

# Placenta previa Placental abruption

# Antepartum Hemorrhage

- ▶ Third-trimester bleeding
- Obstetric: Placental separation
- ✓ Placental Previa
- ✓ Placenta Abruptio
- ✓ Uterine Rupture
- ✓ vasa previa : Fetal Vessel Rupture
- No obstetric: Acute vaginitis/cervicitis, Cervical polyp, Cervical cancer, Trauma

# Placenta previa

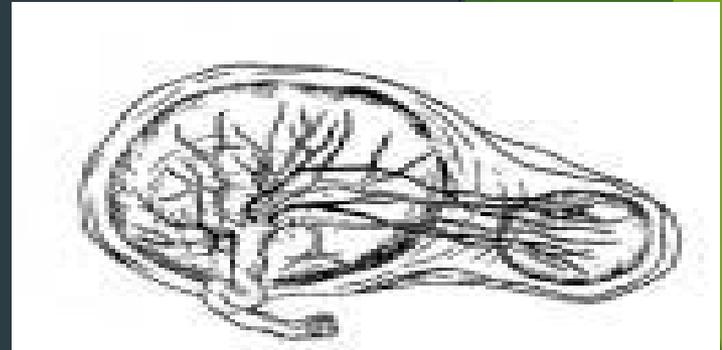
# Definition

- ▶ **Placenta previa:**

The inferior edge of placenta load at the lower uterine segment, or even reach the internal cervical os after 28 weeks gestation.

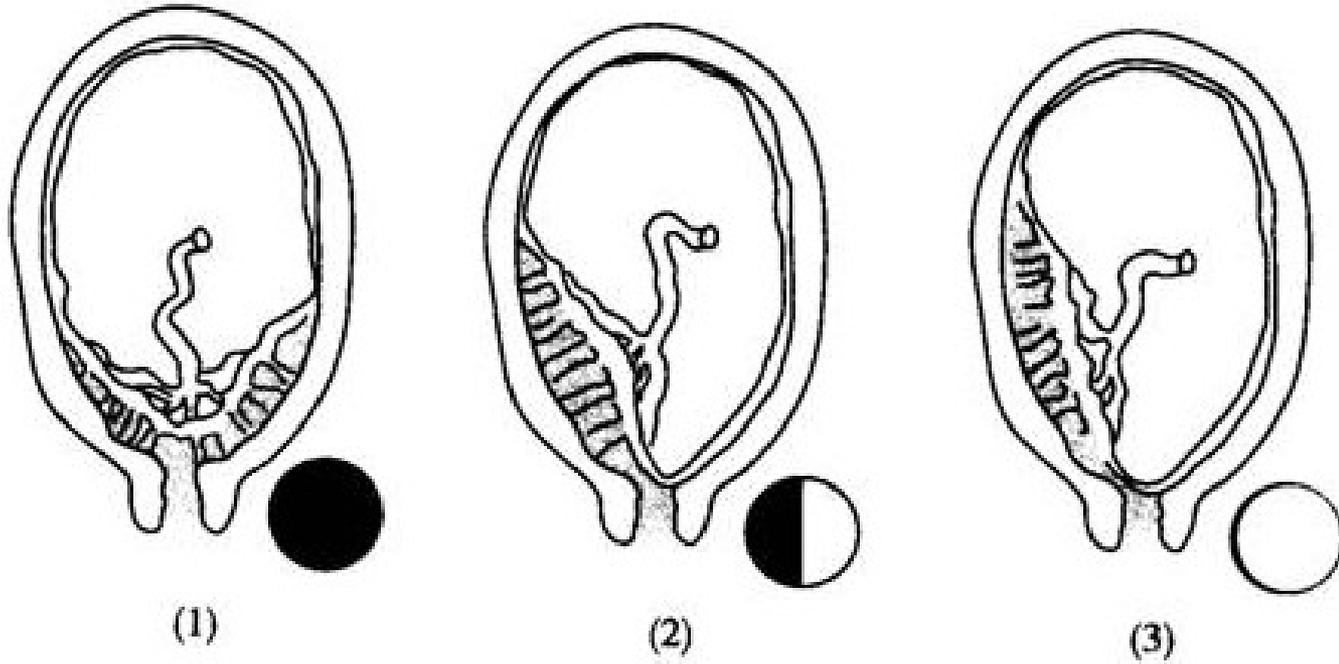
# Etiology

- ▶ High-risk group
  - Age of gravida > 35
  - Multipara
  - Pregnancy women used to tobacco or dope
  - Multiple pregnancy
  - Chronic HTN
  - Damage of endometria
  - Anomaly of placenta
  - Cicatricial uterus due to cesarean section , e.g.



