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Placenta previa : A 3 years' experience at King Chulalongkorn Memorial Hospital

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- Background** : *Placenta previa is one leading obstetric complication. According to the search in Thai Index Medicus and Medline, there is no clear data regarding placenta previa in Thailand.*
- Objective** : *To explore maternal and neonatal outcomes of pregnancies complicated with placenta previa.*
- Setting** : *King Chulalongkorn Memorial Hospital*
- Research design** : *A descriptive study, retrospective collection of the data*
- Patients/material** : *Pregnant women diagnosed as placenta previa*
- Methods** : *The medical records of all pregnant patients diagnosed with placenta previa who delivered at King Chulalongkorn Memorial Hospital between 1996 and 1998 were reviewed. The diagnosis of placenta previa was made on the basis of transabdominal ultrasound examination. Maternal outcomes included episodes of antepartum hemorrhage, the number of blood transfusion (in units), route of delivery, tocolytics administration, maternal complications which were aimed at anemia, hypovolemic shock, postpartum hemorrhage, placenta adherens (placenta accreta, placenta increta or placenta percreta), puerperal infection, and peripartum hysterectomy. Neonatal outcomes included neonatal morbidity, neonatal mortality, preterm birth (defined by Ballard score of less than 37 weeks' gestation) and birthweight.*

Results : *The incidence of placenta previa was 7.38 per 1000 deliveries. (281 cases among 38,074 deliveries). One hundred – fifty four patients (55%) had at least one antepartum vaginal bleeding, 64.9% of which had complications associated with placenta previa. The total numbers of newborn were 280 including one set of twins. Mean birthweight was $2,902 \pm 543.5$ grams (range 1,050 – 4,400). Forty-six neonates (16.4%) had birthweight less than 2,500 grams. Forty-two neonates (15%) were preterm. Forty-one neonates (14.6%) had neonatal complications associated with placenta previa but there was no neonatal death.*

Conclusion : *Maternal and neonatal complications in pregnant women with complications of placenta previa in our study population occurred less often than those reported in previous studies, however the complications observed were serious. Clinicians should be aware of these complications to avoid preventable complications such as postpartum hemorrhage. Long term effects of placenta previa on mothers and children are yet to be explored.*

Key words : *Placenta previa, Maternal outcomes, Neonatal outcomes.*

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ข้อมูลพื้นฐาน : รกเกาะต่ำเป็นภาวะแทรกซ้อนทางสูติศาสตร์ที่สำคัญอย่างหนึ่ง จากการสืบค้นใน Thai index medicus และ Medline พบว่าในประเทศไทยยังไม่มีข้อมูลพื้นฐานทางด้านมารดาและทารกในสตรีตั้งครรภ์ที่มีรกเกาะต่ำเป็นภาวะแทรกซ้อน

วัตถุประสงค์ : เพื่อศึกษาผลของมารดาและทารกในการตั้งครรภ์ที่มีรกเกาะต่ำเป็นภาวะแทรกซ้อน

สถานที่ : โรงพยาบาลจุฬาลงกรณ์

วิธีการ : ทบทวนเพิ่มข้อมูลของสตรีตั้งครรภ์ที่ได้รับการวินิจฉัยเป็นรกเกาะต่ำซึ่งมาคลอดที่โรงพยาบาลจุฬาลงกรณ์ ระหว่าง พ.ศ. 2539 - 2541 การวินิจฉัยรกเกาะต่ำได้จากการตรวจคลื่นเสียงความถี่สูงทางหน้าท้อง โดยผลลัพธ์ของมารดาได้แก่จำนวนครั้งของการมีเลือดออกก่อนคลอด, จำนวนเลือดที่ได้รับเป็นหน่วย, วิธีการคลอด, การใช้ยาระงับการหดตัวของมดลูก, ภาวะแทรกซ้อนของมารดาได้แก่ อากาเรซิด, ซ็อค, ตกเลือดหลังคลอด, รกติด, การติดเชื้อหลังคลอด, การตัดมดลูก และศึกษาผลลัพธ์ของทารกจากอัตราภาวะเจ็บป่วยและการตายของทารก, การคลอดก่อนกำหนดโดยดูจากคะแนน Ballard, และน้ำหนักแรกคลอด

