which may not heal properly.[30] The technique of repair and the type of suture used may also affect the outcome of episiotomy repair. Continuous

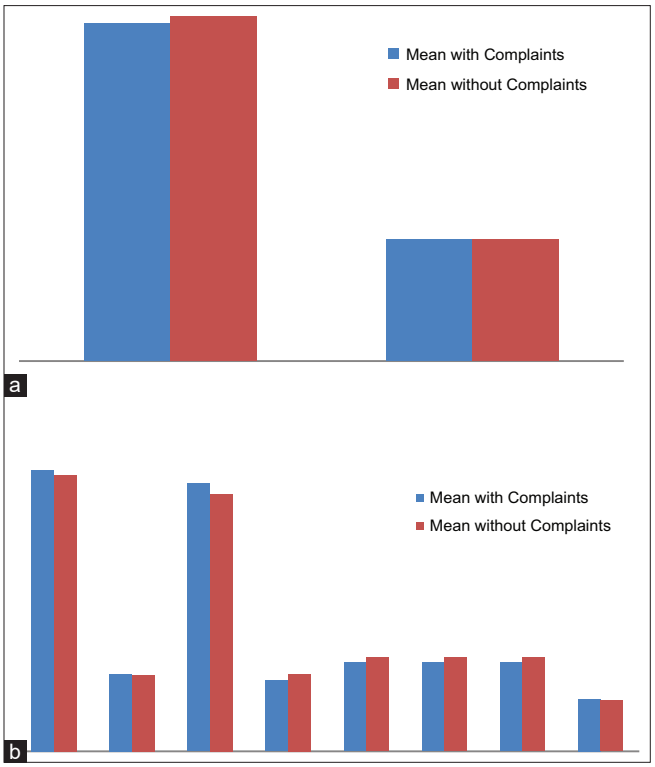

Figure 1: (a) Comparison of risk factors associated with postepisiotomy complications. (b) Further comparison of risk factors associated with postepisiotomy complications. Min – Minutes; Hrs – hours; P – P value; GA – Gestational age; POA – Packed cell volume at admission; DFSL – Duration of first stage of labor; DSSL – Duration of second stage of labor; DRFM – Duration of rupture of fetal membranes; DRI – Delivery–repair interval; EBL – Estimated blood loss; DSB – Duration of Sitz birth; DAI – Duration of analgesia; DAn – Duration of antibiotics

subcuticular stitches have been found to have less perineal pain than other sutures.[31] Others include perineal contamination, delayed repair, and poor perineal hygiene which increases the risk of infection.[32] Most of the complications resulting from episiotomies are usually not life-threatening and are often neglected in obstetrics practice in Nigeria. However, it must be emphasized that ill health resulting from immediate postepisiotomy complications constitutes a serious cause of maternal morbidity, particularly in the puerperium,[1,2,9] whereas late complications such as coital difficulties, dyspareunia, and gaping introitus occasioned by faulty repair will adversely affect the couple's sexual and reproductive lives.[32] These complications need attention.

Aim

This study aimed to determine the prevalence of episiotomy and postepisiotomy complications and to assess the relationship between the risk factors and postepisiotomy complications in the University of Port Harcourt Teaching Hospital.

Methodology

Ethical approval was obtained from the Ethics Committee of the University of Port Harcourt Teaching Hospital. This was a

descriptive longitudinal study to assess the association of risk factors and postepisiotomy complications in the University of Port Harcourt Teaching Hospital. Patients especially those at 37 weeks gestation and above were informed of this study at the antenatal clinics. Consent for the study was sought from the patients after the third stage of labor. All women who were delivered with the aid of an episiotomy at the labor ward and gave their consents were recruited for the study and were followed up. Patients who withheld their consents as well as those who had perineal tears were excluded from the study.

The sample size determination (N) was calculated using the Fish formula:

$$N = (Z^2 P (1 - P)/d^2)^{33}$$

where Z is the proportion of normal distribution corresponding to the required significance level (5%), which is 1.96; P is equivalent to the prevalence of episiotomy in the University of Port Harcourt Teaching Hospital, 0.394 per 100 deliveries;[33] and d is the degree of accuracy/precision expected (0.05). From a pilot study done at our center, episiotomy occurs at the rate of 10/week. A sample size of 403 women was calculated after the application of the Fish formula. This study lasted for 6 months.

