



## FREQUENCY OF EPISIOTOMY AND COMPLICATIONS IN THE OBSTETRICS SERVICE OF HOSPITAL UNIVERSITARIO SAN JOSÉ, POPAYÁN (COLOMBIA), 2016. EXPLORATION OF MATERNAL AND PERINATAL FACTORS ASSOCIATED WITH ITS PERFORMANCE

Frecuencia de la realización de episiotomía y complicaciones en el servicio de Obstetricia del Hospital Universitario San José, Popayán (Colombia), 2016. Exploración de factores maternos y perinatales asociados a su realización

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### ABSTRACT

**Objective:** To determine the frequency with which episiotomy is performed, explore factors associated with its performance, and describe maternal and perinatal outcomes in the obstetric service of San José University Hospital in the city of Popayán (Colombia) during the first semester of 2016.

**Materials and methods:** Descriptive, cross-sectional study with secondary analysis which included pregnant women with more than 37 weeks of gestation delivered during the first semester of 2016 in a high complexity public referral centre in the Department of Cauca Colombia, which serves patients covered by both the contributive as well as the subsidised health insurance regimes. Simple random sampling was used with a sample size of 197 deliveries and a margin of error of 5%. Maternal and childbirth variables, as well as maternal and neonatal outcomes were assessed. The frequency of episiotomy was estimated and the factors associated with its performance were explored by means of bivariate and multivariate analysis.

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**Results:** The frequency with which episiotomy was performed was 30.45% ( $n = 60$ ; 95% CI: 24.1-37.3), and the most frequent complication was perineal tear at 29% (95% CI: 22.9-35.5). In terms of risk factors, nulliparity was the only factor associated with the need to perform episiotomy (aOR = 16.11; 95% CI: 6.46-42.81).

**Conclusion:** Episiotomy is performed more frequently in this institution than recommended by the World Health Organisation (WHO). Strategies should be considered for reducing this frequency to the expected levels.

**Key words:** Episiotomy, parity, perineum, delivery, obstetric.

## RESUMEN

**Objetivo:** determinar la frecuencia de la realización de la episiotomía, explorar los factores asociados a esta, y describir resultados maternos y perinatales en el servicio de obstetricia del Hospital Universitario San José de Popayán (Colombia) en el primer semestre del año 2016.

**Materiales y métodos:** estudio descriptivo de corte transversal, con análisis secundario; se incluyeron gestantes con embarazo mayor de 37 semanas cuyos partos fueron atendidos el primer semestre del año 2016, en un hospital público de alta complejidad, centro de referencia del departamento del Cauca (Colombia), el cual atiende población del aseguramiento contributivo y subsidiado. Se realizó un muestreo aleatorio simple, con tamaño de muestra de 197 partos, y margen de error del 5%. Se evaluaron variables maternas, del parto, de resultado materno y neonatal. Se estimó la frecuencia de episiotomía y se realizó exploración de los factores asociados a esta por medio de análisis bivariado y multivariado.

**Resultados:** la frecuencia de la realización de episiotomía fue de 30,45 % ( $n = 60$ ; IC 95 %: 24,1-37,3), la complicación más frecuente fue el desgarro perineal, con 29 % (IC 95 %: 22,9-35,5). En cuanto a los factores de riesgo, la nuliparidad fue el único factor asociado al uso de la episiotomía (Ora = 16,11; IC 95 %: 6,46-42,81).

**Conclusión:** el uso de la episiotomía en esta institución es superior a lo recomendado por la Organización Mundial de la Salud (OMS). Se deben evaluar estrategias para reducir su frecuencia a los niveles esperados.

**Palabras clave:** episiotomía, paridad, perineo, parto, obstétrico.

## INTRODUCTION

Episiotomy is a surgical procedure performed in order to widen the lower portion of the vagina, the vulvar annulus and the perineal tissue during the expulsion stage of childbirth (1). It is one of the most common procedures in obstetrics despite the fact that the current scientific evidence does not support its routine use (2-4). There are four techniques for performing episiotomy: midline, mediolateral, lateral and “J” incision (5). Historically, it has been used to avoid spontaneous vaginal tears (6, 7), and to reduce neonatal morbidity and mortality (2, 8, 9). It has also been argued that a controlled surgical incision is generally easier to repair (6).