ผลการศึกษา : อุบัติการณ์ของรกเกาะต่ำในโรงพยาบาลจุฬาลงกรณ์เท่ากับ 7.38 ต่อการคลอด 1000 ราย ผู้ป่วยร้อยละ 55 มีเลือดออกก่อนการคลอดอย่างน้อย 1 ครั้ง ในจำนวนนี้ ร้อยละ 64.9 มีเลือดออกครั้งแรกก่อนอายุครรภ์ 37 สัปดาห์ มารดามีภาวะแทรกซ้อนที่เกี่ยวข้องกับรกเกาะต่ำร้อยละ 6.8 จำนวนทารกที่คลอด 280 ราย น้ำหนักแรกคลอดเฉลี่ย 2902 ± 543.52 กรัม (1050 - 4400 กรัม) ทารกร้อยละ 16.4 มีน้ำหนักน้อยกว่า 2500 กรัม โดยทารกร้อยละ 15 เป็นทารกคลอดก่อนกำหนด มีภาวะแทรกซ้อนในทารกร้อยละ 14.6 และไม่พบทารกเสียชีวิต

สรุป : ภาวะแทรกซ้อนที่เกิดแก่มารดาและทารกในภาวะรกเกาะต่ำแม้จะมีอัตราไม่สูงนัก แต่ก็เป็นภาวะแทรกซ้อนที่รุนแรง แพทย์ที่ให้การดูแลรักษาผู้ป่วยที่มีภาวะรกเกาะต่ำควรตระหนักถึงภาวะแทรกซ้อนที่อาจเกิดขึ้นได้อยู่เสมอ โดยการเตรียมการที่ดีเพื่อหลีกเลี่ยงภาวะแทรกซ้อนบางอย่างที่อาจป้องกันได้ เช่น การตกเลือดหลังคลอด ควรมีการศึกษาต่อไปถึงผลของรกเกาะต่ำต่อมารดาและทารกในระยะยาว

Placenta previa is one of the leading causes of third trimester bleeding. It has long been known to be associated with advanced maternal age, multiparity, prior cesarean section, abortion and curettage. Placenta previa can result in serious maternal and fetal morbidity or mortality. According to a search in Thai Index Medicus and Medline, there is no clear data regarding placenta previa in Thailand. Baseline data of any disease is somewhat beneficial in management policy of the disease. This study was conducted to explore the maternal and neonatal outcomes of pregnancies complicated with placenta previa in Department of Obstetrics & Gynecology, Faculty of Medicine, Chulalongkorn University.

Materials and methods

The medical records of all pregnant patients diagnosed as having placenta previa who delivered at King Chulalongkorn Memorial Hospital between 1996 and 1998 were reviewed. The diagnosis of placenta previa was made on the basis of transabdominal ultrasound examination. A low lying placenta was defined as a placenta that was located at the lower segment with a distance of less than 5 centimeters from its edge to the internal os.⁽¹⁾ Placenta previa partialis was a placenta that partially covered the internal os and placenta previa totalis was the placenta that totally covered the internal os. The diagnosis was confirmed during delivery.

Maternal outcomes included episodes of antepartum hemorrhage, the number of blood transfusions (in units), route of delivery, tocolytics administration, maternal complications which were aimed at anemia, hypovolemic shock, postpartum hemorrhage, placenta adherens (placenta accreta, placenta increta or placenta percreta, all of which were

diagnosed clinically or pathologically), puerperal infection, and peripartum hysterectomy.

Neonatal outcomes included neonatal morbidity, neonatal mortality, preterm birth (defined as Ballard score less than 37 weeks' gestation) and birthweight.

Neonatal morbidity was evaluated in terms of anemia, hypovolemic shock, respiratory distress syndrome, hyperbilirubinemia, a five-minute APGAR score of less than 7, intraventricular hemorrhage, length of stay in neonatal intensive care unit and length of ventilator usage.

Descriptive statistics were applied to all data.

Results

Among 38,074 women who delivered at King Chulalongkorn Memorial Hospital during the 3-year observed period, 281 women were diagnosed as having placenta previa. This gave the incidence of 7.38 : 1000 deliveries. One case was excluded because the newborn record was missing. One patient delivered male twins and one patient had a dead fetus, giving the total number of 280 newborn for analysis.