Sample selection and protocol

All consecutive patients who had episiotomy and consented to the study were recruited until the minimum sample size was obtained. Seven junior residents in the five different units of the department that take calls every other day and run antenatal and postnatal clinics from Monday through Friday were trained to assist in data collection, follow–up, and examination of the women at the postnatal clinics at the 1st and 6 weeks postdelivery. Appropriate treatments were given to those who had developed complications. Statistical analysis was done using statistical software (SPSS for Windows® version 19.0, SPSS Inc., Chicago, IL, USA). A *t*-test was used to explore the association of risk factors to postepisiotomy complications.

Results

Table 1 shows the sociodemographic characteristics of women. There were 1820 vaginal deliveries during the period of the study between March 2015 and August 2015 at the University of Port Harcourt Teaching Hospital. There were 1820 vaginal deliveries during the period of the study between March 2015 and August 2015 at the University of Port Harcourt Teaching Hospital. Out of these, 403 women who had episiotomy were enrolled for the study. Three hundred and fifty (92.3%) were booked and 31 (7.7%) were unbooked. The episiotomy rate was 22.1%. The mean age of the women was 23.8 (standard deviation ± 3.2) years. The most frequent age group was 20–30 years (382 [94.8%]), whereas the least was those ≥30 years (13 [3.2%]). Majority of the women were primiparous (302 [74.9%]), nulliparous women were 77 (19.1%), while grand-multiparous women were four (1.0%). Two hundred and fifty (53.3%) episiotomies were repaired by the house officers, 160 (39.7%) by junior residents, while 28 (6.9%) were repaired by the senior residents.

Table 1: Sociodemographic characteristics of the women (*n*=403)

Variable	Total, *n* (%)
Age group (years)	
≤19	8 (2.0)
20-30	382 (94.8)
≥30	13 (3.2)
Ethnicity	
Ikwere	140 (34.7)
Igbo	120 (30.0)
Ogoni	60 (14.9)
Ijaw	40 (9.9)
Others	43 (10.7)
Religion	
Christian	394 (97.8)
Islam	9 (2.2)
Education of the mother	
None	9 (2.2)
Primary	20 (5.0)
Secondary	74 (18.4)
Tertiary	300 (74.4)
Marital status	
Married	390 (96.8)
Never married	7 (1.7)
Divorced	6 (1.5)
Occupation of mother	
Professionals	200 (49.6)
Nonprofessionals	203 (50.4)
Parity	
Primigravida	77 (19.1)
Primipara	302 (74.9)
Multipara	20 (5.0)
Grandmultipara	4 (1.0)

Table 2 shows the postepisiotomy complications. Out of the 403 women enrolled for the study, only 390 (96.8%) came for follow-up at the postnatal clinic and 13 (3.2%) patients did not come for follow-up. Only 210 (52.1%) women had complaints suggestive of postepisiotomy morbidities. Majority of the women had more than one complaint. The prevalence of postepisiotomy morbidities in this study was 52.1%. Majority of the patients had perineal pain (72 [34.3%]), which lasted for 72 h or more, 61 (29.1%) had difficulty in walking, while 37 (17.6%) had perineal discomfort. Only 4 (1.9%) had wound infection and 1 (0.4%) had wound dehiscence. Four had recommenced sexual intercourse with their husbands and had no complaint suggestive of dyspareunia. None had an extension into a third- or fourth-degree perineal tear or had any complaint suggestive of depression or anxiety.

Table 3 shows the risk factors associated with postepisiotomy complications. The development of postepisiotomy complications was not statistically significantly associated

Table 2: Postepisiotomy complications

Type of complications	Frequency, *n* (%)
Perineal pain	72 (34.3)
Difficulty with walking	61 (29.1)
Perineal discomfort	37 (17.6)
Difficulty with breastfeeding	12 (5.7)
Difficulty at defecation	10 (4.8)
Perineal asymmetry	8 (3.8)
Perineal bleeding	5 (2.4)
Wound infection	4 (1.9)
Wound dehiscence	1 (0.4)