Internationally, there is a trend towards reducing the use of episiotomy and limiting its performance to specific indications (10). The restricted use of this procedure in uncomplicated vaginal deliveries compared to the routine use of episiotomy has been associated with a lower risk of perineal trauma and the need for suturing (11, 12). Performance of episiotomy varies from country to country, with reported figures ranging from 8% to 95%, varying in relation to instrumented delivery, pre-term delivery, breach presentation, suspected foetal macrosomy, or impending perineal tear (5, 11-14). Given the absence of reliable evidence for routine use or beneficial effects, the World Health Organisation (WHO) recommends that frequency of use should not exceed 10% (13).

There is a paucity of information regarding the frequency of episiotomy and associated factors at a national (4) and regional level (15, 16). Institutions should be aware of this frequency in order to determine if the procedure is being performed

within the standards suggested internationally and to plan quality improvement actions in obstetric services in an attempt at rationalising the use of the procedure. Consequently, the main objective of this research is to determine the frequency with which episiotomy is performed and the associated complications. A second objective is to explore factors associated with episiotomy and describe maternal and neonatal outcomes in the obstetrics service of San Jose University Hospital (HUSJ) in the city of Popayán (Colombia), during the first semester of 2016.

## MATERIALS AND METHODS

*Design and Population:* Descriptive cross-sectional study conducted in pregnant women with vaginal delivery and a gestational age of 37 or more weeks who were seen at HUSJ in the city of Popayán during the first semester of 2016. This general institution provides Level III services and is a referral centre in the Department of Cauca in southwestern Colombia for a population affiliated either to the contributive or the state-subsidised social security system in Colombia. Patients with incomplete clinical record and doctor's notes, or with a loss of information of more than 10% were excluded. A sample size of 197 patients was calculated using the formula  $n = P \times Q / (E/Z)^2$ , taking into consideration the number of live births delivered in previous years at the institution (1800 deliveries, 900 cesarean sections and 900 vaginal deliveries in 2015), with an expected frequency of episiotomy of 20% (close to the 10% proposed by the WHO), (13) and the tolerated margin of error was 5%, with a 95% confidence level.

*Procedure.* Patients with vaginal delivery and a gestational age of 37 weeks or more determined by early ultrasound of the reliable date of the last menstruation were identified, and simple sampling was performed using a random number list in Microsoft Excel (2013); the investigators obtained the informed consent before starting data collection. The form was then completed based on

the institutional clinical record. An Excel database was created using validation rules for entry control in order to ensure data reliability and quality; the analysis was performed using the Stata v.9 software package and this was followed by data encryption.

*Measured variables:* Maternal age, origin, weight (kg), height (cm) (to estimate body mass index in  $\text{kg}/\text{m}^2$ ), parity, adequate prenatal care (four or more prenatal visits initiated during the first trimester), gestational age, obstetric maternal pathology (hypertensive disorders of pregnancy, premature membrane rupture, chorioamnionitis, gestational diabetes). Characteristics of the delivery: duration of the expulsion phase and labour in minutes, labour induction, instrumented delivery, presentation, shoulder dystocia, weight of the neonate. Maternal outcome variables included episiotomy, presence of tear, classification of the tear in grades I-IV (17), postpartum infection and postpartum bleeding. Neonatal outcome variables included Apgar score at 1, 5 and 10 minutes, meconium-stained amniotic fluid, need for neonatal intensive care unit (NICU) or step-down unit, and presence or absence of acute respiratory distress syndrome (ARDS).

*Statistical analysis.* In order to determine frequency, the numerator used was the total number of patients in whom episiotomy had been performed, and the denominator was the total number of patients with vaginal delivery who met the inclusion criteria. Baseline sociodemographic and clinical variables are presented comparing the women that underwent episiotomy versus women who did not. Continuous variables are summarised by means of central trend and scatter measurements, and categorical values are presented as proportions. The Shapiro Wilk normality test was used for normality evaluation of continuous variables. Normal distribution variables were compared using Student's *t* test, while the Mann-Whitney test was used for variables with a non-normal distribution; categorical variables were compared using the chi square test or Fisher's test. A bivariate analysis was performed with the

established variables. Association was established by means of the prevalence ratio and its respective 95% confidence interval (95% CI). Finally, a logistic regression multivariate analysis was performed in order to determine the association between episiotomy and primiparity, adjusting for potential confounding factors. The stepwise procedure was used with entry and exit probability of 0.20 and 0.05, respectively; moreover, the clinical criterion was also considered besides the statistical criterion for the selection of variables. The analysis of the data obtained was performed using the Stata v. 9 software package.