Maternal outcomes

The mean maternal age was 31.1 ± 4.8 years (range 16-42 years). Mean gravidity and parity was 2.1 and 0.7 respectively. Gestational age at delivery ranged from 25 to 42 weeks (Mean 37.2 ± 2.3 weeks).

The types of placenta previa at delivery are demonstrated in table 1.

Two hundred and seventy two patients (97.1%) delivered by Cesarean section and 8 patients (2.9%) had vaginal delivery.

One hundred and fifty four out of 280 patients (55%) had at least one episode of antepartum vaginal bleeding. Gestational age at first bleeding ranged from

Table 1. Types of placenta previa.

Types of placenta previa	Numbers of patients	Percent
Low lying	111	39.6
Partialis	25	8.9
Totalis	144	51.4

Table 2. Gestational age at first episode of bleeding.

Range of GA at first bleeding	Number	Percent
Non-bleeding	126	45.0 %
25 - 27	5	1.8 %
28 - 32	44	15.7 %
33 - 36	51	18.2 %
>37	54	19.3 %
Total	280	100.0 %

25 to 41 weeks (Mean 34.4 ± 3.6 weeks). One-hundred out of 154 patients (64.9%) had the first episode of vaginal bleeding before 37 weeks' gestation. Ranges

of gestational age at first episode of bleeding were shown in table 2. Types of placenta and bleeding were shown in table 3.

Mean maternal hematocrit of total subjects at first admission was 34.7 ± 4.2 volume percent (Range 19 – 46 volume percent). Twenty patients (7.1%) had hematocrit less than 30 volume percent. Mean hematocrit was 34.2 ± 4.1 and 35.2 ± 4.1 volume percent in bleeding group and non-bleeding group, respectively.

Among 100 patients who had the first episode of bleeding before 37 weeks, 84 patients were conservatively managed and 56 patients received tocolytics. Duration of tocolytics administration varied from 1 to 76 days. The types of tocolytics are shown in table 4.

Among the 84 patients who were conservatively managed, 23 patients (27.3%) had recurrent episodes of bleeding, which are shown in table 5.

Table 3. Types of placenta previa and bleeding.

Types of placenta previa	Bleeding (Number)	% Bleeding	Non-bleeding (Number)	% Non-bleeding	Total (number)
Low - lying	51	45.9	60	54.1	111
Partialis	13	52.0	12	48.0	25
Totalis	90	62.5	54	37.5	144
Total	154	55.0	126	45.0	280

Table 4. Type of tocolytics.

Type of tocolytics	Number of patients
Salbutamol	46
Terbutaline	8
Magnesium sulfata	1
Salbutamol plus Terbutaline	1

Table 5. Recurrent episodes of bleeding.

Number of recurrent episodes of bleeding	Number of patients
1	80
2	10
≥ 3	5

Forty-four patients received blood transfusion.

The amount of transfused blood ranged from 1 to 9 units (Mean 2.5 ± 1.9 units).

Nineteen out of a total of 280 patients (6.9%) had other complications associated with placenta previa as shown in table 6.

The indications of hysterectomy were placenta accreta in 3 cases, and immediate postpartum hemorrhage unresponsive to medical treatment in 3 cases.

There was one maternal death due to amniotic fluid embolism occurring during cesarean section, the diagnosis was confirmed by postmortem pathological study.

Table 6. Maternal complications (one patient might have more than one complication)

Complications	Number of patients
Postpartum hemorrhage	11
Cesarean hysterectomy	5
Puerperal infection	4
Placenta accreta	4
Postpartum hysterectomy	1
Hypovolemic shock	1

Table 7. Neonatal complications. (One neonate might have more than one complication)

Neonatal complications	Number of newborn	Percent of total newborn
Hypovolemic shock	22	7.9
Birth asphyxia	12	4.3
Hyperbilirubinemia	10	3.6
IRDS	8	2.9
Pneumonia	3	1.1
Anemia	2	0.7

Neonatal outcomes

The total numbers of newborn was 280 including one set of twins. There were 162 males (57.9%) and 118 females (42.1%). Mean birth weight was $2,902 \pm 543.5$ grams (range 1,500 – 4,400 grams). Forty-six neonates (16.4%) had birth weight less than 2,500 grams. There were 42 preterm neonates (15%) according to the Ballard score. The mean Apgar score at 5 minutes was 9.7 ± 0.9 . There were 6 newborn with an Apgar score of less than 7 at 5 minutes.

