Risk Factors of Retained Placenta in Siriraj Hospital

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Objective: *To identify risk factors associated with retained placenta after vaginal delivery.*
Design: *Case-control study.*
Material and Method: *Medical records of 234 pregnant women whose gestational age ≥ 28 weeks were reviewed. Cases comprised of 78 women with retained placenta after vaginal delivery and controls comprised of 156 women with spontaneous placental delivery. Associated risk factors were examined. Chi-square test and logistic regression analysis were used for analysis of data.*
Results: *Cases were significantly older than controls (29.3 ± 6.4 vs. 27.0 ± 6.4 years respectively, p = 0.01). Cases were likely more significant than controls to have a previous history of uterine curettage (20.5% vs. 6.4% respectively, p = 0.001) and premature rupture of membranes (35.9% vs. 22.4% respectively, p = 0.029). Between the two groups, there were no differences in gestational age, parity, previous abortion, induction of labor, oxytocin, and pethidine usage. Logistic regression analysis showed that independent risk factors for retained placenta were age (adjusted OR 1.06, 95%CI 1.01-1.11), previous uterine curettage (adjusted OR 4.2, 95%CI 1.7-9.9), and PROM (adjusted OR 2.2, 95%CI 1.2-4.1).*
Conclusion: *Maternal age, previous uterine curettage, and PROM were independently associated with increased risk of retained placenta. The condition should be aware of among pregnant women with such risk factors.*

Keywords: *Retained placenta, Risk factors, Vaginal delivery*

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Retained placenta is potentially life-threatening and the most common cause of postpartum hemorrhage. It has been shown to be the second major indication for blood transfusion during third stage of labor after uterine atony[1]. Postpartum hemorrhage increases 3 folds among women with retained placenta compared with those with normal delivery of placenta[2].

The length of the third stage of labor was not clearly determined. Previous studies reported that mean duration of third stage of labor is 6 minutes and 3.3% of placental deliveries occurred in 30 minutes or longer[3,4]. If the third stage was longer than 30 minutes, the exceeding blood loss would be occurred. Then, if the placenta is not separated in 30 minutes after newborn delivery, called "Prolonged third stage of labor or retained placenta", it indicates that manual removal of placenta should be done immediately to prevent other complications[3,4].

The purpose of the present study was to identify risk factors associated with retained placenta in pregnant women who were delivered by vaginal route at Siriraj Hospital.

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Material and Method

A case-control study was conducted at Siriraj Hospital. Two hundred and thirty-four singleton pregnant women who delivered vaginally at 28 weeks of gestation or more during 2003-2006 were enrolled. Cases consisted of 78 pregnant women with retained placenta, defined as placenta which was not delivered in 30 minutes after the birth of an infant and manual removal of the placenta was performed. Another 156 pregnant women who delivered vaginally, but who did not have retained placenta, were randomly selected and served as controls (2:1, controls:cases). Those who

were delivered by cesarean section, multifetal pregnancy, and intrauterine fetal death were excluded from the present study.

Medical records of these women were reviewed. Data were extracted including maternal age, gestational age, parity, previous abortion, history of uterine curettage, history of retained placenta, type of analgesia in labor, onset of labor, placental weight, fetal weight, estimated blood loss, oxytocin usage, and length of labor in different stages.

Descriptive statistics were used to describe the patient's characteristics. Student-t test and Chi-square test were used in the comparison between the two groups as appropriate. Multiple logistic regression analysis was used to determine independent associated factors, adjusted for potential confounders. Adjusted odds ratio and 95% confidence interval were estimated. A p-value of < 0.05 was considered statistical significance.

The present study was reviewed and approved by the Ethics Committee, Faculty of Medicine Siriraj Hospital, Mahidol University.

Results

During the study period, a total of 234 singleton vaginal deliveries who met the criteria were enrolled. Cases consisted of 78 pregnant women with retained placenta and controls consisted of 156 pregnant women who did not have retained placenta.

