

Determinant of Maternal Factors Towards the Incidence of Perineal Rupture at Prof. Dr. W.Z. Johannes Hospital

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ABSTRACT

Introduction: Postpartum hemorrhage is the main cause of maternal deaths in Indonesia which can cause disruption of placental release, uterine atony and perineal rupture. Perineal rupture is the second cause of postpartum hemorrhage after uterine atony. Purpose of this study is to analyze the determinant of maternal factors towards the incidence of perineal rupture in normal childbirth at Prof. Dr. WZ Johannes hospital.

Material and methods: This study used an observational analytic design with a case control approach. Documentation review was applied in this study. The total sample was 142 respondents with normal childbirth which consisting of 71 case samples and 71 control samples. The statistical analysis used was simple logistic regression test and multiple logistic regression tests.

Results of the study indicates maternal factors that are significantly influenced the incidence of perineal rupture is parity ($p=0,000$; $OR=15,142$), mother's age ($p=0,000$; $OR=4,441$) and birth interval ($p=0,000$; $OR=3.919$) and the determinant of maternal factor that is significantly influence the incidence of perineal rupture in Prof. Dr. WZ.Johannes hospital is parity ($p=0,000$; $OR= 27,126$; $95\%CI: 5,883-125,077$).

Conclusion: It is essential to improve the provision of counseling, information and education to pregnant mothers especially in their third trimester regarding factors which may cause the perineal rupture, the process of labor as well as post-partum family planning counseling so as to minimize the incidence of perineal rupture.

Keywords: Perineal Rupture, Normal Childbirth, Maternal Factor

INTRODUCTION

Childbirth is a physiological condition that will happen to each woman. However, this physiological condition can turn into a pathological one if the mother does not know what the physiological condition is and if the helper or health workers do not know whether a childbirth is physiologically happening and how to manage it to help decrease the maternal mortality rate.¹ 27% of maternal deaths happen due to the pregnancy-related complications which occurs throughout pregnancy, labour, and childbirth; 11% due to postpartum infections; 14% due to hypertension during pregnancy; 8% due to unsafe abortion; 9% due to arrested labor; 3% due to embolism; and 28% due to the already available causes.² On the other hand, the percentage of obstetrical bleeding that leads to maternal deaths are as follows; 19% due to placental abruption, 16% due to perineal rupture and uterine rupture,

7% due to placenta previa, and 15% due to uterine atony.³ Perineal rupture is also one of the health problems in Asia where 50% of the world's perineal rupture cases occurred. The prevalence of perineal rupture during labor in 2014 was 52,5%, and it increased to 58,4% and 73,5% in 2015 and 2016, respectively. For the age range, 24% of perineal rupture cases happened to women age 25 to 30 years old, while 62% of the cases happened to women age 32-39 years old.⁴

The result of initial study conducted at the Prof. Dr. W.Z. Johannes Hospital showed that within 3 years from 2016, 617 mothers experienced perineal rupture (70%), in 2017 total of 515 mothers (67,4%) and 548 mothers experienced the perineal rupture (65,2%). We can see from the data that the number of perineal rupture incidence on mothers with vaginal delivery were still high⁵ given that postpartum hemorrhaging caused by perineal rupture is the main cause of maternal death in Indonesia. Whereas, in S.K Lerik hospital the number of perineal rupture incidence were decreasing. As in 2016 was 548 mothers (66%), 2017 530 mothers (75,7%).⁶ Based on the data that we got, we were interested to do the research about "Maternal Determinant Factor of Perineal Rupture Incidence at Prof. Dr. W.Z. Johannes Hospital." This research aims to analyze the maternal determinant factor of perineal rupture incidence.

Perineal rupture affects such things as bleeding and infected stitches, which can spread and cause the urinary tract infection or the birth canal infection.⁷ Wrong perineal wound treatment can cause breeding grounds for bacteria in the wet area by lochia which can lead to the perineal infection⁸

Based on the description above, the main problem of this study is the high incidence of perineal rupture which can have an impact on bleeding, infection of suture wounds which can lead to complications of infection in the birth canal. For this reason, this study was aimed at analyzing the effect of maternal determinants on the incidence of perineal

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rupture.