Sixty neonates (21.43%) had various neonatal complications. Forty-one neonates had serious complications as detailed in table 7.

Thirty-four neonates (12.1%) were admitted to the neonatal intensive care unit (NICU), of which 23 (67.6%) were preterm babies. The length of stay in the NICU ranged from 1 to 45 days (Mean 16.3 ± 11.1 days). There were no neonatal deaths in this study.

Discussion

During the 3-year observed period, 281 out of a total of 38,074 deliveries were diagnosed as placenta previa giving an incidence of 7.38 per 1000 deliveries. According to a search in Thai Index Medicus,

there was no data regarding the incidence of placenta previa in Thailand. The incidence of placenta previa in this study was higher compared to those reported in western countries (incidence = 3.0 - 6.0 per 1000 deliveries).⁽²⁻⁴⁾ The difference in rates was probably due to ethnicity, a difference in definition and diagnosis or referral from satellite hospital.

Placenta previa is generally known to be associated with increased maternal age; women aged over 30 years old were three times more likely to have placenta previa than were women of less than 20 years old.⁽³⁾ The patients in our study had a mean maternal age of 31.09 years, which was in accord with previous studies.

Fifty-five percent of the patients had at least one episode of bleeding in second half of pregnancy. Bleeding occurred mostly between 28 and 36 weeks' gestation (96 patients, 62.3% of bleeding patients). Patients with placenta previa totalis had the highest rate of bleeding. Forty-five percent of the patients had no bleeding across gestation. Thus, clinicians should be aware of placenta previa in patients with high risk obstetric history for placenta previa even if there is no bleeding. Ultrasound scan may be done to document the placental site. Further study should be done to identify clinical and sonographic factors predicting antepartum hemorrhage.

We found maternal complications associated with placenta previa in 6.8% of the patients. This figure seems not very striking, but half of the complications was postpartum hemorrhage, and one-third of the complications was peripartum hysterectomy. These two conditions may cause serious morbidity and sequelae to the patients. Therefore, in the condition of placenta previa, clinicians should always be aware

of these complications.

One case of maternal death encountered in this study resulted from amniotic fluid embolism during cesarean section, which might be an indirect result of placenta previa.

The mean birthweight in this study was 2,902 grams, which was consistent with that observed in the study of Crane et al. (2,895 grams).⁽⁵⁾ There is a preponderance of male newborns at birth (male:female ratio = 1.4:1), which was in agreement with that observed in a previous study by Demisse et al. (1.19:1).⁽⁶⁾ This is of interest but without a clear explanation.

The incidence of preterm birth was 15%, which was higher than a 9% incidence in our population (Departmental statistics) but was much lower than that reported by Crane et al. (46.7%).⁽⁵⁾ This might be the result of the difference in the definition of preterm birth, which was defined by Ballard score in our study in order to avoid the incorrect diagnosis caused by inaccurate menstrual date.

The incidence of the very low birth weight (≤ 1000 grams) newborns was low (2.14 %). This was probably because of the low proportion of patients with bleeding at early gestational age, which might compel preterm birth at extreme age and a high proportion of non-bleeding patients in our series.

We found neonatal complications in 14.6 % of newborn. Difference in rates of neonatal complications is noted between studies but they were incomparable because of a difference in inclusion criteria. The two most common complications found in newborns were hypovolemic shock and birth asphyxia (79 % and 4.3% respectively), both of which were possibly the results of massive hemorrhage at delivery. There was no

neonatal death in our study, which may be due to a low incidence of extremely premature babies.

As noted in our study, maternal and neonatal complications in pregnant women complicated by placenta previa were serious. Clinicians should be aware of these complications to avoid preventable complications, such as postpartum hemorrhage.

The results of this study were immediate maternal and neonatal outcomes. Long term maternal and childhood effects of placenta previa are yet to be explored.

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