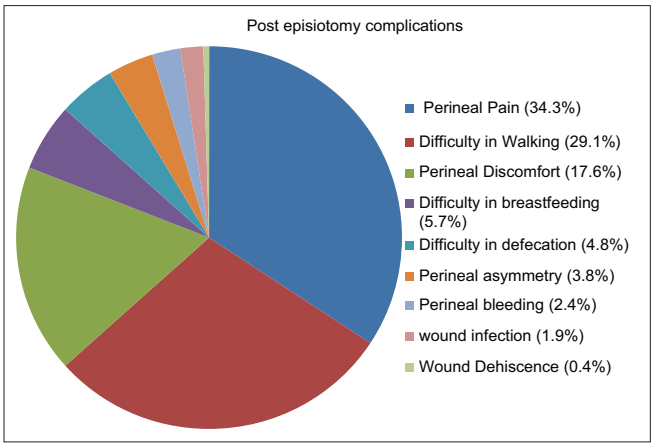

Table 3: Risk factors associated with postepisiotomy complications

Variable	Mean with complaints	Mean without complaints	*T*	*P*
GA	276.5 days	276.9	1.4	0.1
POA	34.2%	34.6%	1.0	0.2
DFSL	9.4 h	9.6 h	0.5	0.1
DSSL	32.6 min	31.8 min	0.7	0.3
DRFM	9.4 h	9.8 h	0.8	0.4
DRI	10.8 min	11.4 min	0.6	0.2
EBL	250 mL	250 mL	0.9	0.1
DSB	10.8 days	11.4 days	1.0	0.2
DAl	3.8 days	4.0 days	1.2	0.1
DAn	6.4 days	6.2 days	1.3	0.1

GA – Gestational age; POA – Packed cell volume at admission; DFSL – Duration of first stage of labor; DSSL – Duration of second stage of labor; DRFM – Duration of rupture of fetal membranes; DRI – Delivery-repair interval; EBL – Estimated blood loss; DSB – Duration of Sitz bath; DAl – Duration of analgesia; Dan – Duration of antibiotics

with gestational age ($T = 1.4$, $P = 0.1$), packed cell volume on admission (T = 1.0, $P = 0.2$), duration of first stage of labor ($T = 0.5$, $P = 0.1$), duration of second stage of labor ($T = 0.7$, $P = 0.3$), duration of rupture of fetal membranes ($T = 0.8$, $P = 0.4$), delivery repair interval ($T = 0.6$, $P = 0.2$), estimated blood loss ($T = 0.9$, $P = 0.2$), duration of Sitz bath ($T = 1.0$, $P = 0.2$), duration of analgesic ($T = 1.2$, $P = 0.1$), duration of antibiotics ($T = 1.3$, $P = 0.1$), or the operator who performed or repaired the episiotomy ($P = 0.2$). Figure 1 shows comparison of risk factors with postepisiotomy complications.

Discussion

The episiotomy rate in this study was 22.1%. This showed a significant decline from the rate of 40.1% previously reported from the study center.[12] However, this fell short of the 10% episiotomy rate recommended by the WHO for all normal deliveries.[5] This finding is comparable to the findings in Jos Nigeria with a recorded decline in the rate from 28.4% in 1998 to 20.8% in 2003[10] and in Benin where the rate decreased from 46.6% in 1998 to 34.5% in 2002.[29] The decline from this study could be attributed to the restrictive use of episiotomy, which was being practiced at our center. However, despite these apparent declines, some centers in Nigeria reported high episiotomy rates.[2,14] This underscores the need to ensure continuing medical education of health-care providers who provide delivery services at the labor wards.[15] Emphasis should be made on the practice of restrictive use of episiotomy in line with the best practices and evidence-based recommendations.[2,4]

The prevalence of postepisiotomy complications of 53.8% reported in this study was higher than 45% previously reported at our center,[2] but was lower than 60.5% reported in Zaria.[1] Perineal pain (34.3%) lasting for 72 h or more was the common postepisiotomy morbidity; this was similar to that reported in Zaria, Port Harcourt, and Benin Nigeria.[1,2,30] Postpartum perineal pain requiring analgesia may continue for up to 10 days after delivery in 2%–3% of women who have had episiotomies.[1,32] In this study, the mean duration of analgesia therapy for perineal pain was 3.8 days in women who had complaints. It has been reported that diclofenac rectal suppositories administered at the time of repair of perineal injury including episiotomies, provide effective analgesia that may continue for up to 3 days postpartum.[1,32] These morbidities need close attention. When identified, they should be addressed adequately because they may constitute a serious cause of maternal morbidity, particularly in the puerperium.[1,6]

As such, there is an urgent need to review pain relief modalities in women who had episiotomies, as well as the possible role of diclofenac in minimizing postepisiotomy pain at the University of Port Harcourt Teaching Hospital. A significant number of parturients (29.1%) complained of difficulty in walking. This was similar to that previously reported in Calabar.[15] The complaints of perineal discomfort, difficulty in breastfeeding, as well as difficulty at defecation may also be attributed to the inadequacy of anesthesia and the failure of postoperative analgesia.