Table 1 shows the comparison of various baseline characteristics between the two groups. Both groups were comparable in parity, gestational age at delivery, previous abortion, and previous retained placenta. There was statistical significance between the cases and controls with respect to mean maternal age (29 ± 6.4 and 27 ± 6.4 years in case and control respectively, $p = 0.01$) and history of previous curettage (20.5% and 6.4% in case and control respectively, $p = 0.001$).

Table 2 shows comparison between intrapartum characteristics between the two groups. No significant difference was observed regarding onset of labor, use of oxytocin, and use of pethidine. However, premature rupture of the membranes (PROM) was significantly increased among cases than controls (35.9% vs. 22.4% respectively, $p = 0.029$).

Table 3 shows the maternal and neonatal outcomes of the two groups. There were no differences in birth weight and sex of babies between the two groups. Patients with retained placenta suffered significantly higher mean blood loss than control groups (457 ± 246.1 ml vs. 193 ± 86.6 ml respectively, $p < 0.001$), and had significantly smaller mean placental weight than controls groups (555 ± 155.5 g vs. 632 ± 118.7 g respectively, $p < 0.001$).

Table 4 shows the results from logistic regression analysis. Independent risk factors associated with retained placenta included previous uterine curettage

Table 1. Baseline characteristics of pregnant women

Characteristics	Case (n = 78)	Control (n = 156)	p-value
Mean age $\pm$ SD (years)	29 ± 6.4	27 ± 6.4	0.010
Age group (years)			0.157
- < 20	6 (7.7%)	22 (14.1%)	
- 20-35	60 (76.9%)	120 (76.9%)	
- > 35	12 (15.4%)	14 (9.0%)	
Mean gestational age at delivery $\pm$ SD (weeks)	38 ± 2.1	38 ± 1.4	0.554
Parity			0.246
- 0	29 (37.2%)	76 (48.7%)	
- 1	31 (39.7%)	51 (32.7%)	
- $\geq$ 2	18 (23.1%)	29 (18.6%)	
Previous abortion			0.069
- No	53 (67.9%)	123 (78.8%)	
- Yes	25 (32.1%)	33 (21.2%)	
Previous curettage			0.001
- Yes	16 (20.5 %)	10 (6.4%)	
- No	62 (79.5%)	146 (93.6%)	
Previous retained placenta			0.333
- Yes	1 (1.3%)	0	
- No	77 (98.7%)	156 (100%)	

Table 2. Intrapartum characteristics of pregnant women

Characteristics	Case (n = 78)	Control (n = 156)	p-value
Onset of labor			0.052
- Spontaneous	59 (75.6%)	134 (85.9%)	
- Induction	19 (24.4%)	22 (14.1%)	
PROM			0.029
- Yes	28 (35.9%)	35 (22.4%)	
- No	50 (64.1%)	121 (77.6%)	
Use of oxytocin			0.618
- Yes	52 (66.7%)	109 (69.9%)	
- No	26 (33.3%)	47 (30.1%)	
Use of pethidine			0.314
- Yes	48 (61.5%)	81 (51.9%)	
- No	30 (38.5%)	75 (48.1%)	

Table 3. Maternal and neonatal outcomes

Outcomes	Case (n = 78)	Control (n = 156)	p-value
Mean estimated blood loss $\pm$ SD (ml)	457 $\pm$ 246.1	193 $\pm$ 86.6	<0.001
Mean placental weight $\pm$ SD (g)	555 $\pm$ 155.5	632 $\pm$ 118.7	<0.001
Mean birth weight $\pm$ SD (g)	3017 $\pm$ 529.0	3040 $\pm$ 323.5	0.685
PPH			<0.001
- No	53 (67.9%)	153 (98.1%)	
- Yes	25 (32.1%)	3 (1.9%)	
Sex of baby			0.744
- Female	37 (48.7%)	79 (51%)	
- Male	39 (51.3%)	76 (49%)	

Table 4. Independent risk factors associated with retained placenta from logistic regression analysis

Variables	Adjusted OR	95% CI
Age	1.06	1.01-1.11
Previous uterine curettage	4.2	1.7-9.9
Premature rupture of membranes	2.2	1.2-4.1

(adjusted OR 4.2, 95%CI 1.7-9.9), premature rupture of membranes (PROM) (adjusted OR 2.2, 95%CI 1.2-4.1), and maternal age (adjusted OR 1.06, 95%CI 1.01-1.11).