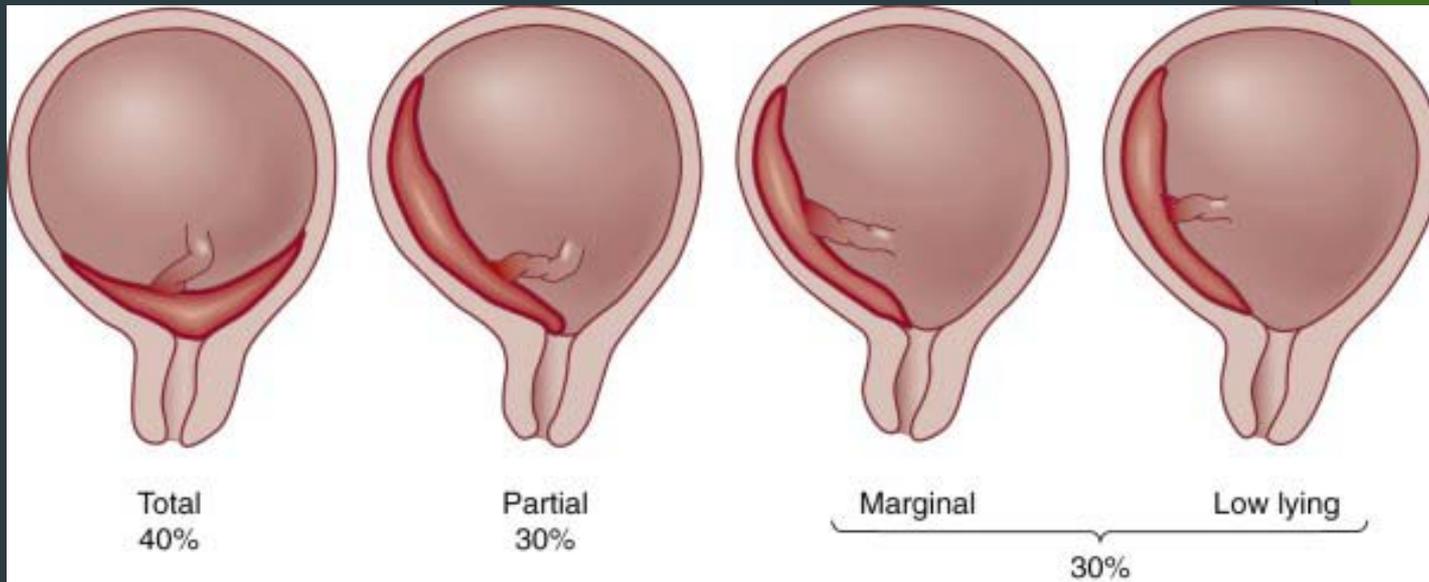
# Classification

- Classified according to the relationship between the edge of placenta and the internal cervical os :
  - complete ( central ) placenta previa
  - partial placenta previa
  - marginal placenta previa
- Time to determine classification :  
the last examination before managed



- (1) complete placenta previa
- (2) partial placenta previa
- (3) marginal placenta previa

# Classification



Types of placenta previa.

# Clinical Features

- Painless, recurrent vaginal bleeding in the second or third trimester of pregnancy
- Anemia, shock or even death corresponded to the volume of vaginal bleeding
- The uterus is usually soft and relaxed
- Anomaly of fetal condition

