Incidence of Episiotomy in Kasr Alainy OBGYN Hospital in Cairo, Egypt; a cross-sectional study

Omar Sadek[1], Nora Fahim[1], Hana Yehia[1], Mariam Elmashad[1], Farah Alaa[1], Abdulrahman Rakha[1], Ahmad Khaled[1], and Nadine Alaa Sherif[1]

[1]Cairo University Kasr Alainy Faculty of Medicine

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Abstract

Objective This study aims to determine the incidence of episiotomy in Kasr Alainy OBGYN Hospital in Cairo, Egypt. Objectives include identifying factors influencing the incidence of episiotomy. **Design** This cross-sectional study was conducted between March 1, 2022 and June 30, 2022, to determine the incidence of episiotomy among vaginal deliveries in the hospital. **Setting** Data was collected from patient charts at Kasr Alainy OBGYN Hospital in Cairo, Egypt. **Patient Sample** The total number of patient charts inspected was 1731, of which 1545 met the inclusion criteria. **Methods** Data was manually collected from patient hospital records at the end of each day, and entered into a standardized data-collection form. The data collected was then statistically analyzed using SPSS. **Main Outcome Measures** The overall incidence of episiotomy was found to be 64%. **Results** The overall incidence of 64%, broken-down by gravidity, it was found that the incidence of episiotomy is 97% in primigravid patients, and 52% in multigravida patients. Several other associated factors were reviewed. **Conclusions** The incidence of episiotomy at Kasr Alainy OBGYN Hospital is greater than the WHO recommended rate. Further research is recommended to study the indications of episiotomy and collect information regarding how episiotomy affects patients' perineal health and quality of life. This will aid in drawing evidence-based conclusions regarding the advantages and drawbacks of episiotomy, and how its incidence changes over time. **Funding** This research received no external funding. **Keywords** episiotomy; vaginal delivery; Egypt; Middle East; Africa; gravidity; maternal age; gestational age; cervical diameter; gestational weight

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Omar Sadek[1,*], Nora Fahim[1], Hana Yehia[1], Mariam Elmashad[1], Farah Alaa[1], Abdulrahman Rakha[1], Ahmad Khaled[1], Nadine Sherif PhD[2]

[1]Students at Kasr Alainy Faculty of Medicine, Cairo University, Elsaray Street, Manial, Cairo, 11956, Egypt.

[2]Professor of obstetrics and gynecology at Kasr Alainy Faculty of Medicine, Cairo University, Elsaray Street, Manial, Cairo, 11956, Egypt.

*Corresponding author

Contact details:

Email (Omar Sadek): omar-sadek@students.kasralainy.edu.eg

Phone number: +20 1025353278

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This cross-sectional study was conducted between March 1, 2022 and June 30, 2022, to determine the incidence of episiotomy among vaginal deliveries in the hospital.

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The total number of patient charts inspected was 1731, of which 1545 met the inclusion criteria.

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Data was manually collected from patient hospital records at the end of each day, and entered into a standardized data-collection form. The data collected was then statistically analyzed using SPSS.

Main Outcome Measures

The overall incidence of episiotomy was found to be 64%.

Results

The overall incidence of 64%, broken-down by gravidity, it was found that the incidence of episiotomy is 97% in primigravid patients, and 52% in multigravida patients. Several other associated factors were reviewed.

Conclusions

The incidence of episiotomy at Kasr Alainy OBGYN Hospital is greater than the WHO recommended rate. Further research is recommended to study the indications of episiotomy and collect information regarding how episiotomy affects patients' perineal health and quality of life. This will aid in drawing evidence-based conclusions regarding the advantages and drawbacks of episiotomy, and how its incidence changes over time.

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1 Introduction

Episiotomy is a surgical incision in the perineum, performed during the second stage of labor[1]. It was first described in 1742 and has become a common means of preventing maternal injury and improving neonatal outcome[2].

