

The prevalence and characteristics of perineal rupture during vaginal delivery at Sanglah General Hospital and Regional Hospitals in Bali from January 2018 until December 2019 period



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ABSTRACT

Background: One of the causes contributing to the high maternal mortality rate in Indonesia is postpartum hemorrhage, which can be the consequence of perineal rupture. Perineal rupture can happen spontaneously in normal vaginal delivery or worsen after episiotomy, induction of labor, vacuum and forceps delivery. This study aims to know the prevalence and characteristics of perineal rupture so that it can be used as data to make policy guidelines for preventing and reducing the incidence of perineal rupture.

Methods: This is a retrospective descriptive study analyzing secondary data collected from Sanglah General Hospital and nine other Regional Hospitals from January 2018 until December 2019. The data analysis technique used is a univariable analysis by calculating the frequency distribution and proportion to determine the prevalence and characteristics of the research subjects. Data were analyzed using SPSS version 20 for Windows.

Results: There are 8,178 cases of vaginal delivery, 6,191 cases (75.70%) with perineal rupture and 1,987 cases (24.30%) without perineal rupture. Perineal rupture is most often found in women < 20 years old (82.66%), primigravida (81.76%), preterm gestational age (78.23%), the baby with birth weight > 4,000 grams (94.26%), underweight mother (87.50%), and women with assisted delivery by vacuum or forceps (100.00%).

Conclusion: The Prevalence of perineal rupture in this study is 75.70%, with the most characteristics being women < 20 years old, primigravida, preterm gestational age, macrosomia baby, normal IMT, assisted vaginal delivery.

Keywords: Perineal rupture, Sanglah General Hospital, Prevalence, Characteristics.

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INTRODUCTION

Vaginal delivery is the process of the fetus's birth through the mother's birth canal that occurs naturally. Most births result from uncomplicated vaginal delivery for both mother and baby.¹ However, when complications occur, they can increase the risk of maternal and infant morbidity and mortality. One of the most complications of vaginal delivery is perineal tear, leading to postpartum hemorrhage, infection, and long-term decline in pelvic organ function.^{1,2}

Perineal rupture is closely related to several risk factors that are beyond the control of the midwife or doctor.³ Three important factors for perineal rupture are

maternal factors, fetal factors, and labor procedures.⁴ In Indonesia, the highest cause of maternal mortality rate in 2020 is postpartum hemorrhage, which can be the consequence of perineal rupture.^{5,6}

Based on those mentioned above, this study aims to evaluate the prevalence of perineal rupture and its characteristics at Sanglah General Hospital and Regional Hospitals in Bali from January 2018 until December 2019.

METHODS

This is a retrospective descriptive study by analyzing secondary data collected from Sanglah General Hospital and nine other Regional Hospitals from January

2018 until December 2019. The data analysis technique used is the univariable analysis by calculating the frequency distribution and proportion to determine the prevalence and characteristics of the research subjects. Variables assess in this study include type of hospital (Sanglah or Regional Hospitals), perineal rupture (spontaneous or episiotomy), maternal age (< 20, 20-35, and > 35 years old), parity status (primigravida or multigravida), gestational age (< 37 or ≥ 37 weeks), birth weight infants (<2,500; 2,500-4,000; or >4,000 grams), mode of delivery (spontaneous vaginal delivery without tools, induction labor, or vaginal delivery with vacuum or forceps), and Body Mass

Index (BMI) (<18.5, 18.5-22.9, 23.0-24.9, or ≥ 25.0 kg/m²).

Data were analyzed using SPSS version 20 for Windows. Data were considered statistically significant if the p-value was less than 0.05.

RESULTS

There are 8,178 cases of vaginal delivery, with the number of spontaneous perineal rupture in 285 cases (3.48%), extended rupture following episiotomy procedure in 5,906 cases (72.22%), without rupture in 1,987 cases (24.30%). Table 1 presented the prevalence of perineal rupture in Sanglah General Hospital and other regional hospitals.

In Table 2, the characteristics of the perineal tears according to maternal, fetal, and delivery procedures are presented. Maternal age with the highest number of

perineal ruptures is those aged <20 years (82,66%), followed by mothers aged >35 years (77,98%). The lowest cases of perineal rupture occurred in mothers aged 20-35 years (73,98%). Primigravida woman have more cases of perineal rupture (81,76%) compared to multigravida woman (71,17%), Perineal rupture due to episiotomy were also higher in primigravida (79,77%) then multigravida (67,82%). The highest number of perineal ruptures was found in deliveries with gestational age <37 weeks (78.23%), followed by deliveries with a gestational age of 37 weeks or more (75.37%). Episiotomy procedures occurred in deliveries with gestational age <37 weeks was 74.92% compared to spontaneous perineal rupture at 3.31% and without perineal rupture at 21.77%. In mothers who delivered low birth weight infants (<2500 grams), as much as 59.08% experienced perineal

ruptures. This figure is lower than normal birth weight infants (2500-4000 grams) (74.34%) and infants with macrosomia (>4000 grams) (94.26%). Spontaneous vaginal delivery without tools has 3,36% cases of spontaneous perineal rupture, while vaginal delivery with episiotomy procedures has 73.40% and 23.24% cases didn't have a perineal rupture. All cases of assisted vaginal delivery with vacuum or forceps have extended perineal rupture following episiotomy. The highest cases of perineal ruptures were found in underweight mothers (87,50%), followed by overweight mothers (76,13%), normal-weight mothers (75,55%), and obese mothers (75,47%).

DISCUSSION

This study shows that perineal ruptures occurred in vaginal deliveries (75,70%).

Table 1. Vaginal delivery data at Sanglah General Hospital Denpasar and Regionals Hospital.