Perineal asymmetry was seen in 3.8% of the parturients. It was comparatively lower than what was previously reported in Zaria.[1] This was not a cause for concern to the patients, and none of them requested for correction of the defects after counseling. This complication was not associated with any of the risk factors assessed in this study.

The infection of the episiotomy wound was observed in 1.9% of the patients. This was not significantly associated with the risk factors studied. This is comparatively lower than what was reported in Zaria, Nigeria,[1] where episiotomy wound infection was observed in 23.7% of the patients and infection appeared to be associated with longer delivery–repair interval.

Delivery–repair interval in this study was at an average of 11 min, which was comparable to that reported in Calabar, 15 in contrast to that which was previously reported,[1] which showed a long delivery–repair interval with a mean of 60.5 min attributed to inadequate provision of consumables. At our center, consumables are regularly provided at the labor ward to ensure immediate care after the delivery as well as repair of episiotomy wounds.

Only one patient (0.4%) had episiotomy wound dehiscence. This was not significantly associated with the risk factors studied unlike in Aba, Nigeria,[11] where 52 (2.8%) mothers had a breakdown of episiotomy repairs, requiring secondary re-suturing. None of the parturients had an extension of the episiotomy wound into a third- or fourth-degree perineal tear. However, this was in contrast to the report in Aba, Nigeria.[13] In Aba, episiotomy wound extension resulted in third-degree tear in 42 (2.2%) mothers and fourth-degree tear in 10 (0.5%) mothers. These necessitated referral to a consultant or senior registrar with experience for repair.

Conclusion

The prevalence of episiotomy and postepisiotomy complications in this study was high. Necessary attention should be given to ensure adequate pain relief for all parturients who had episiotomy, and the policy of restrictive use of episiotomy should be fully implemented in the department in line with the best practices and evidence-based recommendations. This will further reduce the incidence of episiotomy rate as well complications that may arise from it and ensure a positive pregnancy experience for pregnant women.

Recommendations

There is a need to ensure continuing education for midwives and doctors who provide delivery services at the labor wards.

There is also a need to carry out a comparative study between continuous subcuticular stitch and interrupted transcutaneous stitch techniques commonly used at our center during episiotomy repair. This will help in establishing the modality, which confers less perineal pains and better wound healing.

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Conflicts of interest

There are no conflicts of interest.