In recent years, however, there has been no credible evidence to support the routine use of episiotomy; on the contrary, some studies have found significant associated risks[2]. Reported complications include; infection, hemorrhage and hematoma, skin tags and asymmetry, accidental extension to the anal sphincter leading to fecal incontinence, and rectovaginal fistulas. Additionally, delay in resumption of sexual activity and dyspareunia are not uncommon[3]. In 2004, a study in Munich concluded that avoiding episiotomy at tears presumed to be imminent, reduces postpartum perineal pain without any complications or adverse effects inflicted upon the mother or fetus[5].

Following the publicity of such evidence, in 1999, the Cochrane Database Systematic Reviews recommended restrictive use of episiotomy[2], in 2006 the American College of Obstetricians and Gynecologists recommended against routine episiotomy[4], and the WHO recommended an episiotomy rate of 10% for all normal deliveries[3].

It is suggested to perform an episiotomy in deliveries with atypical fetal presentations, including breech and shoulder dystocia, with instrumental deliveries, in patients with scars or poorly healed tears in the lower genital tract, and in cases of fetal distress[3].

Currently, in Egypt, there are limited epidemiological studies regarding the practice of episiotomy. It appears, however, that in the Middle East and North Africa, episiotomy is generally performed at higher rates than the WHO recommendation.

This study aims to determine the incidence of episiotomy in patients undergoing a vaginal delivery in Kasr Alainy OBGYN University Hospital between March 1st, 2022, and June 30th, 2022. The objectives of this study are to identify factors that influence the incidence of episiotomy, outline any correlations, and address gaps in knowledge

The study was conducted in Kasr Alainy University Hospital, the largest hospital in Egypt, with 5500 beds, servicing more than two million patients annually[9]. It is considered by many a leading healthcare provider and medical education center in the Middle East and Africa.

2 Methods

2.1 Study design

This cross-sectional study was conducted in Kasr Alainy OBGYN Hospital in Cairo, Egypt, between March 1, 2022 and June 30, 2022, to determine the incidence of episiotomy. Data was manually collected by our data collection team from hospital records for all admitted patients in the vaginal delivery ward at the end of each day during the duration of the study. No unique patient identifiers were collected.

Data from hospital records was entered into a standardized data-collection form for analysis. The following information was gathered:

- Date of data collection
- Whether an episiotomy was performed
- Maternal age
- Gravidity
- Parity
- Gestational age at time of delivery
- Cervical diameter upon admission
- Fetal presentation
- Gestational weight
- Years of marriage

2.2 Study sample

There were a total of 1731 vaginal deliveries during the four-month period of the study. All patients who delivered vaginally after 24 weeks gestation were included in the study. Patients who delivered before completing 24 intrauterine weeks, which by hospital protocol is considered an abortion, and those whose episiotomy status was undocumented in hospital records were excluded.

Based on the exclusion criteria, 186 patients were excluded from the study. A total of 1545 patients were therefore included in the study.

2.3 Statistical analysis

The incidence of episiotomy was determined using the data collected and organized in the standardized form. Further statistical analysis was conducted using the Statistical Package for Social Sciences (SPSS) 28 package. Descriptive statistics, Chi-squared test of hypothesis independence, and ANOVA test were carried out for numerical variables. Categorical variables were defined in terms of the number, percentage, and risk estimate. A p-value of <0.05 was considered statistically significant.