Discussion

Postpartum hemorrhage remains a major cause of maternal mortality and morbidity worldwide. Retained placenta is the second leading cause of postpartum hemorrhage[2,5]. The overall risk of retained placenta in the general population has been estimated to be about 2.1%[5]. The risk of repetition increased 2 to 4 times than in patients without any such previous history[5]. A properly conducted delivery can reduce the incidence of retained placenta and if retention occurs timely, appropriate management can save a life[6]. Anticipation of the condition by understanding the risk factors together with appropriate management in a timely manner could prevent serious consequences that lead to maternal morbidity and mortality.

Previous studies have reported that risk factors for retained placenta included age > 35 years, parity > 5, previous retained placenta, previous dilatation & curettage, preterm delivery, induced labor and previous cesarean delivery[7,8]. In the present study, all factors suspected to be associated with retained placenta were investigated except previous cesarean delivery and their results showed that retained placenta was significantly associated with maternal age, previous uterine curettage, and premature rupture of membranes. These factors were still significantly

related to its occurrence, after adjusting for the effects of all the other variables were selected. In addition, it was also associated with small placental weight, and large amount of blood loss.

Injury to the uterus such as previous uterine curettage increased chances of having retained placenta by 4.2 fold in a subsequent birth. It is believed that infiltration of uterine muscles at the site of previous injury by chorionic villi of the implanted ovum may have accounted for this because of deficient or damaged endometrium at these sites[9]. It is accepted that this may account for a number of placenta accreta often encountered in cases with retained placenta.

Interestingly, pregnant women who had premature rupture of membranes have been demonstrated to increase the risk of retained placenta by 2.2 fold. No previous study has shown such association before. The reason may be from inflammation of the placental sites in cases of intrauterine infection, which could lead to placental abnormalities.

In some studies, preterm labor has been reported to be a significant risk factor for retained placenta[4,7,8,10]. However, no association was found in the present study. Moreover, induction of labor, pethidine, and oxytocin usage has been reported to increase the incidence of retained placenta in previous studies[4,7,8,10,11], except in the present study.

The association of increased blood loss with retained placenta is more likely a consequence, rather than cause of retained placenta. Smaller placental size was significantly associated with retained placenta. This is an interesting association and it may be that in smaller placenta, more chorionic tissues are replaced by fibrous or infarcted tissues, and this results in non-physiological attachment to deciduas basalis, or myometrial surface. Perhaps an ultrasound determination of placental size antenatally may allow a better management of labor in these patients.

The limitation of the present study included minor errors that are inevitable due to the nature of retrospective data. Some information might not be accurate and some data might be missing, especially the history of uterine curettage and retained placenta. A further prospective study should be conducted to verify these results and identify other risk factors associated with retained placenta.

Pregnant women with such risk factors should be counseled regarding the increased risk of a retained placenta. In addition, the presence of these risk factors antenatally should alert obstetricians to be aware of the condition and its major consequence of postpartum hemorrhage and that they should be prepared to avoid serious morbidity and mortality.

