A multicenter cross-sectional study of episiotomy practice in Romania

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Abstract

Rationale, aims, and objectives: The aim of this study was to focus attention on episiotomy practice in Romanian maternity units in order to identify factors associated with the very high rate of the procedure in Romania and to consider strategies to reduce it.

Methods: In this clustered cross-sectional study, a total of 11,863 patients were recorded in eight Romanian maternity units to assess the prevalence of episiotomy. A random effects Poisson model was used to estimate the prevalence rate in univariate and multivariate models.

Results: Among the 11,863 patients included for analysis, 8,475 (71.4%) had an episiotomy. The prevalence of episiotomy was 92.7% for the first vaginal birth, 73.2% for the second vaginal birth, and 35% for the third vaginal birth. The overall rate of suturing was higher than the episiotomy rate for all patients (total rate 79.2%). The likelihood of exiting the maternity ward with an intact perineum after the first vaginal birth was less than 5% at the first vaginal birth.

Conclusions: In conclusion, routine episiotomy is the norm in Romanian maternity units, with episiotomy rates among the highest in Europe. Episiotomy use is mainly driven by local professional norms, experiences, previous training, and practitioners' decisions rather than evidence, guidelines, or variations in patient needs at the time of vaginal birth.

KEYWORDS episiotomy, episiotomy rate, Romania, vaginal birth

Abbreviations: ICC, intra-class correlation coefficient; PR, prevalence ratio

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1 | INTRODUCTION

Episiotomy is a surgical cut of the perineum performed in the second stage of labor in order to facilitate the birth of an infant by enlarging the vaginal opening.\(^1\) Episiotomy became a routine practice well before research results were available to support it. Two Cochrane Reviews in 2009 and 2017 pointed out that restrictive use of episiotomy was associated with a lower risk of clinically relevant morbidities including posterior perineal trauma, need for suturing perineal trauma, and healing complications.\(^2,3\) Despite decades of research, which many interpret as having provided definitive evidence against the routine use of episiotomy, little professional consensus has been reached about the suitability of routine use.\(^5\)

The rates of episiotomy in Europe are wide ranging, spanning 3.7% in Denmark to 75.0% in Cyprus.\(^5\) In a multicenter retrospective study conducted between 2003 to 2005 (Period 1) and 2012 to 2014 (Period 2), performed in Burgundy, France, the overall episiotomy rate reduced from 35.8% to 16.7%.\(^6\) In North America, a 17% decrease in episiotomy rate from 46.9% to 38.8% was achieved in the year 2006 after the introduction of a physician educational program,\(^7\) whereas another report found that the episiotomy rate ranged from 6.7% to 22.9% in operative vaginal deliveries in 2016.\(^8\)

In many countries, including Romania, a number of obstetric health care practitioners consider that episiotomy should be used to prevent perineal trauma, pelvic floor relaxation, and its consequences, such as bladder prolapse and urinary incontinence. Furthermore, some practitioners prefer episiotomy because it is easier to repair than the laceration that results when episiotomy is not used.\(^9\) Simultaneous belief in the prevention of future sequelae and ease of repair creates the potential for misattributed motivations.\(^4\)

The present study aimed to assess the prevalence of episiotomy in Romania, to identify factors associated with the practice of episiotomy, and to suggest strategies to reduce this practice in maternity units.

2 | METHODS

2.1 | Study design

Data were collected from the maternity wards of eight Romanian hospitals from September through December 2013. All singleton vaginal births (live births and stillbirths) that occurred during this period were included. Information was extracted from obstetric and neonatal records.

2.2 | Statistical analysis

A total of 11 863 patients were recorded in eight maternity units in this clustered cross-sectional study, aiming to assess the prevalence of episiotomy (prevalence ratio, PR). There was strong evidence of clustering within maternity units (intra-class correlation coefficient –ICC = 0.07; 95% confidence interval: 0.03-0.16 and \(P < 0.001\)). However, with the small number of clusters (maternity units), the estimation methods to correct for clustering may not perform well, illustrating that the random effects Poisson model for estimating the prevalence rate declined when there was a high ICC and with an increasing number of clusters. We used the random-effects Poisson model to estimate the prevalence rate in univariate and multivariate models. For all fitted models, we used the adaptive Gaussian quadrature with eight integration points to approximate the log likelihood. STATA software version 13.1 was used for statistical analysis.