MATERIAL AND METHODS

This was an observational analytic study using a case control approach to determine the risk factors or determinants of perineal rupture incidence in normal labor in the case group and the control group. The population in this study were normal delivery mothers who gave birth at Prof. Dr. W.Z Johannes Hospital Kupang in 2019 totaled 540 mothers who gave birth normally. The sample in this study was a part of the population taken with a matching technique with a sample ratio of 1: 1, and for maternal education, which was High School, in the case sample using simple random sampling and in the control sample using total sampling, it was found that 142 normal birth mothers consisted of 71 case sample and 71 control sample.

The research was conducted at Prof. Dr. W.Z Johannes Hospital Kupang in April - May 2020. The study used secondary, with the independent variables used were parity, maternal age, birth spacing, and the duration of second period, while the dependent variable was perineal rupture. In this study, the existing data were collected using a checklist sheet. The analysis used was univariate analysis, bivariate analysis using simple logistic regression tests, and multivariate analysis using multiple logistic regression tests.

RESULTS

Characteristics of respondents

The characteristics of the respondents consisted of the variables of education, occupation, perineal rupture incidence, parity, maternal age, birth spacing, and duration of second stage which can be seen in table 1 below;

All respondents have graduated from high school, respondents who are not working or as housewives, the incidence of perineal rupture in the case group is dominated by moderate perineal rupture. Respondents according to parity in the case group were predominantly primiparous, while the control group was multiparous, according to the age of the mothers who were dominated by age 20-35 years. According to the birth spacing in the case group was dominated by 0 years, while the control group was <2 years and >2 years, and according to the duration of second stage in the case group generally >2 hours, while the control group was <2 hours.

Risk factors for the perineal rupture incidence

The risk factors for the incidence of perineal rupture consisted of variables of parity, maternal age, birth spacing, and the duration of second stage. The results of risk factor measurement using simple logistic regression test showed that three variables that passed with p value <0.05 on the 95% Confidence Interval were the variables of parity, maternal age, and birth spacing. After the variable selection was carried out in the bivariate analysis which had a p value <0.25, there were variables of parity, maternal age, and birth spacing that passed the selection. Furthermore, multivariate analysis was carried out using multiple logistic regression tests. The final results were obtained in table 2 below;

The results showed that only the parity variable had a

Variable	case		control	
	n=71	%	n=71	%
Education				
High School	71	100	71	100
Occupation				
Unemployed/Housewives	45	63,4	36	50,7
Entrepreneur	12	16,9	8	11,3
Private Employee	4	5,6	11	15,5
Civil Servant	10	14,1	16	22,5
Perineal Rupture Incidence				
Mild Rupture	15	21,1	0	0
Moderate Rupture	56	78,9	0	0
Severe Rupture	0	0	0	0
No Rupture	0	0	71	100
Parity				
Primipara	50	70,4	6	8,5
Multipara	20	28,2	35	49,3
Grand Multipara	1	1,4	30	42,3
Maternal Age				
<20 years old	19	26,8	0	0
20-35 years old	43	60,6	51	71,8
>35 years old	9	12,7	20	28,2
Birth Spacing				
0 year	49	69	5	7
≤2 years	6	8,5	33	46,5
>2 years	16	22,5	33	46,5
Duration of Second Stage				
>2 hours	71	100	0	0
≤2 hours	0	0	71	100

Table-1: Characteristics of respondents

Variable	P value	OR	95% CI for EXP(B)
Parity	0,000	27,126	5,883-125,077

Table-2: Results of multivariate analysis

significant effect on the incidence of perineal rupture because $p < 0.05$ with an OR = 27.126 ($p = 0.000$; 95% CI: 5.883-125.077). So that mothers who gave birth for the first time had a risk level of 27 times the occurrence of perineal rupture compared to mothers who gave birth with multipara and grand multipara. The value of Negerkerkr R. Square was 0.568 which means that the variability of the incidence of perineal rupture which could be explained by the parity variable was 56.8%, while 43.2% was explained by other variables. The Hosmer-Lemeshow test value showed a chi-square value of 10.601 with a significance value (p) of 0.102. Based on these results, because the significance value is greater than 0.05, the model can be concluded that it is able to predict the observation value or it can be said that the model is acceptable because it matches the observation data.