# Auxiliary examination

- B-ultrasound examination
- MRI



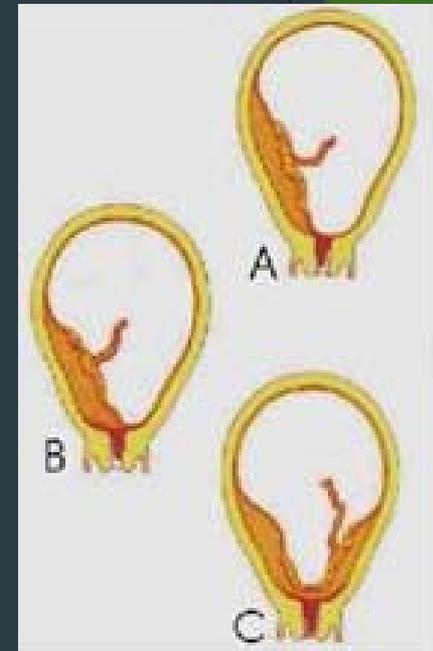
图6-1-1 前置胎盘声像分类示意图



marginal placenta previa

# Differential diagnosis

- ▶ Placental abruption
- ▶ Disruption of vasa previa
- ▶ Cervical polyp or erosion
- ▶ Cancer of cervix



# Complication of mother and fetus



- Bleeding at or post partum
- Implantation of placenta
- Anemia and puerperal infection
- Premature delivery



# Management

The management goals in women with asymptomatic placenta previa are to:

- Determine whether the previa resolves with increasing gestational age
- Reduce the risk of bleeding
- Reduce the risk of preterm birth

For pregnancies >16 weeks,

- If the placental edge is  $\geq 2$  cm from the internal os, the placental location is reported as normal and follow-up ultrasound for placental location is not indicated.
- If the placental edge is  $< 2$  cm from, but not covering, the internal os, the placenta is labeled as low-lying. If the placental edge covers the internal os, the placenta is labeled a previa. For either diagnosis, follow-up ultrasonography for placental location is performed at 32 weeks of gestation.

- **At the 32-week follow-up ultrasound,**

- If the placental edge is  $\geq 2$  cm from the internal os, the placental location is reported as normal and follow-up ultrasound for placental location is not indicated.
- If the placental edge is still  $< 2$  cm from the internal os (low-lying) or covering the cervical os (previa), follow-up transvaginal ultrasound is performed at 36 weeks.
- Transvaginal ultrasonography with color and pulsed Doppler is recommended to rule out vasa previa, as resolution of a low-lying placenta can be associated with vasa previa

## *advise women with placenta previa to avoid*

- vaginal intercourse and exercise after 20 weeks of gestation (earlier if they have experienced vaginal bleeding),
- overall physical activity in the third trimester. The rationale is that these activities cause uterine contractions, which, in turn, provoke bleeding.
- vaginal intercourse might cause direct trauma to the previa, resulting in bleeding. **There is no evidence to either support or refute these recommendations.** However, it is clear from anecdotal experience that palpation of placenta previa through a partially dilated cervix can result in severe hemorrhage.

**Women should also be advised to seek immediate medical attention if contractions or vaginal bleeding occur, given the potential for severe bleeding and need for emergency cesarean delivery.**

## It is unclear whether asymptomatic women benefit from hospitalization prior to delivery.

Findings from observational studies suggest that women with placenta previa who have not experienced any antepartum bleeding are at low risk of needing an emergency cesarean delivery. These women can generally be managed on an outpatient basis until vaginal bleeding occurs or until admission for scheduled cesarean birth.

However, patient-specific risk factors (eg, short cervical length, ability to get to the hospital promptly in an emergency, home support) need to be taken into account.

Delivery of pregnancies with uncomplicated placenta previa should be accomplished at 36<sup>0/7</sup>ths to 37<sup>6/7</sup>ths weeks, without documentation of fetal lung maturity by amniocentesis

. The rationale behind this recommendation is that the risks associated with continuing the pregnancy (severe bleeding, emergency unscheduled delivery) are greater than the risks associated with prematurity at this gestational age

## *ACUTE CARE OF BLEEDING PLACENTA PREVIA —*

- should be admitted to the Labor and Delivery Unit for maternal and fetal monitoring.

The major goals in managing these pregnancies are:

- Achieve and/or maintain maternal hemodynamic stability
- Determine if cesarean delivery is indicated

## *Assessment*

### Maternal :

- cardiac monitor and automated blood pressure cuff to monitor maternal heart rate and blood pressure
- . Urine output is evaluated hourly with a Foley catheter attached to an urometer.