2.3 | Ethical considerations

This study was approved by the institutional review board of the University of Medicine and Pharmacy of Targu Mures. Exemptions for a separate informed consent were obtained because the study was retrospective.

3 | RESULTS

A total of 11 863 patients were recorded in eight maternity units of which 8475 (71.4%) had episiotomy (Table 1).

In the study group, 5 470 (46.1%) patients gave birth for the first time, 10 645 (89.7%) were over 20 years old, and 1 146 (9.7%) patients had a premature birth. Univariate analyses showed strong associations between episiotomy practice and parity, gestational age, age group, prematurity, birth weight and type of care provider (all \(P < .001\) for all), Apgar score at 1 minute (\(P = .002\)), and use of oxytocin during labor (\(P = .003\)). There were non-significant trends between episiotomy practice and maternity level (primary, secondary, tertiary) and also no evidence of association between episiotomy practice and time of birth.

We also investigated the occurrence of perineal lesions with respect to the practice of episiotomy practice in a univariate analysis for each of the following variables: labial tears, vaginal tears, anterior labial involvement, and cervical tear (Table 2).

Episiotomy was strongly associated with labial tears, vaginal tears, anterior labial involvement, and cervical tears (all \(P < .001\) for all). The necessity for sutures was three times greater in patients with episiotomy than in those without episiotomy (Table 3).

The rates of anterior labial involvement and cervical tears were also moderately higher in patients with episiotomy than in those without. However, the rate of labial tears was 68% lower in patients with episiotomy, and the rate of vaginal tears was 91% lower in patients with episiotomy compared with those without episiotomy.

Among the available variables, parity, gestational age, age group, prematurity, birth weight, type of care provider, maternity level, use of oxytocin, and time of birth were used as potentially explanatory variables in a multivariate analysis. The choice of these explanatory variables was based on their antecedence to episiotomy potential utility to assess causal relationships that are not readily apparent in a cross-sectional study. From the model selection procedure, gestational age, age group, prematurity, maternity level, use of oxytocin, and time of birth showed no evidence association with episiotomy practice after adjusting for all potential explanatory variables. We also investigated whether there was any interaction between prevalence of need of suture and parity and found no evidence (Table 4).
The prevalence of episiotomy was reduced by 60% when the care provider was a doctor instead of a midwife, after adjustment for parity, Apgar score at 1 minute, and birth weight. Compared with the first delivery, the prevalence of episiotomy was reduced by 20%, 61%, and 80% for the second delivery, third delivery, and subsequent deliveries, respectively. We tested for a linear trend in the association between episiotomy practice and parity and found strong evidence of nonlinearity. However, there was a monotonic decrease in the prevalence of episiotomy with increased parity.

There were non-significant trends between episiotomy practice and maternity level (Table 5).

There was a strong association between episiotomy practice and Apgar score at 1 minute, after adjustment for parity, birth weight, and care provider \( (P < .001) \). Controlling for parity, Apgar score at 1 minute, and care provider, there was also a strong evidence of association between episiotomy practice and birth weight \( (P < .001) \). The prevalence of episiotomy was higher in patients whose newborn weighed 1500 to 2500 g, 2500 to 3500 g, or more