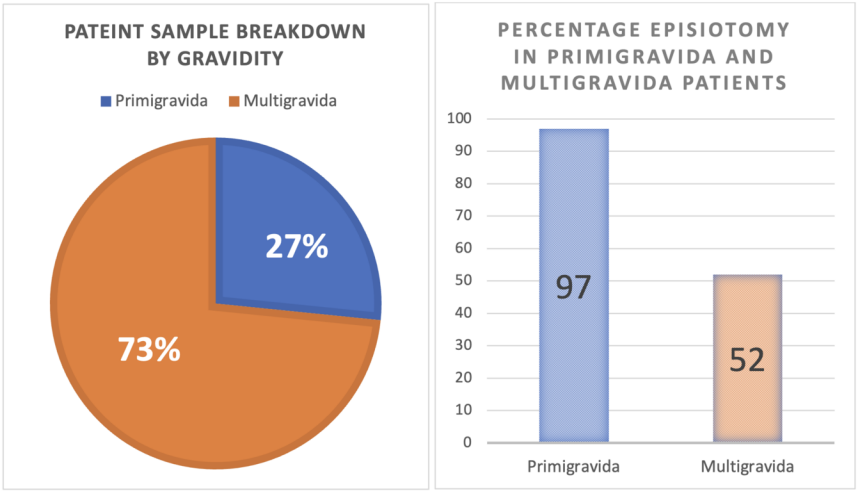
3 Results

Of all included vaginal delivery patients, 64% had an episiotomy. Patients were further broken down according to gravidity, and it was found that of the 1545 patients, 983 were multigravida, while 562 were primigravida[Figure 1a].

The rate of episiotomy was found to be 97% in primigravid patients, and 52% in multigravida patients[Table 1][Figure 1b].

Table 1: Total percentage of episiotomy, and breakdown by gravidity.

Episiotomy	Primigravida	Multigravida	Total	Percent
Yes	397	586	983	64%
No	14	548	562	36%
Total	411	1134	1545	100%
Percent	97%	52%	100%	



(a) **(b)**

Chi-squared and p-values were calculated for all variables mentioned in the study design for multigravida patients[Table 2], primigravid patients[Table S1], and the collective patient sample[Table S2]. Tables S1 and S2 are in the "Supporting Information" section.

Table 2: Chi-squared, p-values, number of valid cases for each variable in multigravida patients.

Variable	Pearson Chi-Square	p-value	Valid Cases	Excluded Cases
Maternal Age	58.774	0.000381	1127	3
Gravidity	118.988	2.1527E-21	1130	0

Variable	Pearson Chi-Square	p-value	Valid Cases	Excluded Cases
Parity	197.224	1.265E-37	1130	0
Gestational Age	15.090	0.656	1100	30
Cervical Diameter on Admission	29.264	0.001129	977	153
Fetal Presentation	34.217	0.000037	1130	0
Gestational Weight	61.165	0.156	849	281
Years of Marriage	48.020	0.34	302	828

Statistical significance is determined by a p-value less than 0.05. Because the incidence of episiotomy in primigravid patients was 97%, meaning that only 14 patients of the 411 did not receive an episiotomy, it was determined that findings among primigravid patients would not adequately represent clinical practices and would not be statistically significant. Findings among the collective patient sample would be highly skewed by primigravid patients and would therefore not be studied either.

Multiple variables were found to be statistically significant among multigravida; including maternal age, gravidity, parity, cervical diameter on admission, fetal presentation, and years of marriage. The correlations with these variables are discussed below, while possible reasons and deductions are discussed in the 'Discussion' section of the paper.

It was determined that maternal age was inversely proportional to the rate of episiotomy, with patients younger than 26 having a rate of episiotomy higher than the mean, and this is especially pronounced in patients aged 18 to 20, with an episiotomy rate of 70%.

Gravidity and parity were very strongly inversely correlated to the incidence of episiotomy. The more pregnancies and deliveries a patient had, the less likely they are to have had an episiotomy.

Moreover, it was concluded that the cervical diameter upon admission to the delivery ward was inversely proportional to the incidence of episiotomy. The highest rate of episiotomy was documented in patients presenting with a 3 cm dilated cervix, and was at its lowest at 7 cm or more.

All patients with fetuses presenting with a non-cephalic presentation in the vaginal delivery ward had an episiotomy. Therefore, fetal presentation is strongly correlated to the incidence of episiotomy.

The number of years a patient was married for was found to be negatively correlated to the incidence of episiotomy, the longer the patient was married for, the less likely they would have episiotomy.

