ORIGINAL ARTICLE

Maternal factors and short-term outcome associated with episiotomy during vaginal delivery at the Women and Newborn Hospital, Lusaka, Zambia

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ABSTRACT

Objective: To explore the maternal factors and short-term outcomes associated with episiotomy during vaginal delivery at Women and Newborn Hospital, Lusaka, Zambia.

Materials and Methods*:* An unmatched case control study was conducted in postnatal wards of Women and New-born hospital in Lusaka, Zambia between November 2019 and April 2020 with convenient sample for the cases and systematic sample for the controls. A semi-structured interviewer administered questionnaire was used and 102 participants (cases) who had episiotomy performed were recruited while 204(controls) were without episiotomy.

Results: A total of 306 (102 are cases and 204 are control) were included. Age was found to be a good predictor of episiotomy in that those younger than 18 years were more than seven times likely to have an episiotomy (AOR=7.65; 95%CI 1.36-18.21; p=0.035). It was also found out that primi gravidas were five times likely to have an episiotomy performed compared to parous women (OR=4.96; 95%CI 2.58-9.52; p<0.001). Out of those delivered by a midwife, 73(28.3%) participants had an episiotomy performed compared to 29(60.4%) delivered by a medical officer. Multivariate regression it was shown that being delivered by a midwife was protective against an episiotomy (OR=0.260; 95%CI 0.14-0.49; p=0.001). Out of the 102 participants who had an episiotomy, only two had third degree tear extension. It was also noted that 99 out of 102 (97%) participants who had an episiotomy experienced post-delivery perineal pain compared to 94 out of 204(46%) of those who had no episiotomies. In univariate analysis, it was found that post-delivery perineal pain was associated with episiotomy (p<0.001). It was further found that those who had an episiotomy performed were about 4 times likely to experience perineal pain post-delivery (OR=3.8; 95%CI 1.2-12.3).

Conclusion*:* Maternal factors associated with episiotomy included age, parity, method of induction, and the personnel conducting the

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Keywords*:* Episiotomy, short term outcomes, perineal tea

This article is available online at: http://www.mjz.co.zm, http://ajol.info/index.php/mjz, doi: https://doi.org/10.55320/mjz.49.2.978

The Medical Journal of Zambia, ISSN 0047-651X, is published by the Zambia Medical Association

delivery. Short term maternal outcomes of episiotomy were perineal tear extension, and post-delivery perineal pain. It was found that 8.5% of women had undergone an episiotomy done on them. Health professional conducting deliveries should be educated on indications of episiotomy, patient selection during episiotomy and trained on surgical skills to repair episiotomy to reduce morbidity associated the procedure.

INTRODUCTION

Episiotomy is a surgically planned incision on the posterior vaginal wall and perineum performed during the second stage of labour, to facilitate the delivery of the neonate.[1] Episiotomy was invented in Europe in 1742, as a procedure that could assist Obstetricians in difficult vaginal deliveries.[8] In terms of practice of episiotomy there are two types- routine and restrictive.[2] Restrictive use was advocated because of several problems associated with routine episiotomy. Restrictive episiotomy is associated with less posterior perineal trauma, less suturing, less perineal pain, fewer healing complications and reduced long term complications.[3]

The practice has been used for many decades in the belief that it offers benefit to mother to ease her delivery.[4] With the objective of protecting the pelvic floor and preventing the fetal trauma during the birth, its routine use was widely accepted in the past, principally in woman in her first labor and delivery. Conversely, the possible adverse effects of episiotomy include the Iatrogenic cutting of the anal sphincter or rectum especially, unavoidable extension of the incision, unsatisfactory anatomic results such as skin tags, asymmetry or excessive narrowing of the introitus, vaginal prolapse, recto-vaginal fistula, increased blood loss, hematoma, perineal pain and edema in episiotomy region, infection, dehiscence and Sexual dysfunction[5].

