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Original article

Episiotomy During Vaginal Delivery: A Comparative Study at A Tertiary Facility in Nigeria

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ABSTRACT

Background an aim. *The use of episiotomy to aid vaginal deliveries remains a common obstetric practice although the evidence remains inconclusive. However, its restrictive use has been recommended especially to reduce potential maternal or neonatal morbidities. The study compares the outcome of vaginal deliveries aided with and without episiotomy.* ***Methods.*** *This was a comparative study conducted at a tertiary facility with a policy of restrictive episiotomy. Participants were women who had vaginal delivery after 28 weeks gestation categorized into those who delivered with (case) or without episiotomy (control) over a ten-year period. Data source was the hospital delivery records and analysis was with SPSS version 24.0; p-value <0.05 was significant.* ***Results.*** *The prevalence of episiotomy was 37.8%, 43.5% of nullipara and 48.4% of teenagers had episiotomy while episiotomy use decreased with increasing parity. Episiotomy use was significantly higher for preterm delivery (p=0.001) and operative vaginal deliveries (ventouse [p=0.001], forceps [p=0.035]). its use was associated with higher primary postpartum hemorrhage (p=0.001) but lower incidence of perineal laceration (p=0.001). The odds for neonatal intensive admission were higher following episiotomy-assisted deliveries (OR2.92; 95%CI 2.586 – 3.297); perinatal mortality rate was 81/1000 versus 136/1000 live birth with or without episiotomy.* ***Conclusion.*** *The study supports the use of episiotomy during vaginal delivery especially for preterm and instrumental vaginal deliveries; however, institutions should prioritize compliance with standard care to further reduce the rate.*

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INTRODUCTION

The practice of episiotomy has been a subject of criticism and its continual practice has been associated with controversy due to lack of strong scientific evidence on its effectiveness [1]. Episiotomy is a surgical incision made on the perineum with the aim of enlarging the introitus during childbirth to aid vaginal delivery [1].

In modern obstetrics, routine episiotomy use has been discouraged; restrictive use has been recommended instead [1-3]. When indicated, mediolateral episiotomy is preferred by most healthcare workers [1,2,4]. Despite the controversy on episiotomy, its perceived benefits include a reduced risk for third degree perineal tear, preservation of the muscle relaxation of the pelvic floor and perineum, reduced risk of fecal and urinary incontinence, ease of repair and better healing compared to perineal lacerations [4].

For the newborn, episiotomy may be useful to reduce the duration of the second stage of labor thereby preventing fetal asphyxia and other forms of physical or biochemical injuries [1]. Conversely, the possible adverse effects of episiotomy include iatrogenic injury to the anal sphincter or rectum especially from midline episiotomy, extension of the incision, asymmetry, sexual dysfunction, primary postpartum hemorrhage (PPH), hematoma formation as well as local pain and edema [2,4]. In a comparative study, perineal pain, redness, edema and ecchymosis were higher among primipara who had compared to those who did not have episiotomy [5].
Despite inconclusive evidence on its effectiveness, episiotomy remains a common obstetric procedure; therefore, additional data is required to further evaluate its role in modern obstetrics. This study was aimed at determining the prevalence of episiotomy and to compare the pregnancy outcome among women who had episiotomy to those who did not have episiotomy during vaginal delivery.

METHODS

Study design and setting

The study was a comparative study conducted at the University of Ilorin Teaching Hospital (UITH), Ilorin, Nigeria. Study participants were women who had vaginal delivery at the facility between 2011 and 2020. The inclusion criteria were vaginal delivery after 28 weeks gestation with availability of the delivery record. Participants were categorized into two groups of those who delivered with (case) and without episiotomy (control).

Data collection procedure and ethics

The data for the study consisted of secondary data from the institutional delivery record which contains vital information about each delivery including maternal, labor, delivery and neonatal outcomes. The information of interest in the study included maternal demography, booking status, parity, gestational age at delivery, administration of episiotomy, Apgar scores, neonatal intensive care admission and the presence of perineal lacerations.
At the study site, mediolateral episiotomy is used and the delivery protocol limits restrictive use of episiotomy to only when it is considered indicated based on the assessment of the birth attendant. Institutional ethical approval was obtained from the Research and Ethics committee of the hospital before the commencement of the study.