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ปัจจัยเสี่ยงที่มีผลต่อการเกิดภาวะรกค้างหลังคลอดในโรงพยาบาลศิริราช

พัชรี พันพาไพร, ดิฐกานต์ บริบูรณ์หิรัญสาร

วัตถุประสงค์: *เพื่อศึกษาถึงปัจจัยเสี่ยงที่สัมพันธ์กับการเกิดภาวะรกค้างในสตรีที่มาคลอดที่โรงพยาบาลศิริราช*

ชนิดของการวิจัย: *การวิจัยแบบ Case-control study*

วัสดุและวิธีการ: *ทำการทบทวนเวชระเบียนของสตรีที่ตั้งครรภ์และมาคลอดบุตรที่โรงพยาบาลศิริราช โดยมีอายุครรภ์มากกว่าหรือเท่ากับ 28 สัปดาห์จำนวน 234 คน โดยแบ่งเป็น 2 กลุ่ม ได้แก่ สตรีตั้งครรภ์ที่มาคลอดบุตรและมีภาวะรกค้างหลังคลอดจำนวน 78 คน และสตรีตั้งครรภ์ที่มาคลอดบุตรและคลอดรกปกติ จำนวน 156 คน (กลุ่มศึกษาและกลุ่มควบคุม) ทำการรวบรวมข้อมูลต่างๆเกี่ยวกับ ข้อมูลทั่วไป ข้อมูลการคลอด ผลการคลอด และบันทึกข้อมูลในแบบบันทึกข้อมูลที่จัดทำขึ้น จากนั้นจึงนำข้อมูลที่ได้ไปวิเคราะห์โดยใช้การทดสอบไคสแควร์ และการวิเคราะห์ถดถอยลอจิสติกเพื่อศึกษาถึงปัจจัยเสี่ยงที่ทำให้เกิดภาวะรกค้างในสตรีที่คลอดบุตรทางช่องคลอดและอัตราเสี่ยงที่เกิดขึ้นในกรณีที่มีปัจจัยเสี่ยงเหล่านั้น*

ผลการศึกษา: *พบว่ามารดาในกลุ่มศึกษามีอายุเฉลี่ยมากกว่ามารดาในกลุ่มควบคุมอย่างมีนัยสำคัญ (29.3 $\pm$ 6.4 และ 27.0 $\pm$ 6.4 ปี, ค่าพี = 0.01) มารดาที่มีประวัติเคยขูดมดลูกมาก่อนมีความเสี่ยงต่อการเกิดภาวะรกค้างมากกว่าไม่มีประวัติการขูดมดลูก (20.5% และ 6.4%, ค่าพี = 0.001) และถ้าพิจารณากรณีที่มีภาวะน้ำเดินก่อนการเจ็บครรภ์พบว่ากลุ่มศึกษามีความเสี่ยงต่อการเกิดภาวะรกค้างมากกว่ากลุ่มควบคุมอย่างมีนัยสำคัญ (35.9% และ 22.4%, ค่าพี = 0.029) แต่ไม่มีความแตกต่างกันทางสถิติของสองกลุ่มในแง่ของอายุครรภ์ จำนวนบุตร ประวัติ เคยแท้งมาก่อน การเร่งคลอด การใช้ยาออกซิโตซิน และการใช้ยาระงับปวดเพ็ททิดีนในระหว่างการคลอดจากการวิเคราะห์ถดถอยลอจิสติก พบว่าอัตราเสี่ยงของการเกิดรกค้างขึ้นกับ อายุของมารดา (1.06 เท่า) ประวัติการเคยขูดมดลูก มาก่อน (4.2 เท่า) และการที่มีภาวะน้ำเดินก่อนการเจ็บครรภ์ (2.2 เท่า)*

สรุป: *ปัจจัยเสี่ยงที่ทำให้เกิดภาวะรกค้างหลังการคลอดบุตร ได้แก่ อายุของมารดา การที่มีประวัติเคยขูดมดลูกมาก่อนและภาวะน้ำเดินก่อนการเจ็บครรภ์ ดังนั้นควรมีการเฝ้าระวังการเกิดภาวะรกค้างในมารดาที่มีปัจจัยเสี่ยงดังกล่าวข้างต้น*