Worldwide between 9.7% and 97% of parturient undergo episiotomy.[6] According to ACOG 2006 practice bulletin, there is insufficient objective evidence based criteria to recommend episiotomy and clinical judgment remains the best guidance for use of this procedure.[22] Reason for episiotomy during normal vaginal delivery are: suspected big baby, signs of faetal distress, poor maternal effort, instrumental delivery and threat for third degree perineal tear (including third degree tear in previous pregnancy). Especially in primigravida tears in the perineum are common. Between 63% and 100% of primigravida around the world undergo an episiotomy because of the fear for perineal tear especially 3rd degree.[6] World Health Organization (WHO) suggests reducing to less than 10% of the practice of episiotomy in developing countries because of risk of infection (Innocent N, Philemon MM et al 2018). This is confirmed by the Cochrane Systematic review of episiotomy, which suggests that benefits are more in restrictive or indicated than routine episiotomy. In the United States, the rate of episiotomy decreased from 60.9% in 1979 to 24.5% in 2004.[9] In England episiotomies were performed on over half of woman delivering in 1980, falling to 20% in 1995.[10] According to Masoumeh Rasouli et al, 2015, revealed that rate of episiotomy varies from 9.7% in Sweden to 100% in Taiwan.[6]

In the African continent, episiotomy practice varies from one region to another. The fact that the results of studies carried out around the world question the benefits traditionally known to episiotomy. So it is important to make an overview on this practice at Women and Newborn Hospital, Lusaka, Zambia, where no scientific evidence does not exist yet in this matter.[11] It is the tertiary care center and it receives a high volume of referral patients. There are a number of 3rd and 4th degree tears, perineal wound infection, wound dehiscence patients use to attend by obstetrician here on call days. Data collected from the labor ward registration book (Jan –June, 2018) has shown that, on average 480-520 patient delivered vaginally and on average 90 episiotomies per month from the mentioned numbers. Currently outcomes and factors associated with episiotomy at the Women & Newborn Hospital at Lusaka, Zambia are not clearly understood, defined and documented. Therefore, this study endeavored to explore the short-term maternal outcomes of episiotomy and the factors associated with it at this hospital.

MATERIALS AND METHODS

This is an unmatched case-control study with 11 case to 2 controls. Post-natal mother who had delivered vaginally with singleton pregnancy after 28 weeks of pregnancy with episiotomy are cases and who had delivered without an episiotomy are controls. They were recruited from the labour ward and post-natal ward. The study was conducted from November 2019 to April 2020, total of 6 months. Convenient sample for cases and Systematic random sampling was being used for control. Using the single proportion formula with confidence interval at 95% and power of 80, the calculated sample size was 102 cases and 204 controls (1 to 2). Interviewer administered semi- structured questionnaire was used. This formed the key data collection tool. Statistical analysis was performed using Statistical Package for Social Sciences (SPSS) version 25 software. In all cases, a P-value of 0.05 was considered significant.

RESULT

The total number of women who delivered vaginally during the study period was 1,875 with 161 parturients having had an episiotomy performed. We have found that 8.5% of the women had undergone episiotomy performed on them during the study period. Following tables presented the factors and outcomes of episiotomy:

Table 1: Socio-Demographic Characteristics

	GROUP				FREQUENCY		
	Had no		Had Episiotomy				
	n	%	n	%	N	%	P
Age							< 0.001
18 and Below	6	2.90%	36	35.30%	42	13.70%	
19-35	167	81.90%	63	61.80%	230	75.20%	
35 and Above	31	15.20%	3	2.90%	34	11.10%	
Marital Status							< 0.001
Single	29	14.20%	38	37.30%	67	21.90%	
Married	175	85.80%	64	62.70%	239	78.10%	
Residence							0.015
High Density	101	49.50%	44	43.10%	145	47.40%	
Medium Density	78	38.20%	38	37.30%	116	37.90%	
Low Density	13	6.40%	3	2.90%	16	5.20%	
Village	12	5.90%	17	16.70%	29	9.50%	
Education							< 0.001
Primary	34	16.70%	12	11.80%	46	15.00%	
Secondary	132	64.70%	67	65.70%	199	65.00%	
Tertiary	38	18.60%	23	22.50%	61	19.90%	
Occupation							< 0.001
House Wife	84	41.20%	28	27.50%	112	36.60%	
Employed	44	21.60%	28	27.50%	72	23.50%	
Business	51	25.00%	15	14.70%	66	21.60%	
School Girl	9	4.40%	15	14.70%	24	7.80%	
Nothing	16	7.80%	16	15.70%	32	10.50%	