### Fetal :

- The fetal heart rate should be monitored. The presence of fetal hypoxia or anemia may result in category 2 or 3 fetal heart rate tracings

## *Laboratory* —

- At a minimum, blood should be sent for baseline complete blood count and type and antibody screen. The blood bank should be notified that a patient with placenta previa has been admitted.
- When bleeding is heavy or increasing, delivery is likely, or difficulty in procuring compatible blood is anticipated, we advise cross-matching two to four units of packed red blood cells.

- Massive blood loss or suspicion of coexistent abruption should prompt evaluation for coagulopathy: fibrinogen level, activated partial thromboplastin time, prothrombin time.
- ✓ A crude clotting test can be performed at the bedside by placing 5 mL of the patient's blood in a tube with no anticoagulant for 10 minutes . Failure to clot within this time or dissolution of an initial clot implies impairment of coagulation, and is suggestive of a low fibrinogen level. Prolonged oozing from needle puncture sites also suggests coagulopathy
- A Kleihauer-Betke test on a specimen of vaginal blood can diagnose fetal bleeding from disruption of fetal vessels in placental villi, vasa previa, or a velamentous cord; however, the fetal bleeding typically results in fetal demise or a nonreassuring fetal heart rate tracing necessitating emergency delivery

## Intravenous access and crystalloid —

One or two large bore intravenous lines are inserted and crystalloid (Ringers lactate or normal saline) is infused to achieve/maintain hemodynamic stability and adequate urine output (at least 30 mL/hour)

## *Transfusion* —

. A reasonable approach is to begin red cell transfusions in hypotensive patients whose blood pressure fails to improve after two liters of crystalloid have been rapidly infused.

## Tocolysis

— to reduce or eliminate uterine contractions, which may promote placental separation and bleeding.

this therapy may prolong pregnancy and result in an increase in birthweight, without causing adverse effects on the mother or fetus

If tocolytics are used, indomethacin has an inhibitory effect on platelet function and thus should be **avoided** in women with placenta previa due to the risk of increased blood loss.

## Magnesium sulfate —

for neuroprotection in patients with preterm (24 to 32 weeks) placenta previa in whom a decision has been made to deliver within 24 hours, but not emergently.

*Antenatal corticosteroids* —

should be administered to symptomatic women between 23 and 34 weeks of gestation to enhance fetal pulmonary maturity.

do not administer steroids to asymptomatic women or to those whose first bleed is after 34 weeks of gestation

## Indications for delivery —

Cesarean delivery is indicated if any of the following occur:

- A nonreassuring fetal heart rate tracing unresponsive to resuscitative measures.
- Life-threatening refractory maternal hemorrhage
- Significant vaginal bleeding after 34 weeks of gestation

## *Management of placenta previa after acute bleeding*

After the patient has been stabilized, we take the following approach with the goal of prolonging the pregnancy.

### *Inpatient versus outpatient management —*

Symptomatic women often remain hospitalized from their initial or second significant bleeding episode until delivery.

discharge selected women with placenta previa whose bleeding has stopped for a minimum of 48 hours and who have no other pregnancy complications, although the safety and efficacy of this approach has not been established

*candidates for outpatient care should:*

- Be able to return to the hospital within 20 minutes
- Be reliable and able to maintain bed rest at home.
- Understand the risks entailed by outpatient management.
- Have an adult companion available 24 hours/day who can immediately transport the woman to the hospital if there is light bleeding or call an ambulance for severe bleeding.



### *Correction of anemia* —

Iron supplementation may be needed for optimal correction of anemia.

*Stool softeners* and a high-fiber diet help to minimize constipation and avoid excess straining that might precipitate bleeding

### *Anti-D immune globulin*

. Readministration is not necessary if delivery or rebleeding occurs within three weeks of administration, unless a large fetomaternal hemorrhage is detected

## *Fetal assessment*

—  
There is no proven value of nonstress testing or performing a biophysical profile in pregnancies with asymptomatic placenta and no evidence of uteroplacental insufficiency (eg, preeclampsia, fetal growth restriction, oligohydramnios) or other indications for antepartum fetal assessment.

active vaginal bleeding is an indication for fetal monitoring

## *Cerclage* —

Cervical cerclage has been used in an attempt to minimize early development of the lower uterine segment, which is thought to promote placental separation. However, the efficacy of this approach is unproven

presence of a stable placenta previa is not a contraindication to cerclage placement when indicated for cervical insufficiency.