*Ethical considerations.* The study as well as the analysis were conducted using the HUSJ database, endorsed by approval minutes No. 10 of November 21, 2015. The women who participated were asked to sign the informed consent, and data confidentiality was guaranteed.

## RESULTS

There were 448 patients with vaginal delivery in the time period between January and June 2016; of them, 323 met the inclusion criteria, 125 (39%) were excluded because of data loss of more than 10% and incomplete documentation in the clinical record. A simple random sample of 197 patients was obtained (Figure 1). Episiotomy was performed in 60 pregnant women, with a frequency of 30.45% (95% CI: 24.1-37.3).

When comparing the patients with and without episiotomy in terms of baseline sociodemographic and clinical characteristics, clinically and statistically significant differences were found for maternal age and parity. Although there were statistical differences in body mass index (BMI), they were not clinically relevant. There were no differences in existing maternal pathology at the time of second stage, or in neonatal birth weight (Table 1). The bivariate analysis of factors associated with the use of episiotomy showed that in nulliparus patients

(PR = 8.81; 95% CI: 4.22-18.4) and in patients under 19 years of age (PR = 1.76; 95% CI: 1.14-2.63) the frequency of episiotomy performed by the treating physician was higher. Protective factors were BMI > 25 (PR = 0.51; 95% CI: 0.34-0.77) and age over 34 years (PR = 0.12; 95% CI: 0.01-0.83), with no differences in terms of whether the delivery was induced or spontaneous, instrumented, or the foetal weight was greater than 3999 g (Table 2).

In terms of maternal and perinatal outcomes, it was found that patients with episiotomy had a lower frequency of tears: 3 (5.26%) vs. 54 (39.42%) in patients without episiotomy (PR = 0.12; 95% CI: 0.04-0.39). Of the cases delivered, 28.93% (n = 57) had perineal tears of which 16.75% (n = 33) were Grade I, 11.68% (n = 23) Grade II, 0.51% (n = 1) Grade III, with no cases of Grade IV perineal tears. There were no cases of postpartum infection or haemorrhage. In terms of neonatal outcomes, there were no differences in terms of the presence of meconium-stained amniotic fluid (PR = 0.68; 95% CI: 0.19-2.4), admission to the NICU (PR = 1.59; 95% CI: 0.63-3.99) or respiratory distress syndrome (Table 3).

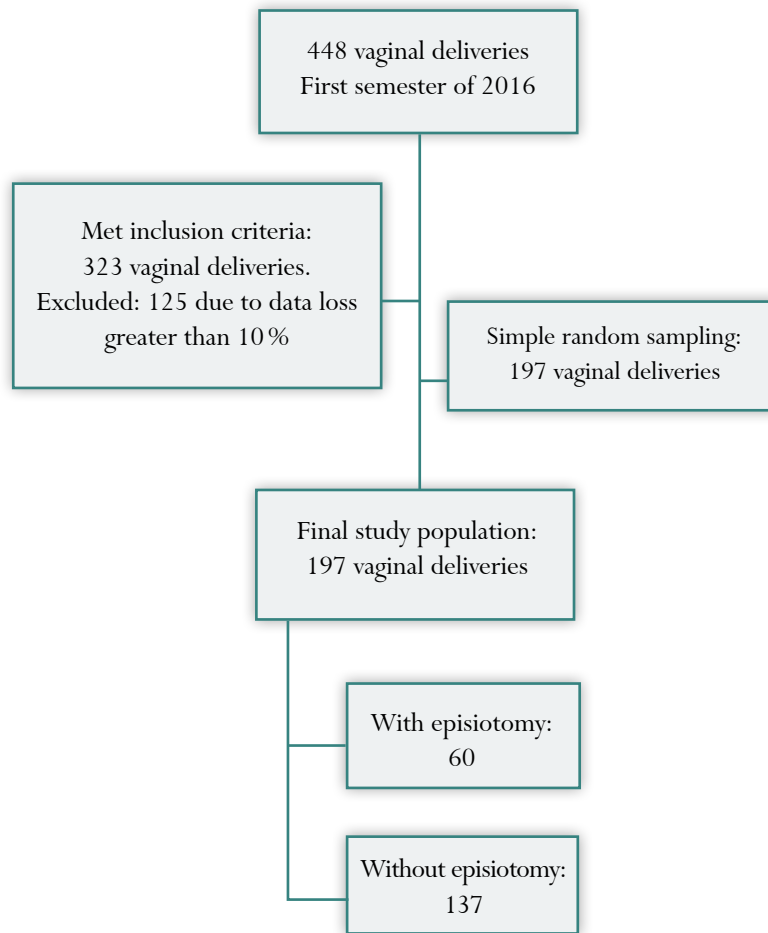
The multivariate analysis was adjusted on the basis of variables considered clinically important from the point of view of obstetrics: foetal weight, maternal age, parity, BMI. Statistical significance was found only for parity (aOR = 16.11; 95% CI: 6.17-42.81) (Table 4). Analysis of the duration of the second stage was not possible because there were no prolonged expulsions.