DISCUSSION

The effect of parity on the incidence of perineal rupture Parity is the number of pregnancies that result in a fetus that is able to survive outside the uterus (28 weeks).⁹ Parity classification, namely; Primipara is a woman who has given birth to a child for the first time, Multipara is a woman who has given birth to more than one or 2 children or more, and Grand Multipara is a woman who has given birth to 5 or more

children and usually experiences complications in pregnancy and childbirth. The perineum that is still intact in primipara will easily tear the primipara parity perineum and multiparity is parity with a greater risk of spontaneous perineal rupture than grandmultipara parity.¹⁰

Based on the results of research, the incidence of perineal rupture is more common in primipara due to the lack of elasticity of the perineal muscles during the delivery process, because the mother's birth canal has never been passed by the fetus so it requires adaptation to these conditions. This study is in line with research¹¹ found that mothers with primipara parity status had a greater risk of experiencing perineal rupture than mothers with multipara parity status, namely 89 people (58.6%). Parity can affect perineal rupture because the tissue structures in the perineum in primipara and multipara are different in elasticity. In primipara who gave birth for the first time, their perineum was still stiff so it was easier and prone to rupture of the perineum, whereas in multipara who had given birth to viable babies more than 1 time, the perineal area was elastic because the perineum in multiparous had often passed the baby.¹²

The effect of maternal age on the incidence of perineal rupture

Maternal age is calculated based on the year of birth, namely the length of life from birth. Women who give birth to children aged <20 years or > 35 years are risk factors for postpartum hemorrhage due to perineal rupture. This is because the reproductive organs are not functioning properly at the age of under 20 years. Whereas at the age of >35 years, a woman's reproductive function has decreased compared to normal reproductive function.⁹ Based on the results of the study, the mother's age did not affect the incidence of perineal rupture. The reproductive age of the mother will have an impact on the comprehension and mindset of the mother. Age greatly determines a mother's health. Mothers are said to be at high risk if they become pregnant at the age of under 20 years and over 35 years. This study is in line with research⁴ which showed that the age of women who gave birth without risk (<20 or > 35) years was 226 people (56.4%) and the age of women who gave birth at risk (20-35 years) was 175 (43.6%). The same is the case with the results of the study which states that the incidence of perineal rupture occurs at reproductive age, namely 20-35 years, whereas based on the theory, it is stated that the age at high risk occurs at <20 years and > 35 years. This is due to other factors such as improper way of pushing the mother during childbirth. And also, this study is in line with research¹³ which states that the age of the mother has no significant relationship with the incidence of perineal rupture. Similar to the study conducted¹⁴, the test results showed no relationship between maternal age and perineal rupture. Even though the mother is of normal age, if she does not exercise and rarely has sex, she can experience perineal lacerations. The flexibility of the birth canal is reduced when the expectant mother who lacks exercise or genetics often becomes infected. The infection will affect

the connective tissue and muscles at the bottom and make it disappear (because infection can make the birth canal stiff). This is also influenced by the narrow perineum and the elasticity of the perineum so that it will be easy to cause birth canal tears or perineal lacerations, therefore babies who have a maximum head circumference will not be able to pass through, causing perineal lacerations. But this result is in contrast to¹⁵ respondents who are ≥ 35 years of age have a risk of experiencing perineal rupture, it appears that women aged <20 years or ≥ 35 years are at risk of incidence of perineal rupture. This is because the perineum is stiff and has never given birth, so you don't know how to push properly and can cause widespread tearing of the birth canal. Women who give birth to children at the age of <20 years, the function of their reproductive organs has not yet been fully developed to experience the labor process and the muscles of the perineum are stiff and inelastic, so that during labor, the vagina will have ruptured once, while at age ≥ 35 years of reproductive organ function in a woman has decreased, so the occurrence of postpartum complications, especially bleeding will be greater, compared to the age of 20- 35 years, where the reproductive organs are mature and ready for labor. Besides that, her emotional status is also more stable and more cooperative when invited to communicate during labor.¹⁶