### Table 1

| Total Number of Patients | Prevalence of Episiotomy (%) | Prevalence Ratio (95% CI) | P-Value |
|--------------------------|-------------------------------|---------------------------|---------|
| Total                    | 11 863                        | 8475 (71.4)               |         |
| Parity                   |                               |                           |         |
| 1                        | 5470                          | 5072 (92.7)               | 1       |
| 2                        | 3704                          | 2713 (73.2)               | 0.80 (0.76-0.83) |
| 3                        | 1265                          | 441 (34.9)                | 0.38 (0.35-0.42) |
| >3                       | 1424                          | 249 (17.5)                | 0.19 (0.17-0.22) |
| Gestational age (in weeks) |                             |                           |         |
| <30                      | 84                            | 45 (53.6)                 | 1       |
| 30-33                    | 265                           | 147 (55.5)                | 1.03 (0.74-1.44) |
| 34-37                    | 1320                          | 812 (61.5)                | 1.16 (0.86-1.57) |
| >37                      | 10 194                        | 7471 (73.3)               | 1.42 (1.06-1.90) |
| Age group (in years)     |                               |                           |         |
| <20                      | 1218                          | 982 (80.6)                | 1       |
| ≥20                      | 10 645                        | 7493 (70.4)               | 0.84 (0.79-0.90) |
| Apgar score at 1 minute  |                               |                           |         |
| 0                        | 17                            | 17 (100.0)                | 1       |
| 1-3                      | 45                            | 45 (100.0)                | 2.18 (1.25-3.81) |
| 4-7                      | 421                           | 289 (68.6)                | 2.41 (1.48-3.93) |
| >7                       | 11 316                        | 8124 (71.8)               | 2.46 (1.53-3.96) |
| Birth weight (in grams)  |                               |                           |         |
| <1500                    | 147                           | 61 (41.5)                 | 1       |
| 1501-2500                | 1192                          | 683 (57.3)                | 1.34 (1.02-1.74) |
| 2501-3500                | 8063                          | 5941 (73.7)               | 1.75 (1.36-2.25) |
| >3500                    | 2461                          | 1790 (72.7)               | 1.74 (1.35-2.24) |
| Use of oxytocin during the labour |   |                           |         |
| No                       | 6526                          | 4274 (65.5)               | 1       |
| Yes                      | 5337                          | 4201 (78.7)               | 1.08 (1.03-1.14) |
| Involvement of the ischiatic fossa | |                           |         |
| No                       | 11 854                        | 8467 (71.4)               | 1       |
| Yes                      | 9                             | 8 (88.9)                  | 1.29 (0.64-2.57) |
| Anal sphincter involvement |                             |                           |         |
| No                       | 11 823                        | 8456 (71.5)               | 1       |
| Yes                      | 40                            | 19 (47.5)                 | 0.56 (0.36-0.89) |
| Daytime of birth (in hours) |                           |                           |         |
| [8-13]                   | 1011                          | 713 (70.5)                | 1       |
| [13-21]                  | 9084                          | 6545 (72.0)               | 0.98 (0.89-1.08) |
| [21-48]                  | 1768                          | 1217 (68.8)               | 0.98 (0.90-1.08) |

\( n \) is the number of patients with episiotomy and % is the prevalence of episiotomy.

95% confidence interval.

Wald test P-value from the random effects Poisson model.

### Table 2

| Episiotomy | Not Episiotomy | Prevalence Ratio (95% CI) | P Value |
|------------|----------------|---------------------------|---------|
| Total      | 8475           | 3.388                     |         |
| Prevalence of need for suture n (%) | 8288 (97.8) | 1112 (32.8) | 2.99 (2.81-3.18) | <.001 |
| Prevalence of labial scar n (%) | 288 (3.4) | 455 (13.4) | 0.32 (0.27-0.37) | <.001 |
| Prevalence of vaginal scar n (%) | 46 (0.5) | 255 (7.5) | 0.09 (0.06-0.12) | <.001 |
| Prevalence of anterior involvement n (%) | 350 (4.1) | 60 (1.8) | 1.94 (1.48-2.56) | <.001 |
| Prevalence of cervical tear n (%) | 970 (11.4) | 214 (6.3) | 1.75 (1.50-2.03) | <.0001 |

95% confidence interval.

Wald test P-value from the random effects Poisson model.

\( n \) is the number of patients with a given perineal lesion and % is the prevalence of the underlined perineal lesion.
than 3500 g compared with those whose newborn weighed less than 1500 g.

4 | DISCUSSION

The Argentine Episiotomy Trial, the first randomized comparison of routine and selective episiotomy policies, was published in 1993. More than 20 years after that landmark study Romania, the seventh largest country by population in the European Union, with around 200 000 babies born annually, has a 71.4% prevalence of episiotomy, according to the present study. Notably, the episiotomy rate at the first vaginal birth was 93% falling to 35% at the third vaginal birth. Thus, routine episiotomy is a common obstetrical practice in Romania, despite the good-quality available evidence against its routine use. This high rate of episiotomy is available evidence, a policy of routine episiotomy should be abandoned and rates above 30% cannot be justified. More than 20 years after that landmark study Romania, the seventh largest country by population in the European Union, with around 200 000 babies born annually, has a 71.4% prevalence of episiotomy, according to the present study. Notably, the episiotomy rate at the first vaginal birth was 93% falling to 35% at the third vaginal birth. Thus, routine episiotomy is a common obstetrical practice in Romania, despite the good-quality available evidence against its routine use. This high rate of episiotomy is

