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Risk Factors Analysis of Retained Placenta at Regional Public Hospital of Muntilan

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ABSTRACT

About 15 % to 20 % of maternal mortality due to postpartum hemorrhage caused by retained placenta. There are risk factors that lead to retained placenta in labor. The purpose of this study was to determine the risk factors which most influence the incidence of retained placenta. This was observational analytic study with case control study design. The population were all mothers who were treated in Regional Public Hospital of Muntilan at January 2019 to November 2022. The sampling method of case used simple random sampling technique. Data were obtained from medical records. Analysis which used in this study were chi square test. The results showed that there was a significant difference between the spacing of delivery (p-value = 0.004) in the case group and the control group, while the risk factors for age, parity, and history of caesarean section did not show a significant relationship to the incidence of retained placenta (p> 0.05). Delivery interval is a risk factor that influences the incidence of retained placenta in Regional Public Hospital of Muntilan.

Keywords: third stage, retained placenta, delivery interval

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1.BACKGROUND

Death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and side of the pregnancy, from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes. This health indicator is influenced by general socioeconomic conditions, unsatisfactory health conditions related to sanitation, nutrition, and care during pregnancy, the incidence of various complications of pregnancy and childbirth, and utilization of the availability of health service facilities, including prenatal and midwifery care (WHO, 2019). The maternal mortality ratio is per 100,000 live births (WHO, UNICEF, UNFPA, 2015). The five leading causes of maternal death are bleeding, infection,

unsafe abortion, preeclampsia, and prolonged or obstructed labor. Indirect causes that contribute to maternal death include anemia, malaria, heart disease, and HIV/AIDS. Abortion and bleeding are still the leading causes of maternal death in countries with low to middle incomes, although the trends in causes of death differ in each region. Causes of postpartum hemorrhage include uterine atony (loss of uterine muscle tone due to blood vessel decompression), birth canal lacerations, abnormal attachment of the placenta (placental retention), uterine rupture, and blood clotting disorders (Jin, Mankadi, Rigotti, & Cha, 2018; Kassebaum et al., 2014).

One of the leading causes of postpartum hemorrhage is retained placenta, which affects 0.5% to 3.0% of women after delivery and is the leading cause of maternal death due to postpartum hemorrhage. Approximately 15% to 20% of maternal deaths due to postpartum hemorrhage are caused by the retained placenta (Gunawan & Damanik, 2021). Retention of the placenta is absent until or more than 30 minutes after the baby is born. Mothers are diagnosed with retained placenta if the placenta is not delivered within 30 minutes after the baby is born. If no bleeding occurs, the patient must be observed further for 30 minutes from the first 30 minutes before the placenta manual is performed (Mattu, 2019; Triana & Damayanti, 2020). NICE defines retained placenta as if the placenta is not born within 30 minutes after the birth of the baby and active management of the third stage or more than one hour when physiological management is applied, without signs of postpartum hemorrhage (Bavaro & Toledo, 2017).

The etiology of retained placenta is unclear and may be complex. If the retained placenta is not handled correctly, it can result in fatal bleeding. This is the leading cause of postpartum hemorrhage besides uterine atony. In these conditions, manual removal of the placenta is usually required. Manual placental action has been shown to increase the risk of endometritis and exacerbate the situation due to significant blood loss (Carusi, 2018). Risk factors for retained placenta are the history of retained placenta in previous deliveries, gestational age less than 36 weeks, multiparity, pregnancy at more than 30 years of age, uterine scar (history of curettage and history of cesarean section) (Alalaf et al., 2020; Jauniaux et al., 2022).

A preliminary study at the Muntilan Hospital on December 3, 2022 showed 44 cases of maternal bleeding in 413 deliveries from January to November 2022. The causes of maternal bleeding at the

Muntilan Hospital from January to November 2022 were abortion, uterine atony, retained placenta, retained placenta, perineal rupture, placental abruption, placenta previa, uterine inversion, and anemia. Placental retention is one of the leading causes of bleeding in Muntilan Hospital, with a percentage of 15.9%. According to the preliminary study, the risk factors for retained placenta at Muntilan General Hospital were 2 people at high risk, two people at multiparity, one person each induction, preeclampsia, and IUFD. This data is taken from the birth register in the delivery room of the Muntilan Hospital.

Based on the description above, this study aims to determine the risk factors for retained placenta at Muntilan Hospital.