Whereas gestational weight and age were not found to be statistically significant, the following correlations were established.

Gestational weight was found to be directly proportional to the rate of episiotomy, reaching a 70% episiotomy rate in newborns weighing 4 kg or more.

Regarding gestational age, there was a noted increase in the incidence of episiotomy in preterm and post-term deliveries, which are medical indications for the procedure. The incidence among preterm deliveries was 67%, with early preterm deliveries (before 34 gestational weeks) having a higher incidence rate than late preterm deliveries (between 34 and 37 gestational weeks), respectively, 73% and 65%.

4 Discussion

4.1 Outlook

Episiotomy rates vary globally from 9.7% in Sweden to 100% in Taiwan[6]. Some countries have succeeded in dropping their episiotomy rates in the early 21st century, for instance, the United States managed to reduce episiotomy rates from 60.9% in 1979 to 24.5% in 2004[3]. In 2003, the incidence of episiotomy was 13% in England, and 16.3% in Scotland[6]. It appears that episiotomy rates are particularly high in the Middle

East, the region of our study. Oman has an episiotomy rate of 66%[7], while in Lebanon, the rate was found to be 73.3% in 2014[8]. In Nigeria the episiotomy rate was 46.6% in 1998[10].

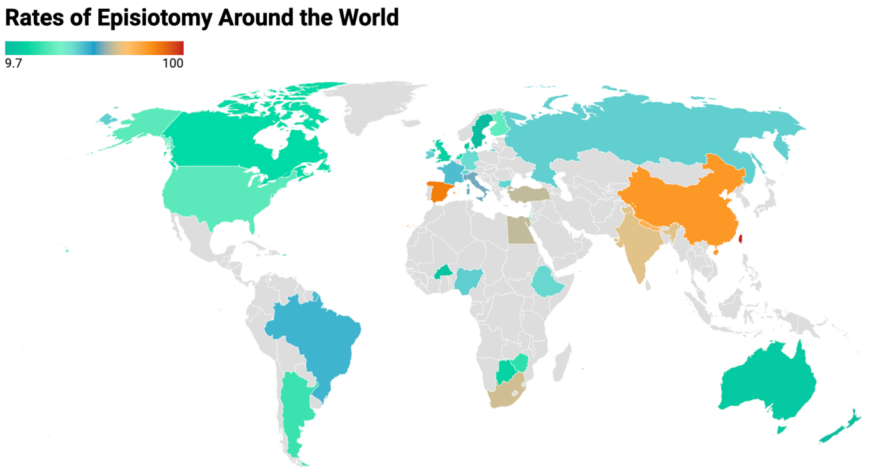


Figure 2 [6, 10-14]: Rates of episiotomy in different countries.

4.2 Main findings

The overall episiotomy rate in Kasr Alainy was found to be 64%, which is higher than the rate recommended by the WHO (10%). The incidence in primigravid patients is 97%. Further research is necessary to discern the causes behind the elevated incidence among this patient group. Potential reasons include patient and practice related factors. Patient factors could include rigid perineum, prolonged second stage of labor, and other clinical indications, most commonly; instrumental deliveries, fetal distress, history or risk of OASIS (obstetric anal sphincter injuries), large fetus, and atypical presentations[16]. Practice related factors include the lack of time due to the hospital capacity being fully utilized, understaffing, high patient flow or hospital protocols. A study in China found the practice of episiotomy to be caused by previous training, the experience of practitioners and local norms rather than the latest medical evidence[17].

It was found that multigravida patients had an episiotomy incidence rate of 52%. Although this incidence rate is significantly lower than that of primigravid patients, it still exceeds the World Health Organization's recommended rate of 10%. The factors examined among the multigravida patient sample were found to be statistically significant and clinically relevant. These findings suggest that the studied factors specifically influence the decision-making process regarding the performance of episiotomies in multigravida patients. Possible explanations for the incidence rate among multigravida patients being less than primigravid patients include; a decreased likelihood of having a rigid perineum, shorter labor durations, or variations in local norms and protocols.