The effect of birth spacing on the incidence of perineal rupture

Birth spacing is the time span between the birth of the current child and the birth of the previous child. A birth interval of less than two years is considered a high risk because it can cause complications in childbirth. A birth spacing of 2-3 years is a safer birth spacing for both mother and fetus. Likewise, the condition of the birth canal that may have experienced a third- or fourth-degree perineal tear in the previous delivery, so that the recovery process is not complete and perineal tears can occur.⁹

This study states that birth spacing does not have a significant effect on the incidence of perineal rupture. The ideal distance for children to be able to maintain the health of mother and child is 2-5 years. This ideal distance will provide opportunities for children to grow and develop in an optimal environment and nutrition.

This study is in line with research¹⁷ and there was no relationship between birth spacing and perineal rupture. However, by treating perineal wounds, maintaining good hygiene, and doing Kegel exercises during postpartum can repair and restore perineal muscle tone so that it will help accelerate the healing of perineal wounds. In addition, performing a perineum massage on the perineal suture scar area will also make the perineum more elastic and can reduce the risk of perineal rupture during labor. But this study contradicts the study¹⁸ that there is an association between pregnancy interval and perineal rupture. This is because when the mother is pregnant for the first time, the mother's perineum will experience a tear, the perineal muscle will experience tension when the baby is born so that it can cause

a rupture. Mothers with birth spacing <2 years are more likely to experience birth canal lacerations than mothers with birth spacing >2 years. This is because the reproductive organs of the mother have not yet recovered to their original condition before the mother was pregnant and are not ready for the birth process but have had to give birth again, causing the perineum to become fragile and easily rupture. Whereas at birth interval >2 years, the reproductive system condition has recovered before pregnancy and the perineum has recovered so that with good 2-stage management it can reduce the occurrence of perineal rupture.¹⁹

Effect of duration of second stage on the incidence of perineal rupture

The second stage is the time span from complete opening to birth of the baby's head that lasts <2 hours in primigravida and <1 hour in multigravidas. In primigravida, facing birth is a new experience that will be experienced without knowing what will happen later so that it makes you feel depressed and can cause feelings of anxiety and worry, causing prolonged labor.¹⁰ This study states that the second stage does not have a significant effect on the incidence of perineal rupture. Because it is influenced by multi factors. The position of bearing down is not one of the factors that can affect the length of the second stage, because several factors that affect the length of the second stage include the length of the first stage, the strength of the contractions, the size of the baby, the number of amniotic organs, the strength and method of pushing, the mother's psychological condition, and possible interventions performed by midwives when assisting childbirth. This study is in line with a study²⁰ in which mothers who are in labor, especially in second stage, can control the speed of the baby's birth by regulating the delivery and breathing of the baby at birth, so that the birth of the baby can be controlled and perineal laceration can be prevented.

This study contradicts the research which states that the second stage plays a role in the occurrence of perineal tearing. The advantage of positions in labor can be due to the better position of the fetal head against the perineum and the shorter length of the II stage. With the short time required for the second stage of labor, the lower part of the fetus will be in the perineum shorter and therefore the opportunity for trauma and perineal injury.²¹

CONCLUSION

The conclusion of this research is that there is a significant influence between parity with perineal rupture incidence on vaginal delivery at the Prof. Dr. W.Z. Johannes Regional Hospital Kupang.

RECOMMENDATION

We hope that this research can help midwives to enhance counseling and to give information and education to the pregnant women especially primigravida women about the process and the women's condition which can potentially experience perineal rupture so it can be prevent and minimalized on vaginal delivery.

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