## DISCUSSION

The frequency of episiotomy between the months of January and June 2016 was found to be 30.45%, nulliparity being the main associated factor. The frequency of tears was lower when this procedure was performed.

Regarding the frequency of episiotomy, our results are similar to what was reported by authors like Pérez Valero *et al.* in a study that found a frequency of 33.5%,

**Figure 1.**  
Patient Flowchart



(18) as well as other studies that show frequencies of 29.9% and 29.1% in similar populations and similar restrictive policies (15-18); however, other Latin-American studies conducted in similar populations report frequencies ranging between 49% and 61% between 2005 and 2009, at the time in which restrictive policies started to be implemented in order to improve maternal care (19-21).

Similar to the findings in our study, Campos Braga *et al.* found primiparity to be a risk factor (OR = 3.08; 95% CI: 2.16-4.41), (20) as was also the case in the study by Trinh *et al.* (OR = 2.22; 95% CI: 1.48-3.32) (17). There was no association with

prior maternal pathology, similar to the findings of Trinh *et al.* that studied hypertensive disorders of pregnancy (OR = 1.04; 95% CI: 0.77-1.36) and diabetes mellitus (OR = 1.04; 95% CI: 0.77-1.36) (17). In terms of labour induction, our study did not find an association with episiotomy, contrary to what is described in other studies like the one by Campos Braga *et al.* where it was reported as a risk factor (OR = 1.92; 95% CI: 1.31-2.79). No association was found with instrumented delivery, in contrast with the latter study which reported a higher risk in patients undergoing instrumented delivery (OR = 18.91; 95% CI: 7.86-45.48). Also,

**Table 1.**  
Baseline characteristics of patients with vaginal delivery at the San José University Hospital in Popayán (Colombia). 2016

Variable	Episiotomy (+) n = 60	Episiotomy (-) n = 137	p Value
Age*	22.3 (± 5.7)	27.7 (± 7.3 DS)	0.000
BMI	26.6 (± 3.3)	28 (± 3.7)	0.010
Parity†	0 (0)	1 (2)	0.000
Adequate prenatal care‡	42(32.5%)	87(67.4%)	0.377
Gestational age (in days)	274.3 (± 6.7)	275.3 (± 7.5)	0.354
Hypertension‡	7(29.17%)	17(70.83%)	0.372
PROM‡	4(44.44%)	5(55.56%)	0.372
Chorioamnionitis‡	0(0%)	1(100%)	0.372
Gestational diabetes‡	0(0%)	1(100%)	0.372
Time en labour†	6 (5.5)	6 (3)	0.326
Time of expulsion phase†	60 (30)	30 (30)	0.296
Induction‡	15(28.85%)	37(71.15%)	0.769
Instrumented delivery‡	1(25%)	3(75%)	0.811
Neonatal birth weight*	3193.6 (± 373.2)	3243.8 (± 355)	0.369

Source: study data.

\* Student *t*

† Range test

‡ Chi square

that same study found no association with birth weight > 3999 g (OR = 1.12; 95% CI: 0.37-3.41) similar to the finding in our population (20).

Like in our study, Santos Oliveira *et al.* reported a higher frequency of tears when episiotomy was not performed (OR = 26.03; 95% CI: 18.13-37.37) (21).

The strengths of this study include the representative sample, the range of associated factors analysed, and the management of confounding factors using a multivariate analysis. Limitations include the number of subjects excluded due to incomplete information (39%), the fact that it was carried out in a single Level III institution and

cannot be extrapolated to the region, and the fact that obstetrician practices, knowledge and attitude were not evaluated, because these are variables that may influence the decision regarding episiotomy.