4.3 Interpretation

The effect of maternal age on the rate of episiotomy is thought to be attributed to perineal rigidity. Younger patients tend to have a more rigid perineum, which increases the incidence of episiotomy.

The effect of gravidity and parity is thought to be attributed to multiple factors, including; perineal rigidity as a patient's perineum is less likely to be rigid with each pregnancy and delivery, the duration of labor which decreases in patients with more pregnancies and deliveries, and the patient's experience and level of cooperation with the healthcare team.

Cervical diameter is an indication of how advanced the delivery is, and affects the duration a patient spends in the delivery ward[19]. The earlier a patient presents, the more likely they would receive an episiotomy to

decrease the duration of labor.

Instrumental deliveries and the vaginal delivery of fetuses with an atypical presentation are rarely practiced in Kasr Alainy OBGYN Hospital, these patients are mostly scheduled for C-sections. But all patients who did deliver vaginally with an atypical presentation had an episiotomy.

Gestational weight and age were not found to have a statistically significant effect on the incidence of episiotomy. However, it is thought that a bigger fetal head distends the perineum further, thereby increasing the incidence of episiotomy. While episiotomy is likely practiced in preterm deliveries to slow the progression of a precipitous labor.

Little is known about the effects of episiotomy in Kasr Alainy patients as there is no follow-up program to check-up on patients in the post-partum period when it comes to episiotomy and perineal tissue health.

4.4 Strengths and Limitations

The study has several strengths, including;

- Conducted in Kasr Alainy University Hospital, one of the largest and leading hospitals in Egypt, Africa and the Middle East.
- First such study in Kasr Alainy University Hospital, therefore, adding useful insight into the practice of episiotomy and allowing for further research and follow up of the incidence.
- Large patient sample, 1545 patients included in the study.
- Manual, daily inspection of patient charts, insuring accuracy of collected data.

The study also had some limitations, including:

- Outdated, paper-based hospital charting and record-keeping system. This makes long-term data collection especially challenging.
- Some information is not mentioned in all charts, like the years of marriage.
- Indications because of which episiotomy was performed are not specified or documented.

5 Conclusion

5.1 General conclusions

This study determined the incidence of episiotomy in Kasr Alainy OBGYN Hospital in Cairo, Egypt for a period of four months, from March to June 2022. The rate of episiotomy was found to be 64%. The study identified several correlations between the incidence of episiotomy and various patient factors, most notably, gravidity. Primigravid patients having an episiotomy rate of 97%, while multigravida patients have a rate 52%.

The results of this study provide a foundation for further research to investigate the indications of episiotomy and how the incidence changes over time. And it could be used to validate and track the effects of hospital practices and protocols.

5.2 Recommendations

Measures can be taken to deepen our understanding surrounding episiotomy practices in Kasr Alainy, our recommendations are;

- Digitalizing patient charting and record keeping systems to streamline access to patient data and facilitate medical decision-making.
- Adding a dedicated field in obstetric patient charts for whether an episiotomy was performed, and the medical indication(s) for which it was performed.
- Incorporating perineal care and follow-up programs into maternal post-natal care programs.

6 Conflict of interest

The authors declare no conflicts of interest.

7 Ethics approval

Approval was granted by the hospital administration and ethics committee to inspect patient admission records. Patient's anonymity was ensured by the nondisclosure of any unique patient identifiers. Final ethics approval for publication was granted on the 19th of March, 2023.

8 Funding

This research received no external funding.

9 Availability of data

Spreadsheet of data is available to be provided on request.

10 Contribution to Authorship

OS conceptualized, designed, coordinated the research, helped with data collection, did a literature review and drafted the manuscript. NF co-designed the research, carried out data analysis, and helped with data collection, literature review and drafting the manuscript. HY co-designed the research and helped with data collection, literature review and drafting the manuscript. ME worked on data collection and entry. FA worked on data collection and entry. AR worked on data collection. AK worked on data collection. NA supervised this research.