Data analysis

The data obtained was analyzed using the Statistical Packaging for Social Sciences (SPSS) software version 24.0 (SPSS Inc. Chicago, Illinois, USA). The results were presented in tables with frequency and percentages. Continuous variables were categorized and compared among study groups using Pearson's chi-square test with calculation of odds ratio at 95% confidence interval while $P < 0.05$ was considered significant.

RESULTS

A total of 8,645 participants were recruited into the study; 3268 (37.8%) had episiotomy while 5377 (62.2%) delivered without episiotomy giving an episiotomy rate of 37.8%.
Table 1 shows that 62 participants were teenagers out of which 30 (48.4%) had episiotomy while 32 (81.6%) did not have episiotomy, also 1737(43.5%) of nulliparous women delivered with episiotomy while episiotomy rate decreased with increasing parity. Among nulliparous women, 1737(43.5%) had episiotomy compared to 2259(56.5%) without episiotomy (p=0.001); significantly fewer grandmultiparous women required episiotomy compared to lower parity women (35 vs. 3233, p=0.004). Among women who had preterm delivery, 678(58.9%) had episiotomy while 474(41.1%) did not have episiotomy (p=0.001); 2038(34.9%) booked women had episiotomy while 3804(65.1%) did not have episiotomy (p=0.001).

Table 1. Biosocial Characteristics of Participants

Parameter	Episiotomy N=3268	No Episiotomy N=5377	χ^2	P value
Maternal age (years)				
<20	30 (48.4)	32 (51.6)	335.9	0.001
20-24	826 (55.6)	659 (44.4)		
25-29	1565 (37.4)	2623 (62.6)		
30-34	527 (34.1)	1018 (65.9)		
35-39	305 (24.1)	959 (75.9)		
≥40	15 (14.9)	86 (85.1)		
Age groups (years)				

≤35	2998 (38.0)	4886 (62.0)	1.914	0.166
>35	270 (35.5)	491 (64.5)		
Parity				
0	1737(43.5)	2259(56.5)		
1	912(40.5)	1340(59.5)		
2	380(35.3)	698(64.7)		
3	130(25.9)	372(74.1)		
4	74(10.9)	608(89.1)		
5	22(26.5)	61(73.5)		
6	9(25.0)	27(75.0)		
7	4(25.0)	12(75.0)		
Parity grouping				
0	1,737(43.5)	2,259(56.5)	101.46	0.001
>=1	1,531(32.9)	3,118(67.1)		
Parity subdivision				
<5	3233	5277	8.23	0.004
>=5	35	100		
Gestational age at delivery (weeks)				
<37 weeks	678 (58.9)	474 (41.1)	262.26	0.001
37-42 weeks	2569 (34.8)	4813 (65.2)		
≥43 weeks	21 (18.9)	90 (81.1)		
Booking Status				
Booked	2038 (34.9)	3804 (65.1)	65.20	0.001
Unbooked	1230 (43.9)	1573 (56.1)		

Table 2 shows that among women who had induction of labour, 13(56.5%) had episiotomy while 10(43.5%) did not have episiotomy. The use of episiotomy was significantly higher for ventouse (10 vs. 1, p=0.001) and forceps (7 vs. 3, p=0.035) deliveries; among women with preeclampsia/ eclampsia, 595(52.5%) had episiotomy while 538(47.5%) did not have episiotomy. Primary PPH was significantly higher following episiotomy (243[73.4%] vs. 88[26.6%], p=0.001) while perineal laceration was lower among participants who had episiotomy (76[5.9%] vs. 1222[94.1%], p=0.001).