## CONCLUSION

The frequency of episiotomy found at HUSJ in Popayán in 2016 was 30.45%. The frequency of episiotomy performed by the treating physician was higher among nulliparous patients. Strategies need to be considered in order to reduce this frequency down to the expected levels.

**Table 2.**  
**Bivariate analysis assessing factors associated with the use of episiotomy at San Jose University Hospital in Popayán (Colombia). 2016**

Associated factors	Episiotomy		PR	95% CI
	Yes n = 60 (30.46%)	No n = 137 (69.54%)		
<b>Age (years)</b>				
< 19	16 (53.33)	14 (46.67)	1.76	1.14-2.63
19-34	43 (30.71)	97 (59.29)	REF	-
> 34	1 (3.7)	26 (96.3)	0.12	0.01-0.83
<b>Origin</b>				
Urban	42 (31.34)	92 (68.66)	REF	-
Rural	18 (28.57)	45 (71.43)	0.91	0.57-1.44
<b>BMI</b>				
Adequate (18-24.9)	25 (47.17)	28 (52.83)	REF	-
Overweight and obesity (> 25)	35 (24.3)	109 (75.69)	0.51	0.34-0.77
<b>Parity</b>				
Primiparity or multiparity	7 (6.6)	99 (93.4)	REF	-
Nulliparity	53 (58.24)	38 (41.76)	8.81	4.22-18.4
<b>Prenatal care</b>				
Adequate	42 (32.56)	87 (67.44)	REF	-
Inadequate	18 (26.47)	50 (73.53)	0.81	0.5-1.29
<b>Obstetric Pathology</b>				
No	48 (29.63)	114 (70.37)	REF	-
Yes	12 (34.29)	23 (65.71)	1.15	0.69-1.93
<b>Labour induction</b>				
No	45 (31.03)	100 (68.97)	REF	-
Yes	15 (28.85)	37 (71.15)	0.92	0.56-1.51
<b>Instrumented delivery</b>				
No	59 (30.57)	134 (69.43)	REF	-
Yes	1 (25)	3 (75)	0.81	0.14-4.52
<b>Neonatal birth weight (g)</b>				
< 2500	3 (75)	1 (25)	2.49	1.35-4.56
2500-3999	56 (30.11)	130 (69.89)	REF	-
> 3999	1 (14.29)	6 (85.71)	0.47	0.07-2.95

Source: Study data.

PR: Prevalence ratio; CI: Confidence interval; REF: Reference; BMI: Body Mass Index



**Table 3.**  
**Bivariate analysis assessing maternal and perinatal outcomes associated with the used of episiotomy at San Jose University Hospital in Popayán (Colombia). 2016**

Episiotomy	Maternal and perinatal outcomes							
	Tear		MAF		NICU		ARDS	
	Yes	No	Yes	No	Yes	No	Yes	No
Yes	3 (5%)	57 (95%)	3 (5%)	57 (95%)	7 (11.66%)	53 (88.33%)	0 (0%)	60 (100%)
No	54 (39.41%)	83 (60.58%)	10 (7.29%)	127 (92.7%)	23 (16.78%)	114 (83.21%)	3 (2.18%)	134 (97.81%)
PR	0.12	REF	0.68	REF	1.59	REF	0	REF
95% CI	0.04 - 0.39	-	0.19 - 2.4	-	0.63 - 3.99	-	-	-

Source: study data.

PR: Prevalence ratio; CI: Confidence interval; REF: Reference; MAF: Meconium-stained amniotic fluid. NICU: Neonatal intensive care unit; ARDS: Acute respiratory distress syndrome

**Table 4.**  
**Multivariate model assess the main factors associated with the use of episiotomy at San José University Hospital in Popayán (Colombia). 2016**

Associated factors		aOR	IC 95%
Age (years)	< 19	0.71	0.28-1.8
	> 34	0.27	0.028-2.6
BMI	Sobrepeso y obesidad	0.62	0.27-1.4
Parity	Nuliparidad	16.11	6.17-42.81
Neonatal birth weight	< 2500	10.38	0.27-393.4
	> 3999	1.01	0.08

Source: study data.

aOR: adjusted OR; CI: Confidence interval; BMI: Body mass index

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