Table 2: Obstetric factors associated with episiotomy

	GROUP				FREQUENCY		
	HAD NO EPISIOTOMY		HAD EPISIOTOMY				STATISTICS
	n	%	n	%	N	%	P
Onset of Labour							< 0.001
spontaneous	57	27.90%	52	51.00%	109	35.60%	
Induction	60	29.40%	34	33.30%	94	30.70%	
Process of Induction							0.012
Misoprostol	19	45.20%	6	16.20%	25	31.60%	
Oxytocin	23	54.80%	31	83.80%	54	68.40%	
Type of Delivery							< 0.001
Spontaneous Vertex	187	91.70%	86	84.30%	273	89.20%	
Breech	16	7.80%	6	5.90%	22	7.20%	
Vacuum	1	0.50%	10	9.80%	11	3.60%	
Tear or Extension occurred							<0.001
Yes	105	51.50%	2	2.00%	107	35.00%	
No	99	48.50%	100	98.00%	199	65.00%	
Degree of tear							<1.000*
First degree	73	71.60%	0	0.00%	73	70.20%	
Second degree	28	27.50%	0	0.00%	28	26.90%	
Third degree	1	1.00%	2	100.00%	3	2.90%	
Had pain Perineum							< 0.001
Yes	94	46.10%	99	97.10%	193	63.10%	
No	110	53.90%	3	2.90%	113	36.90%	

Table 3a: Factors associated with Episiotomy during Labour and Delivery

	GROUP				FREQUENCY		
	HAD NO EPISIOTOMY		HAD EPISIOTOMY				STATISTICS
	n	%	n	%	N	%	P
Onset of Labour							< 0.001
spontaneous	57	27.90%	52	51.00%	109	35.60%	
Induction	60	29.40%	34	33.30%	94	30.70%	
Process of Induction							0.012
Misoprostol	19	45.20%	6	16.20%	25	31.60%	
Oxytocin	23	54.80%	31	83.80%	54	68.40%	
Type of Delivery							< 0.001
Spontaneous Vertex	187	91.70%	86	84.30%	273	89.20%	
Breech	16	7.80%	6	5.90%	22	7.20%	
Vacuum	1	0.50%	10	9.80%	11	3.60%	
Tear or Extension							<0.001
Yes	105	51.50%	2	2.00%	107	35.00%	
No	99	48.50%	100	98.00%	199	65.00%	
Degree of tear							<1.000*
First degree	73	71.60%	0	0.00%	73	70.20%	
Second degree	28	27.50%	0	0.00%	28	26.90%	
Third degree	1	1.00%	2	100.00%	3	2.90%	
Had pain Perineum							< 0.001
Yes	94	46.10%	99	97.10%	193	63.10%	
No	110	53.90%	3	2.90%	113	36.90%	

Table 3b: Factors associated with episiotomy during labour and delivery and outcome

Variable	Group	N	Mean	SD	P
Gestational age (weeks)	case	204	37.71	3.01	0.186
	control	102	38.16	2.35	
Duration of 2nd stage labour	case	204	31.68	6.46	0.001
	control	102	34.35	6.15	
Amount of blood loss (ml)	case	204	233.73	141.14	0.047
	control	102	269.41	159.32	
Weight of baby (kg)	case	204	2.84	0.61	0.001
	control	102	3.08	0.45	

TABLE 3c- Factors associated with episiotomy and short term out outcomes

Variable	Group	N	Mean	SD	P
Gestational age (weeks)	case	204	37.71	3.01	0.186
	control	102	38.16	2.35	
Duration of 2nd stage labour	case	204	31.68	6.46	0.001
	control	102	34.35	6.15	
Amount of blood loss (ml)	case	204	233.73	141.14	0.047
	control	102	269.41	159.32	
Weight of baby (kg)	case	204	2.84	0.61	0.001
	control	102	3.08	0.45	

TABLE 4: Logistic regression of the factors associated with occurrence and outcomes of episiotomy