Table 2. Labor, delivery and maternal outcome with and without episiotomy

Parameter	Episiotomy n=3268	No Episiotomy n= 5377	χ^2	*P value*
Onset of labor				
Spontaneous	3255 (37.8)	5367 (62.2)	3.437	0.064
Induction of labor	13 (56.5)	10 (43.5)		
Accoucher				
Junior nurse	1466 (45.1)	1785 (54.9)	186.08	0.001
Senior nurse	726 (38.2)	1174 (61.8)		
Intern	18 (52.9)	16 (47.1)		
Junior resident	556 (26.8)	1522 (73.2)		
Senior resident	484 (36.3)	848 (63.7)		
Consultant	18 (36.0)	32 (64.0)		
Mode of Delivery				
Spontaneous vertex	3231 (37.7)	5343 (62.3)	990.75	0.675
Assisted breech	20 (40.0)	30 (60.0)	0.103	0.748
Ventouse	10 (90.9)	1 (9.1)	133.21	0.001
Forceps	7 (70.0)	3 (30.0)	4.41	0.035
Maternal complications				
None	2129 (32.7)	4381 (67.3)	394.98	0.001
Preeclampsia/ eclampsia	595 (52.5)	538 (47.5)		
Antepartum hemorrhage	301 (44.9)	370 (55.1)		

Primary PPH	243 (73.4)	88 (26.6)		
Perineal Laceration				
Yes	76 (5.9)	1222 (94.1)	663.0	0.001
No	3192 (43.4)	4155 (56.6)		

Table 3 shows that fewer women with fetal macrosomia (birth weight >4000g) required episiotomy (17[28.8%] vs. 42[71.2%], p=0.001), first (p=0.001) and 5th (p=0.001) minute APGAR scores were significantly higher among neonates delivered without episiotomy, babies delivered with episiotomy had higher neonatal intensive care admission (772 vs. 515, p=0.001) and longer (p=0.001) duration of admission compared to those without episiotomy. Out of the 995 recorded stillborn, 265(26.6%) followed episiotomy use while 730(73.4%) did not have episiotomy (p=0.001). The perinatal mortality rate was 81/1000 live birth (266/3268) with and 136/1000 live birth (733/5372) without episiotomy.

Table 3. Comparison of perinatal outcome following deliveries with and without episiotomy

Parameter	Episiotomy n=3268	No Episiotomy n=5377	χ^2	OR (95%CI)	P value
Birth weight (g)					
<2500	204 (25.7)	591 (74.3)	57.54		0.001
2500-4000	3047 (39.1)	4744 (60.9)			
>4000	17 (28.8)	42 (71.2)			
1st minute APGAR score					
<4	523 (30.1)	1216 (69.9)	60.97		0.001
4-6	597 (37.2)	1007 (62.8)			
≥7	2148 (40.5)	3154 (59.5)			
5th minute APGAR score					
<4	207 (20.8)	789 (79.2)	491.15		0.001
4-6	471 (74.8)	159 (25.2)			
≥7	2590 (36.9)	4429 (63.1)			
NICU Admission					
Yes	772 (60.0)	515 (40.0)	316.4	2.921 (2.586-3.297)	0.001
No	2496 (33.9)	4862 (66.1)			
NICU admission >1day					
2 days	67 (30.5)	153 (69.5)			
≥3days	209 (99.5)	1 (0.5)	223.0	0.002 (0.003-0.015)	0.001
Final Neonatal Outcome					
Alive and well	2927 (39.5)	4483 (60.5)	63.642	1.712 (1.498-1.956)	0.001
Alive and sick	75 (31.8)	161 (68.2)	3.743	0.761 (0.577-1.004)	0.053
Still born	265 (26.6)	730 (73.4)	59.658	0.562 (0.485-0.651)	0.001
Early neonatal death	1 (25.0)	3 (75.0)	0.279	0.548 (0.057-5.274)	0.597

NICU: Neonatal Intensive Care Unit

DISCUSSION

From this study, the prevalence of episiotomy was 37.8%; episiotomy use was significantly associated with preterm delivery, instrumental vaginal deliveries (ventouse and forceps) and primary PPH. Also, episiotomy use decreased with parity and it was higher for women who had induction of labor and preeclampsia/ eclampsia; neonates who were delivered with episiotomy had significantly higher NICU admission but lower perinatal mortality rate compared to those delivered without episiotomy.