11 Acknowledgements

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12 References

1. Kalis V, Laine K, de Leeuw J, Ismail K, Tincello D. Classification of episiotomy: towards a standardisation of terminology-BJOG: An International Journal of Obstetrics & Gynaecology-Vol. 119, 5-ISBN: 1471-0528-p. 522-526.
2. Frankman EA, Wang L, Bunker CH, Lowder JL. Episiotomy in the United States: has anything changed?. American journal of obstetrics and gynecology. 2009 May 1;200(5):573-e1.
3. Kartal B, Kızılırmak A, Calpbinici P, Demir G. Retrospective analysis of episiotomy prevalence. Journal of the Turkish German Gynecological Association. 2017 Dec;18(4):190.
4. American College of Obstetricians and Gynecologists. "ACOG recommends restricted use of episiotomies." (2006): 03-31.
5. Dannecker C, Hillemanns P, Strauss A, Hasbargen U, Hepp H, Anthuber C. Episiotomy and perineal tears presumed to be imminent: randomized controlled trial. Acta obstetricia et gynecologica Scandinavica. 2004 Apr;83(4):364-8.
6. Graham ID, Carroli G, Davies C, Medves JM. Episiotomy rates around the world: an update. Birth. 2005 Sep;32(3):219-23.
7. Al-Ghammari K, Al-Riyami Z, Al-Moqbali M, Al-Marjabi F, Al-Mahrouqi B, Al-Khatri A, Al-Khasawneh EM. Predictors of routine episiotomy in primigravida women in Oman. Applied Nursing Research. 2016 Feb 1;29:131-5.
8. Kaddoura R, DeJong J, Zurayk H, Kabakian T, Abbyad C, Mirza FG. Episiotomy practice in the Middle East: a Lebanese teaching tertiary care centre experience. Women and Birth. 2019 Apr 1;32(2):e223-8.
9. El Dib NA. Kasr Al Ainy, the story of a palace that became a medical school. Kasr Al Ainy Medical Journal. 2015 Jan 1;21(1):1.
10. Otoide VO, Ogbonmwan SM, Okonofua FE. Episiotomy in Nigeria. International Journal of Gynecology & Obstetrics. 2000 Jan;68(1):13-7.
11. Goldberg J, Holtz D, Hyslop T, Tolosa JE. Has the use of routine episiotomy decreased? Examination of episiotomy rates from 1983 to 2000. Obstetrics & gynecology. 2002 Mar 1;99(3):395-400.

12. Cesar JA, Marmitt LP, Mendoza-Sassi RA. Episiotomy in Southern Brazil: prevalence, trend, and associated factors. Revista de Saúde Pública. 2022 Apr 22;56:26.
13. Indhumathi MS, CHANDRA KS. Study of Episiotomy in our Population. Biomedical & Pharmacology Journal. 2015 Oct 1;8(SpecialOct):575.
14. Gebeyehu NA, Gelaw KA, Adela GA, Alemu BW, Demisie BW, Lake EA. The magnitude of episiotomy among women who gave birth in Ethiopia: Systematic review and meta-analysis. African Journal of Reproductive Health. 2022 Jun 3;26(4):98-109.
15. Fodstad K, Staff AC, Laine K. Episiotomy preferences, indication, and classification–a survey among Nordic doctors. Acta obstetricia et gynecologica Scandinavica. 2016 May;95(5):587-95.
16. Yang J, Bai H. Knowledge, attitude and experience of episiotomy practice among obstetricians and midwives: a cross-sectional study from China. BMJ open. 2021 Apr 1;11(4):e043596.
17. Evbuomwan O, Chowdhury YS. Physiology, Cervical Dilation. StatPearls Publishing; 2023.
18. [dataset]Sadek O, Fahim N, Yehia H, Elmashad M, Alaa F, Rakha A, Khaled A, Sherif N; 2022; Incidence of Episiotomy in Kasr Alainy Data.