	95%CI				95%CI			
	OR	LOWER	UPPER	P	AOR	LOWER	UPPER	P
Age								
≤18	11	2.302	30.778	<0.001	7.646	1.364	18.211	0.035
19-35	3.898	1.151	13.204	0.029	2.649	0.188	29.428	0.319
>35	1	-	-	-	1	-	-	-
Marital status								
single	3.583	2.043	9.283	<0.001	0.27	0.039	1.858	0.183
married	1	-	-	-	1	-	-	-
Residence								
High density	0.308	0.136	0.698	0.005	1.007	0.135	7.505	0.995
Medium density	0.344	0.149	0.792	0.012	1.304	0.152	11.209	0.809
Low density	0.163	0.038	0.699	0.015	18.13	0.239	49.786	0.19
village	1	-	-	-	1	-	-	-
Number of Pregnancy								
primi	4.961	2.584	9.524	<0.001	2.657	3.199	44.621	0.037
second	3.081	1.562	6.077	0.001	0.485	0.041	5.669	0.564
Third and over	1	-	-	-	1	-	-	-
Duration of 2nd stage labour								
	1.065	1.025	1.106	0.001	1.149	0.994	1.328	0.059
Process of induction used								
misoprostol	0.234	0.081	0.679	0.008	0.155	0.03	0.795	0.025
oxytocin	1	-	-	-	1	-	-	-
Type of delivery								
breech	0.815	0.308	2.156	0.681	4.225	0.15	56.602	0.397
vacuum	14.744	2.74	172.57	0.004	0.974	0.821	2.346	0.999
Spontaneous vertex	1	-	-	-	1	-	-	-
Had pain in perineum								
yes	38.617	11.853	125.82	<0.001	21.138	4.159	91.744	0.001
no	1	-	-	-	1	-	-	-
Amount of blood loss								
	1.002	1	1.003	0.052	0.998	0.991	1.006	0.67
Weight of baby								
	2.248	1.403	3.601	0.001	0.967	0.27	3.464	0.959
Conductor of delivery								
midwife	0.259	0.136	0.49	<0.001	0.288	0.031	2.685	0.275
Medical officer	1	-	-	-	1	-	-	-

DISCUSSION

Most important obstetrics factors explored were age and parity. The majority of the participants were primiparous child-bearing age (19-35 years) and had 51% episiotomy in compared to 15% in multiparous. Parity was found to be significantly associated with episiotomy ($p<0.001$). In multivariate analysis, it was found that primigravidas were about 5 times more likely to have an episiotomy than their parous counterparts (OR 4.96; 95%CI 2.58-9.52). However, primiparity has been seen in many studies as an important risk factor for episiotomy because of fear of 3rd degree

tear.[6] There had been varied data on the rate of episiotomy among primipara women, ranging from as low as 33% to high as 86% has been reported.[13] Similar studies done by Bernabas*et al* found that absence of prior vaginal birth and null parity is significantly associated with episiotomy. This study has similar findings in primiparous with episiotomy.[17]

When univariate analysis was performed, age was found to be significantly associated with episiotomy (p<0.001) with younger ones having higher rates of episiotomy. It was further found that those who were 18 years and younger were more than seven times likely to have an episiotomy compared to the older population (AOR 7.65; 95% CI 1.36-18-21; p=0.035). This similar to what Alayande found in Nigeria when looking at the predictors of episiotomy, they found that the overwhelming majority of the subjects were in the age group 19-35 years and 85.4% of them had episiotomy performed.[17]

Other obstetric factors explored included onset of labour, method of induction, type of delivery, who conducted the delivery, duration of second stage of labour and weight of the baby. Onset of labour was significantly associated with episiotomy (p<0.001). In univariate analysis, the method of induction used was found to be significantly associated with episiotomy (p=0.012). Patients induced with oxytocin had an episiotomy performed compared with those induced with misoprostol. In separate studies in Brazil by Christianson *et al* and Braga *et al*, a significant relationship was found between inducing labour with oxytocin and increase frequency of episiotomy, again which disagreed with the Carvalho *et al* study.[23,18]

In terms of types of types of delivery, it was found that spontaneous vertex delivery had low episiotomy rate (31.5%) than assisted vacuum delivery(91.1%) .When univariate analysis was found that this was significantly associated with episiotomy (p<0.001).This finding was agreed with study SBU, April 2016, showed that when a vacuum extractor is used episiotomy will have reduced the anal sphincter injuries by 7%.[19] Participants of vacuum delivery were smaller only 11, that's why it was not coming out significant during logistic regression.