2. METHODS

This research is an analytic observational study with a case-control approach. The research was conducted at the Muntilan Regional Hospital in December 2022. The study population was all birth mothers treated at the Muntilan Regional General Hospital from January 2020 to November 2022, with as many as 3267 people. The sample was selected by random sampling technique with a sample size of 222, including 111 case samples and 111 control samples. The independent variables in the study were age, parity, history of cesarean section, and delivery interval, while the dependent variable was the incidence of retained placenta. Data analysis used the chi-square test to determine the risk factors that influence the incidence of retained placenta.

3. RESULTS

Table 1. Relationship between age and the incidence of retained placenta

Risk factor	Group				Result	
	Case		Control		p-value	Odd Ratio
Age	n	%	n	%		
Risk	50	45%	52	46,8%	0,893	0,930 (0,549-1,577)
No Risk	61	55%	59	53,2%		

Based on Table 1, the incidence of retained placenta in the case group with age risk factors was 50 people (45%), while in the control group, mothers without retained placenta with more age risk factors, namely 52 people (46.8%). Based on bivariate analysis, there was no significant difference between age (p-value = 0.883, OR = 0.930 95% CI 0.549-1.577) in the case and control groups of retained placenta.

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Table 2. The relationship between parity and the incidence of retained placenta

Risk factor	Group				Result	
	Case		Control		p-value	Odd Ratio
Parity	n	%	n	%		
Risk	36	32,4%	33	29,7%	0,772	1,135 (0,642-2,004)
No Risk	75	67,6%	78	70,3%		

The incidence of retained placenta with parity risk factors in the case group was higher than parity risk factors in the control group. The number of events with multiparity / grandemultipara risk factors was 36 people (32.4%) in the case group and 33 people with multiparity/ grandemultipara risk factors (29.7%) in the control group of mothers without retained placenta. Bivariate analysis showed no significant difference between parity (p-value = 0.772, OR = 1.135 95% CI 0.642-2.044) in the case and control groups of retained placenta.

Table 3. Relationship between a history of cesarean section with incidence of retained placenta

Risk factor	Group				Result	
	Case		Control		p-value	Odd Ratio
History of cesarean section	n	%	n	%		
Risk	4	3,6%	9	8,1%	0,253	0,424 (0,127-1,419)
No Risk	107	96,4%	102	91,9%		

The results of the univariate analysis showed that the risk factor for a history of cesarean section in the control group was higher with a total of 9 people (8.1%) compared to the incidence of retained placenta with a history of cesarean section with a total of 4 people (3.6%). There was no significant difference between cesarean sections in the case and control retained placenta groups (p-value = 0.253› 0.05) (OR = 0.42 95% CI 0.127-1.419).

Table 4. The relationship between delivery interval and the incidence of retained placenta

Risk factor	Group				Result	
	Case		Control		p-value	Odd Ratio
Delivery interval	n	%	n	%		
Risk	14	12,6%	2	1,8%	0,004	7,866 (1,744-35.488)
No Risk	97	87,4%	109	98,2%		

The percentage of retained placenta in women with risk factors for birth spacing less than 18 months from the previous birth was 12.6% (14 people).

These events were higher than the risk factors for spacing less than 18 months from previous deliveries in the control group, which was only 1.8% (2 people). The bivariate analysis revealed a significant difference between the spacing of labor in the case and control groups with the retained placenta (p-value = 0.004 <0.05 and OR = 7.866 95% CI 1.744-35.488). The risk for mothers experiencing retained placenta with risk factors for delivery intervals of less than 18 months is eight times greater than for mothers without risk factors for delivery intervals.

4. DISCUSSION

Relationship between Age and Retained Placenta

The results showed that age at high risk was not related to the incidence of retained placenta. This is not in accordance with a study conducted by Favilli et al., which stated that there was a relationship between age at high risk and the incidence of retained placenta with a p-value <0.001 (Favilli et al., 2021). Age is a risk factor for bleeding that results in maternal death. This is because, in women with increasing age, there is a progressive decrease in the endometrium so that to meet the nutritional needs of the fetus, the placenta will expand implantation, which results in the retention of placenta adhesive percreta (Zmora et al., 2019). The presence of retained placenta adeshiva and percreta causes physiological separation to fail, requiring further intervention to remove the placenta according to the conditions of placental implantation and the patient's condition (Favilli et al., 2021).