There is no universally agreed rate for episiotomy; however, the consensus is that its routine use is not recommended. However, the WHO recommended a 10% rate of episiotomy for non-operative vaginal delivery [6]. The International

Federation of Obstetrics and Gynecology (FIGO) endorses restrictive use of episiotomy with a call to avoid unnecessary episiotomy although it should not be withheld when indicated [7]. The FIGO safe motherhood and newborn health committee approves an episiotomy range between 10% and 28% as an acceptable limit [4]. In Nigeria, reported episiotomy rates include 21.0% in Uyo [8], 22.1% in Port Harcourt [9], 35.6% in Zaria [10], 41.4% in Kano [11], and 62.1% in Enugu [4]. Other reports include a rate of 44.15% from Ethiopia [12] and 45% From China [13]. In a report, majority of the participating obstetricians and midwives interviewed opined that the 45% local episiotomy rate was acceptable [13]. This underscores the role of education and re-orientation of health workers as part of the strategy to reduce episiotomy rate. Again, the difference in episiotomy rates among facilities may be a reflection of individual hospital protocol and the level of supervision of deliveries. The degree of restriction on episiotomy use in an institution is the determinant of the episiotomy rate and can help to reduce unnecessary episiotomy and the potential complications [7].

Parity has been a factor in episiotomy with most studies recording the highest rate among nulliparous women while the rate reduces with parity [10,14]. This study reported 43.5% episiotomy rate among women who were nulliparous at the time of labor admission compared to 88.5% [10], 79.4% [11], 76.2% [15] and 62.1% [4] from other study reports. This may be due to the perceived need for additional space in the previously untested perineum and the commonly reported 'rigid' perineum in nulliparous women.

Episiotomy use has been documented to be related to gestational age and the assistance during vaginal delivery. It has been recommended for preterm vaginal delivery as a means of preventing intracranial complications such as intraventricular hemorrhage in the neonate; it also remains a prerequisite for instrumental vaginal delivery [16,17] which may explain its significant association in this study. Again, episiotomy may provide additional space for the application of the required instrument to aid vaginal delivery and minimize complications from the procedure. Episiotomy may also be beneficial in instances where there is a need to shorten the second stage of labour such as preeclampsia / eclampsia and other medical disorders of pregnancy [4] as corroborated in this study.

In other instances, episiotomy may be useful to expedite delivery due to fetal distress [2,4]; this may explain the higher incidence of NICU admission and longer duration of admission for babies delivered with the aid of episiotomy in this study.

The call for restrictive use of episiotomy is based on the potential for complications sequel to its use. Primary PPH which is an important cause of maternal morbidity and mortality was significantly higher among women who had episiotomy in this study similar to previous reports [10,11,15]. This may be related to the poor timing of the episiotomy; the incision is expected to be made in the expulsive phase of the second stage of labour when the presenting part is distending the perineum in the presence of expulsive effort [18]. This timing is often missed by a number of healthcare providers resulting in cutting the woman too early with the resultant bleeding from the incision while awaiting delivery. Furthermore, episiotomy repair should be performed as soon as the delivery is completed because delaying repair increases blood loss [10,11]. Other complications of episiotomy include perineal pain, asymmetry, infection, extension of incision as well as breastfeeding problems [8,10].