Hospital	With Perineal Rupture				Without Perineal Rupture	
	Spontaneous		Episiotomy			
	n=285	%	n=5,906	%	n=1,987	%
Sanglah Hospital	18	3.59	340	67.73	144	28.68
Regionals Hospital	267	3.48	5,566	72.51	1,843	24.01

Table 2. Characteristics of perineal tears in vaginal delivery at Sanglah General Hospital Denpasar and Regionals Hospital.

Variable	With Perineal Rupture		Without Perineal Rupture (n=1,987)
	Spontaneous (n=285)	Episiotomy (n=5,906)	
Maternal Age (Years), n (%)			
<20	73 (6.43)	866 (76.23)	197 (17.34)
20-35	187 (3.14)	4,233 (70.84)	1,555 (26.02)
>35	25 (2.35)	807 (75.63)	235 (22.02)
Parity, n (%)			
Primigravida	60 (1.99)	2,402 (79.77)	549 (18.24)
Multigravida	225 (4.35)	3,504 (67.82)	1,438 (27.83)
Gestational Age (Weeks), n (%)			
<37	32 (3.31)	726 (74.92)	211 (21.77)
≥ 37	253 (3.52)	5,180 (71.85)	1,776 (24.63)
Birth Weight Infants (Gram), n (%)			
<2,500	52 (5.00)	563 (54.08)	426 (40.92)
2,500-4,000	227 (3.21)	5,120 (72.62)	1703 (24.17)
>4,000	6 (6.90)	76 (87.36)	5 (5.74)
Mode of Delivery, n (%)			
Spontaneous vaginal delivery without tools	230 (3.36)	5027 (73.40)	1591 (23.24)
Induction labor	55 (5.75)	506 (52.87)	396 (41.38)
Vaginal delivery with vacuum or forceps	0 (0.00)	373 (100.00)	0 (0.00)
BMI (kg/m ²), n (%)			
<18,5	1 (12.50)	6 (75.00)	1 (12.50)
18,5-22,9	48 (2.70)	1,296 (72.85)	435 (24.45)
23,0-24,9	85 (3.41)	1,810 (72.72)	594 (23.87)
≥ 25	151 (3.87)	2,794 (71.60)	957 (24.53)

The data is slightly lower than a similar study by Goh R et al., that offers 80-85% of women experience perineal ruptures during vaginal deliveries.⁷ Around 72,22% of women in this study have episiotomy procedures during vaginal deliveries. Episiotomy procedures during vaginal deliveries aren't routinely performed by the caregiver, although this is not the case in some countries. Asian countries tend to have a higher incidence of episiotomy compared to European countries.^{7,8}

We found a young woman aged <20 years old has the highest incidence of perineal ruptures due to episiotomy. This finding is similar to another study that found that 74% of women aged <20 – 30 will have episiotomy procedures done during vaginal deliveries because their muscles are tenser than those in older age.⁹

This study found that the number of perineal tears was higher in primigravida than in multigravida. In perineal tears due to episiotomy were also higher in primigravida. These results are generally comparable with previous studies.¹⁰⁻¹² Grade II perineal rupture or rupture reaching the vaginal and/or perineal muscles was reported in 3.51-78.3% in primiparas and 34.8-39.6% in multiparas.¹⁰⁻¹² Episiotomy is higher in primigravida than multigravida. This result is similar to a study by Kartal B et al., which also showed a higher episiotomy rate in primigravida than in multigravida.¹³ The risk of perineal rupture is more heightened in primigravida because the baby's head has never passed the birth canal, so the perineal muscles have not been stretched.¹

Perineal tears were higher in deliveries with gestational age (UK) <37 weeks. The results of previous studies rarely identified a comparison of perineal tears between preterm and term labor but mostly identified between aterm and post-term deliveries. Episiotomy aims to protect the baby's head, especially in preterm infants.^{14,15} A previous study in Romania still considered an episiotomy in preterm labor as a protective factor against perineal tears.¹⁶ This makes the number of episiotomy cases in preterm labor high in the country.¹⁶

Mothers with a baby's birth weight >4000 grams have a higher number of perineal tears, both episiotomy and spontaneous tears. Another study found that fetal weight greater than 3500 grams was associated with an increased risk of perineal rupture in multiparas.¹⁷⁻¹⁹ Infant birth weight of 4000 grams or more is a risk factor for episiotomy.²⁰ The higher number of episiotomy procedures in macrosomia may be explained by several factors: the higher likelihood of vaginal operative delivery, prevention of Obstetric Anal Sphincter Injuries (OASI), and dystocia during vaginal delivery.²¹

In this study, vaginal delivery was categorized into spontaneous labor without tools, induction labor, and surgical delivery (forceps extraction/vacuum extraction). Especially in vaginal deliveries, surgical procedures all require an episiotomy. Studies in primiparas have also found that labor induction is associated with an increased risk of vaginal rupture.²²

Underweight mothers have the highest perineal rupture cases, but we only found 8 cases vaginal deliveries mothers with underweight BMI. This data may not be representative due to the small sample size. The results of previous studies on the effect of BMI on perineal tears are still controversial. One study showed that maternal weight and maternal BMI were significantly higher among women with third- and fourth-degree perineal tears than women without perineal tears.²³ However, in a larger study, no association between maternal obesity and anal sphincter injury was found.²⁴

CONFLICT OF INTEREST

All authors don't have any conflict of interest related to the publication of this research article.

ETHICS CONSIDERATION

This study doesn't violate the ethics of research. All secondary data are collected privately and only know the authors based on the COPE and ICMJE protocols.

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AUTHOR CONTRIBUTION

All authors equally contribute to the study from the conceptual framework, data acquisition, data analysis until reporting the study results through publication.

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