This study also showed that high rates of episiotomy among those delivered by medical officers (60.4%), in compared to midwives (28. 3%). In univariate analysis, this was found to be significantly associated with episiotomy (p<0.001). Further, in multivariate regression it was shown that being delivered by a midwife was protected against episiotomy (OR=0.260; 95%CI 0.14-0.49; p=0.001). This study agrees with the findings from other studies that claimed being delivered by medical officers will increase the risk of being done an episiotomy than those delivered by midwives. This finding coincides with Owa*et al*, that most deliveries done by medical officers are either instrumental or complicated hence the need to widen the introitus with an episiotomy to expedite the delivery process.[24]

The mean weight of the babies delivered in those participants who had an episiotomy performed was 3080grams (SD±450) while for those without an episiotomy, it was 2840grams (SD±610). This is consistent with what is expected in that episiotomy is usually performed in parturient who is presumably carrying a bigger baby. In univariate analysis, this was found to be significant (p=0.001). This resultconcurs with those obtained by Okeke*et al*, which showed that bigger size baby needed episiotomy.[20]

Maternal outcomes studied following episiotomy included tear extension, degree of tear, amount of blood loss and post-delivery perineal pain. Out of the 102 participants who had episiotomy, only 2 (1.96 %) experienced tear extension and both were of third-degree type. When univariate analysis was done, it was found that tear extension was significantly associated with episiotomy (p<0.001).

Post-delivery perineal pain was found to be significantly associated with episiotomy (p<0.001). In multivariate analysis, episiotomy was found to be

a good predictor of post-delivery perineal pain (OR 3.80, 95%CI 1.2-12.30). This finding is consistent with the study done at Amino Kano Hospital, Kano in Nigeria by Garba *et al.*, where post-delivery perineal pain is immediate complication.[21]

Informed Consent

The patients gave written informed consent.

Competing interests

The authors declare no competing interests.

Funding: This work, from a Master's dissertation, received no funding.

ETHICAL APPROVAL

Ethical approval was obtained from the University of Zambia Biomedical Research Ethics Committee, approval number REF131-2019.