References

1. Sule ST, Shittu SO. Puerperal complications of episiotomies at Ahmadu Bello University teaching hospital, Zaria, Nigeria. East Afr Med J 2003;80:351-6.
2. Nyengidiki TK, Nyeche S. Post-episiotomy morbidities' amongst parturients at the University of Port Harcourt Teaching, Port Harcourt Nigeria. Niger Health J 2008;8:16-9.
3. Weeks JD, Kozak LJ. Trends in the use of episiotomy in the United States: 1980-1998. Birth 2001;28:152-60.
4. Kok J, Tan KH, Koh S, Cheng PS, Lim WY, Yew ML, *et al.* Antenatal use of a novel vaginal birth training device by term primiparous women in Singapore. Singapore Med J 2004;45:318-23.
5. Onwuhafua PI. Childbirth in Germany and Nigeria compared. Niger J Med 2006;15:387-92.
6. Morhe ES, Sengretsi S, Danso KA. Episiotomy in Ghana. Int J Gynaecol Obstet 2004;86:46-7.
7. Graham ID, Carroli G, Davies C, Medves JM. Episiotomy rates around the world: An update. Birth 2005;32:219-23.
8. Woku SA, Mitku YM, Getahun SA. Episiotomy practice and its associated factor among women who gave birth at Public health institution of Akaki Kality in Addis Ababa, Ethiopia. Clin Mother Health 2019;16:2090-7214.
9. Owa OO, Eniowo AR, Ilesanmi OS. Factors associated with episiotomy among parturients delivering in a tertiary care centre in Nigeria. Int J Res Med Sci 2015;3:836-40.
10. Mutihir JT, Ujah IO. Episiotomy in the University of Jos Teaching Hospital. Res J 2005;3:7-9. Available from: http://www.ajol.info/index.php/njm. [Last accessed on 2020 Mar].
11. Alayande BT, Amole IO, Akin D, Olorun O. Relative frequency and predictors of episiotomy in Ogbomoso, Nigeria. Int J Med Update 2012;7:42-5. Available from: http://www.ajol.info/index.php/njm. [Last accessed on 2020 Mar].
12. Ojule JD, Oriji VK, Georgewill KN. Perineal trauma in port Harcourt, South-South Nigeria. Niger J Med 2012;21:36-40.
13. Chigbu B, Onwere S, Aluka C, Kamanu C, Adibe E. Factors influencing the use of episiotomy during vaginal delivery in South Eastern Nigeria. East Afr Med J 2008;85:240-3.
14. Otoide VO, Ogbonmwan SM, Okonofua FE. Episiotomy in Nigeria. Int J Gynaecol Obstet 2000;68:13-7.
15. Inyang-Etoh EC, Umoiyoho AJ. The practice of episiotomy in a University Teaching Hospital in Nigeria: How satisfactory? Int J Med Biomed Res 2012;1:68-72.
16. Ibrahim G, Mohammed SO, Idris SA, Rabiu A. Episiotomy at AKTH, Kano, Nigeria: A 3-year review. Arch Int Surg 2016; 6:17-21.
17. Imarengiaye CO, Andet AB. Postpartum perineal pain among Nigerian women. West Afr J Med 2008;27:148-51.
18. Ogunyemi D, Manigat B, Marquis J, Bazargan M. Demographic variations and clinical associations of episiotomy and severe perineal lacerations in vaginal delivery. J Natl Med Assoc 2006;98:1874-81.
19. Robinson JN, Norwitz ER, Cohen AP, McElrath TF, Lieberman ES. Epidural analgesia and third- or fourth-degree lacerations in nulliparas. Obstet Gynecol 1999;94:259-62.
20. Robinson JN, Norwitz ER, Cohen AP, Lieberman E. Predictors of episiotomy use at first spontaneous vaginal delivery. Obstet Gynecol 2000;96:214-8.
21. Adaji SE, Shittu SO, Sule ST. Operative vaginal deliveries in Zaria, Nigeria. Ann Afr Med 2009;8:95-9.
22. Hartmann K, Viswanathan M, Palmieri R, Gartlehner G, Thorp J Jr., Lohr KN, *et al.* Outcomes of routine episiotomy: A systematic review. JAMA 2005;293:2141-8.
23. Barranger E, Haddad B, Paniel BJ. Fistula in ano as a rare complication of mediolateral episiotomy: Report of three cases. Am J Obstet Gynecol 2000;182:733-4.
24. Carroli G, Mignini L. Episiotomy for vaginal birth. Cochrane Database Syst Rev 2009;(1):CD000081.
25. Ajenifuja KO, Adepiti CA, Ogunniyi SO. Post partum haemorrhage in a teaching hospital in Nigeria: A 5-year experience. Afr Health Sci 2010;10:71-4.
26. Signorello LB, Harlow BL, Chekos AK, Repke JT. Midline episiotomy and anal incontinence: Retrospective cohort study. BMJ 2000;320:86-90.
27. Grant A. Repair of episiotomies and perineal tears. Br J Obstet Gynaecol 1986;93:417-9.
28. Rogers RE. Evaluation of post-episiorrhaphy pain: Polyglycolic acid vs. catgut sutures. Mil Med 1974;139:102-4.

29. Kettle C, Hills RK, Ismail KM. Continuous versus interrupted sutures for repair of episiotomy or second degree tears. Cochrane Database Syst Rev 2007;(4):CD000947.
30. Aziken ME, Orhue AA, Onakewhor JU, Onuh S. Observation on the rates, benefits and complications of episiotomy in a tertiary health institution. Ann Biomed Sci 2002;1:141-7. Available from: http://www.ncbi.nlm.nih.gov/sites/. [Last accessed on 2020 Mar].
31. Nalbanski A, Nikolov A. Routine episiotomy – a five year practice at university hospital "Majchin Dom". Akush Ginekol (Sofiia) 2009;48:11-4.
32. Sleep J, Grant A, Garcia J, Elbourne D, Spencer J, Chalmers I, *et al.* West Berkshire perineal management trial. Br Med J (Clin Res Ed) 1984;289:587-90.
33. Jekel JF, Katz DL, Elmore JF. Sample size, randomization and probability theory. Epidemiology, Biostatistics and Preventive Medicine. 2nd ed. Philadelphia: WB Saunders; 2001. p. 196.