Proponents of episiotomy infer that it reduces the risk for perineal trauma but the evidences remained insufficient to establish the claim. Perineal laceration was lower with episiotomy in this study similar to the report by Shiono et al where episiotomy use resulted in a 2.5-fold reduction in perineal lacerations among primiparous women [19]. Another report indicated that selective episiotomy resulted in a 30% reduction in vaginal and perineal injuries [20]. However, a Cochrane review reported that although restrictive mediolateral episiotomy decreased the risk for anterior perineal laceration, it increased the risk for posterior perineal laceration [1]. In another report, the overall obstetric anal sphincter injuries (OASI) was not significantly reduced by episiotomy [18] while episiotomy in a previous delivery was reported to have a two-fold risk for second degree lacerations during subsequent vaginal deliveries [21]. This further strengthens the suggestion for training for healthcare workers on other modalities of reducing perineal tear in order to discourage the justification of using episiotomy due to the fear of perineal tears [13].

The strength of the study is the large number of participants relative to most reports on episiotomy. However, it is limited by its restriction to a single facility, the inability to follow up the participants after delivery or capture their experience in subsequent deliveries.

CONCLUSION

The study suggests that there is a place for episiotomy during vaginal delivery especially for preterm and instrumental vaginal deliveries; however, institutions should prioritize compliance with standard care to further reduce the rate.

We recommend that hospitals should review their delivery room protocols with the aim to further reduce the episiotomy rate by ensuring compliance with the recommendations on its use. In addition, adequate supervision of the conduct of vaginal deliveries will further encourage compliance.

Conflict of Interest

There are no financial, personal, or professional conflicts of interest to declare.

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بضع الفرج أثناء الولادة المهبلية: دراسة مقارنة في منشأة طبية ثالثة في نيجيريا

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المستخلص

خلفية والاهداف. يظل استخدام بضع الفرج للمساعدة في الولادة المهبلية ممارسة توليدية شائعة على الرغم من أن الأدلة لا تزال غير حاسمة. ومع ذلك، فقد أوصى باستخدامه المقيد خاصة للحد من الأمراض المحتملة للأمهات أو الأطفال حديثي الولادة. تقارن الدراسة نتائج الولادات المهبلية بمساعدة أو بدون بضع الفرج. **طُرق الدراسة.** كانت هذه دراسة مقارنة أجريت في منشأة من المستوى الثالث مع سياسة بضع الفرج التقييدي. كانت المشاركات من النساء اللاتي ولدن مهبلياً بعد 28 أسبوعاً من الحمل وتم تصنيفهن إلى أولئك اللاتي ولدن مع (حالة) أو بدون بضع الفرج (التحكم) على مدى فترة عشر سنوات. كان مصدر البيانات هو سجلات الولادة في المستشفى وكان التحليل باستخدام SPSS الإصدار 24.0؛ كانت القيمة $p < 0.05$ كبيرة. **النتائج.** كان معدل انتشار بضع الفرج 37.8%، و43.5% من النساء النوليبارا و48.4% من المراهقات أجرين بضع الفرج بينما انخفض استخدام بضع الفرج مع زيادة التكافؤ. كان استخدام بضع الفرج أعلى بكثير في حالات الولادة المبكرة (قيمة الاحتمال = 0.001) والولادات المهبلية الجراحية (الشفط [قيمة الاحتمال = 0.001]، الملقط [قيمة الاحتمال = 0.035]). ارتبط استخدامه مع ارتفاع نزيف ما بعد الولادة الأولي (ع = 0.001) ولكن انخفاض معدل حدوث تمزق العجان (ع = 0.001). كانت احتمالات القبول المكثف لحديثي الولادة أعلى بعد الولادات بمساعدة بضع الفرج(OR2.92 ؛ 95% CI 2.586 – 3.297)؛ كان معدل الوفيات في الفترة المحيطة بالولادة 1000/81 مقابل 1000/136 مولود حي مع أو بدون بضع الفرج. **الخاتمة.** تدعم الدراسة استخدام بضع الفرج أثناء الولادة المهبلية خاصة في حالات الولادة المبكرة والولادات المهبلية باستخدام الأدوات؛ ومع ذلك، يجب على المؤسسات إعطاء الأولوية للامتثال للرعاية القياسية لزيادة خفض المعدل.

الكلمات الدالة. بضع الفرج. الولادة المهبلية . تمزق العجان المرحلة الثانية من المخاض.