REFERENCES

1. Carroli G, Mignini L. Episiotomy for vaginal birth. Cochrane Database Syst Rev. 2009 Jan 21;(1):CD000081. doi: 10.1002/14651858.CD000081.pub2. Update in: Cochrane Database Syst Rev. 2017 Feb 08;2:CD000081. PMID: 19160176; PMCID: PMC4175536.
2. Venus D, Rao P.S., Prajwal S. *Int J Reprod Contracept Obstet Gynecol*. 2017 May;6(5):1770-1776.
3. PietrasJ, Taiwo BF, Episiotomy in modern obstetrics: Necessity versus malpractice, *Adv Clin Exp Med* 2012; 21:545-50
4. Viswanathan M, Hartmann K, Palmiere R.et al. The use of episiotomy in obstetric care: A systematic Review, May2005 AHRQ publication 05-E009-1
5. Thacker SB, Banta HD. Benefits and risks of episiotomy: an interpretative review of the English language literature, 1860-1980. *Obstet GynecolSurv*. (1983);38(6):322-38. PMID: 6346168.
6. Graham I, D., Carroli, G., Davies, C., Medves, J. M. (2005). Episiotomy rates around the world: An update. *Birth*, 32(3), 219–223.
7. Innocent N, Philémon MM,Prince I, Justine Y, Ntakwinja M, Olivier N *et al*,Factors associated with episiotomy practice inBukavu, Democratic Republic of the Congo. *Int JReprod Contracept ObstetGynecol*2018; 7:2553-8
8. "Episiotomy Rates Vary Widely Worldwide" nursinganswers.net 11 2018 All Answer Ltd.03 2022 <http://nursinganswers.net/essays/episiotomy-rate-vary-worldwide-health-and-social
9. Frankman, E. A., Wang, L., Bunker, C. H., &Lowder, J. L. (2009). Episiotomy in the United States: Has anything changed? *American Journal of Obstetrics and Gynecology*, 200(5), e1–e7.
10. Maduma-Bushe A, Dyall A, Garner P. Routine episiotomy in developing countries. Time to change a harmful practice.*BMJ* 1998; 316:1179-80
11. Clesse C, Lighezzolo –Alnot J, De Lavergne S, Hamlin S, *et al.* Factors related to episiotomy practice: an evidence base medicine systematic review. *JObstetGynaecol* .2019 Aug 39 (6):737-747.
12. Guled Y. (2007) Episiotomy trends in the era of HIV/AIDS at K N H. MMed Thesis University of Nairobi.
13. Sagi-Dain L, Sagi S. Morbidity associated with episiotomy in vacuum delivery: a systematic review and meta-analysis. *BJOG*. 2015 Jul;122(8):1073-81. doi: 10.1111/1471-0528.13439. Epub 2015 May 7. PMID: 25950083.
14. Amorim MM, Franca-Neto AH, Leal NV, Melo FO, Maia SB, Alves JN. Is it possible to never perform episiotomy during vaginal delivery? *Obstet Gynecol.* 2014;123 Suppl 1:38S–38S. doi: 10.1097/01.AOG.0000447314.51968.54.
15. Mohamed EL Bakkali, Younes Azzouzi, AbderrazzakKhadmaoui, Nabil AitOuaaziz, and Amine Arfaoui, "Risk factors associated with the practice of episiotomy and perineal tears occurred in mothers at the maternity hospital Sharif Idrissi in the region of GharbChrardaBniHssen (Morocco),"

International Journal of Innovation and Applied Studies, 2014: 7, 3, pp. 911–919.

16. Althabe F, Belizan JM, Bergel E, Episiotomy ratein primiparous women in Latin America: hospital based descriptive study. *BMJ* 2002; 324:945-946.
17. Barnabas T, Alayande I, Olusyo A Amale D A Relative frequency and predictors of episiotomy in Ogbomoso Nigeria. Internet Journal of Medical Update: July, 2012; 7 (2): 41- 44.
18. Carvalho CC, Souza AS, Morales Filho OB, Prevalence and factors associated with practice of episiotomy at a maternity school in Recifie, Pernambuco, Brazil (Portuguese) Revista da Associaco Medica Brasileria 2010, 56 (3):333-9 doi: 10.1590/S0104- 42302010000300020.
19. Swedish Council on Health Technology Assessment. Anal Sphincter Injuries: A Systematic Review and Assessment of Medical, Social and Ethical Aspects [Internet]. Stockholm: Swedish Council on Health Technology Assessment (SBU); 2016 Apr. SBU Assessments No. 249. PMID: 28876739.
20. Okeke TC Uqwu EO okezie OA, Enwerezi JO Ezenyeaku CC Ikeako LC Trends and determinants of episiotomy at the University of Nigeria Teaching Hospitals (UNTH) Enugu, Nigeria. *Niger. J Med* 2012; 21 (3): 304-7.
21. Garba I, Ozegya MS, Abubakar IS, Ayyuba R. Episiotomy at Amino Kano Teaching Hospital, Kano, Nigeria: 3-Year Review. *Arch Int Surg* 2016; 6:17-21.
22. American College of Obstetricians-Gynecologists. ACOG Practice Bulletin. Episiotomy. Clinical Management Guidelines for Obstetrician-Gynecologists. Number 71, April 2006. Obstet Gynecol. 2006 Apr;107(4):957-62.
23. Christianson LM, Bovbjerg VE, Mc Davitt EC, Hullfish KL, Risk factor for perineal injury during delivery.*Am J Obstet Gynecol*. 2003;189 (1):255- 260.
24. Owa OO, Eniowo AR; Ilesanmi OS. Factors associated with episiotomy among parturients delivering in a tertiary care centre in Nigeria. *International Journal of Research in Medical Sciences*, [S.l.], v. 3, n. 4, p. 836-840, 2017.