| Covariates | Adjusted PR a | 95% CI b | P-Value c |
|------------|---------------|-----------|---------|
| Fixed effects component | | | |
| Type of surgeon | Midwife 1 | | <.001 |
| | Doctor 0.41 | | 0.34-0.51 |
| Parity | 1 | | <.001 |
| | 2 | 0.80 | 0.76-0.84 |
| | 3 | 0.39 | 0.36-0.43 |
| | >3 | 0.20 | 0.17-0.22 |
| Apgar score at 1 minute | 0 | | 0.006 |
| | 1-3 | 2.41 | 1.37-4.23 |
| | 4-7 | 2.42 | 1.48-3.97 |
| | >7 | 2.30 | 1.42-3.74 |
| Birth weight (in grams) | <1500 | | <.001 |
| | 2501-3500 | 1.32 | 1.01-1.73 |
| | 1501-2500 | 1.53 | 1.18-1.98 |
| | >3500 | 1.62 | 1.24-2.10 |

Random effects component: Cluster level random intercept

- Likelihood ratio test testing whether the random intercept is needed: P < .001.
- aPrevalence ratio.
- b95% confidence interval of the prevalence ratio.
- cWald test P-value from random effects Poisson model.
- dStandard errors of the estimate of the standard deviation of the random intercept.

TABLE 4  Association between the prevalence of need for suture and parity

| Total Number of Patients | Prevalence of Need for Suture n (%) a | Prevalence Ratio (95% CI) b | P-Value c |
|--------------------------|---------------------------------------|----------------------------|---------|
| Total 118 63 | 9400 (79.2) | | |

Mother characteristics

Parity 1 5470 | 5139 (94.0) | 1 | <.001 |
| 2 3704 | 3094 (83.5) | 0.89 (0.85-0.93) |
| 3 1265 | 714 (56.4) | 0.60 (0.56-0.65) |
| >3 1424 | 453 (31.8) | 0.34 (0.31-0.38) |

a n is the number of patients with episiotomy, and % is the prevalence of episiotomy.
b95% confidence interval.
cWald test P-value from random effects Poisson model.

TABLE 5  Association between the prevalence of episiotomy and maternity level

| Total Number of Patients | Prevalence of Episiotomy n (%) a | Prevalence Ratio (95% CI) b | P c |
|--------------------------|----------------------------------|----------------------------|-----|
| Total 11 863 | 8475 (71.4) | | |

Maternity level

Low 2789 | 1652 (59.2) | 1 | 0.11 |
| Medium 4154 | 3131 (75.4) | 1.22 (1.00-1.50) |
| Academic 4920 | 3692 (75.0) | 1.16 (0.97-1.39) |

a n is the number of patients with episiotomy, and % is the prevalence of episiotomy.
b95% confidence interval of the prevalence ratio. The prevalence ratio is adjusted for birth weight.
cWald test P-value from random effects Poisson model.
5 | CONCLUSION

In conclusion, routine episiotomy is the norm in Romanian maternity units with rates among the highest found in the medical literature. The likelihood of a primipara to leave a Romanian maternity unit with an intact perineum is less than 5%. Episiotomy use is primarily related to local professional practice, training during residency programs, and care provider preference, rather than to the real needs of individual women at the time of vaginal birth. Without knowing the “ideal” rate of episiotomy, efforts should be made to follow the best currently available evidence in order to reduce the over-medicalization of normal vaginal birth, without putting our patients at risk for severe perineal laceration.

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CONFLICT OF INTEREST

None declared.

AUTHOR CONTRIBUTIONS

A.P. and D.N. contributed equally to this article and should both be considered joint first authors. A.P. and D.N. wrote the draft manuscript. C.A.I., L.P., F.S., A.C., M.D., D.C., R.B., L.P., and D.N. contributing to further drafts and comments. All authors revised the draft and approved the final submitted article.

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