Based on the results of the study, the researchers assumed that at high risk, there was a lot of retained placenta. This is because the most ideal gestational age for women is 20-35 years. Women at the age of > 35 years reproductive functions such as the pelvic muscles have not functioned optimally so that it can cause complications during childbirth.

Parity Relationship with Retention Placenta

In this study, parity was not related to the incidence of retained placenta. The results of this study are not in line with the research conducted by Lathifatuzzahro at Aura Syifa Hospital Kediri Regency, with a p-value <0.05 (OR: 2.000 CI: 1.138-3.515), which means that there is a relationship between parity and the incidence of retained placenta, mothers who have a risk factor for age at delivery is two times more likely to experience retained placenta (Lathifatuzzahro, Titisari, & Wijanti, 2020). Theoretically, multiparas and grand multiparas have a high risk of bleeding and

postpartum hemorrhage (Zmora et al., 2019). This is because, in multiparas and grand multiparas, there is an invasive attachment of the placenta, which causes abnormal attachment to the uterine wall resulting in the retained placenta. Uterine conditions in multiparity or grand multipara women may not be effective for placental attachment due to various reasons such as endometrial deficiency or insufficient fetal nutrition. This causes the trophoblast to invade deeper so the placenta can implant into the myometrium or the outer serous layer (Greenbaum, Wainstock, Dukler, Leron, & Erez, 2017; Wei, Wei, & Wang, 2022).

This study is not in accordance with the theory because the study's results indicate that parity is not a risk factor for retained placenta. There was no relationship between parity and the incidence of the retained placenta because the number of risk factors was an age in the group of patients with retained and without retained placenta, namely 36 people (32.4%) in the case group and 33 people (29.7%) in the control group. The existence of an equivalent percentage of parity risk factors in the case and control groups affected the p-value, so it was insignificant.

Relationship between the history of cesarean section and retained placenta

There was no significant difference between cesarean sections in the case and control retained placenta groups (p-value = 0.253> 0.05) (OR = 0.42 95% CI 0.127-1.419). The study results align with Elizabeth's research in 2013 at MedStar Washington Hospital Centers with a p-value = 0.803> 0.05, indicating that the risk factor for a history of cesarean section is not a risk factor for retained placenta.

The results of this study are not in accordance with the theory that a history of cesarean section increases the risk of retained placenta with heavy bleeding due to abnormal attachment due to disturbed decidual formation. Placental retention in a history of the cesarean section can occur because the placenta implants deeper into the myometrial layer or reaches the outer serous layer when scar tissue from a cesarean section is considered ineffective as a place for placental implantation (Kudela, 2021). The percentage of risk factors for the history of cesarean section in the control group is more significant, affecting the p-value results.

The Relationship between Delivery Interval and Placenta Retention

The risk for mothers experiencing retained placenta with risk factors for

delivery intervals of less than 18 months is eight times greater than for mothers without risk factors for delivery intervals. It was giving birth at a distance that was too close, resulting in the incomplete recovery of the body due to previous pregnancies and deliveries. Research shows that the safe distance for delivery is 18 months or more (Greenbaum et al., 2017). The uterus condition has not returned entirely if the pregnancy occurs at a relatively short distance. As a result, implantation of the placenta will be disrupted due to endometrial deficiency. The placenta will try to find a place for ideal implantation. Trophoblastic activity causes the chorionic villi to penetrate the uterine wall, and implantation expands. The abnormal condition of placental implantation results in retained placenta (Perlman & Carusi, 2019)..

5. CONCLUSION

This study showed a significant difference between the spacing of labor in the case and control groups of retained placenta, so it can be concluded that spacing of labor is a risk factor for retained placenta. The risk for mothers experiencing retained placenta with risk factors for delivery intervals of less than 18 months is eight times greater than for mothers without risk factors for delivery intervals. There were no significant differences between age, parity, or history of cesarean section in the case group, and the control retained the placenta. These risk factors are not direct risk factors for retained placenta.

AUTHOR CONTRIBUTIONS

Substantial contributions to conception, data collection, and analysis: Honesty Pujiyani, Nindi Pramesthi Vardila Putri, Esthi Pujiati. Writing: Honesty Pujiyani, Nindi Pramesthi Vardila. Manuscript revisions: Honesty Pujiyani.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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