## *Preterm premature rupture of membranes*

— Antepartum decidual hemorrhage is a major risk factor for preterm premature rupture of membranes (PPROM). PPRM can occur despite the presence of a complete placenta previa. In these cases, each condition is managed independently

## *Delivery*

Timing — depends on the patient's status.

Delivery of patients with stable (no bleeding or minimal bleeding) placenta previa should be accomplished at *36 to 37 weeks*, without documentation of fetal lung maturity by amniocentesis

Delivery is indicated emergently if any of the following occur

vaginal bleeding with a nonreassuring fetal heart rate tracing  
unresponsive to resuscitative measures

- Life-threatening refractory maternal hemorrhage
- Labor

In women with moderate vaginal bleeding >34 weeks or progressively increasing frequency or volume of bleeding after cessation of an initial bleed, we deliver the patient if she has previously received a course of betamethasone anytime during the pregnancy.

If she is clinically stable and has not received a course of betamethasone because her first bleed occurred after 34 weeks, we perform an amniocentesis and deliver the fetus if pulmonary indices are mature. Management of women with immature indices in this setting is controversial, and is ultimately a decision based on clinical judgment. We would give a course of betamethasone and then perform cesarean delivery in 48 hours, based on limited data that even late in gestation neonatal respiratory problems may be reduced with steroid use

## Previa —

A cesarean delivery in complete placenta previa and a viable fetus.

Vaginal delivery may be considered in rare circumstances, such as in the presence of a fetal demise or a previable fetus, as long as the mother remains hemodynamically stable.

When the placenta reaches the internal os but does not cross it, it has been hypothesized that vaginal delivery can occasionally be performed because the fetal head tamponades the adjacent placenta, thus preventing hemorrhage. These pregnancies remain at high risk of intrapartum hemorrhage; therefore, we suggest scheduled cesarean delivery to minimize the risk of emergent delivery and need for transfusion.

Low placenta —placenta is more than 20 mm from the internal os, so a trial of labor is appropriate if there are no other contraindications to vaginal birth

When this distance is between 1 and 20 mm, the rate of cesarean delivery ranges from 40 to 90 percent, so management of these patients is more controversial from the internal os.

# Placental abruption

# Definition

Placental abruption: placenta in normal site strip from the uterine parietal partially or completely before the fetus expulsion, after 20 weeks gestation or in the delivery procedure.

Incidence rate: 1% of total pregnancies

# Etiology

- HTN, preeclampsia, thrombophilia
- Previous abruption
- Iron deficiency anemia
- Mechanical agent
- Others: Age of gravida > 35, multipara, tobacco, dope

# Classification

- Classify according to severity degree:
  - Light type  $< 1/3$
  - Severe type  $> 1/3; > 1/2$ , Dead fetus



# Clinical Features

- Abruptly, persistent abdominal pain with vaginal bleeding
- Back pain
- Maternal compromise/ shock (Volume of vaginal bleeding not correspond to patient condition)
- Anomaly of fetal condition
- The uterus touched hard with pain
- The size of uterus is bigger than it should be in that gestation age

# Auxiliary examination

- Diagnostic examination:

B-ultrasound examination

Placenta examination post partum

# sonography



# Differential diagnosis

- ▶ Placental previa
- ▶ Uterus rupture

# Complications

- DIC, dysfunction of coagulation
- Post partum hemorrhagic/shock
- Amniotic fluid embolism
- Acute renal failure
- Fetal death

▶ Management

## *Pregnant women with symptoms of abruption*

- should be evaluated promptly on a labor and delivery unit to establish the diagnosis,
- assess maternal and fetal status, and initiate appropriate management.

*The following actions are reasonable initial interventions:*

- continuous fetal heart rate monitoring,
  - Place one wide-bore intravenous line; two if the patient presents with signs of moderate or severe abruption, such as moderate to heavy bleeding, hypotension, tachysystole, uterine hypertonicity and tenderness, coagulopathy, or an abnormal fetal heart rate. Administer crystalloid, preferably Lactated Ringer's, to maintain urine output above 30 mL/hour
- Closely monitor the mother's hemodynamic status (heart rate, blood pressure, urine output, blood loss).

- Draw blood for a CBC, PL, BGRH, fibrinogen, PT, APTT, cr, ALT, AST.

notify the blood bank so blood replacement products (red cells, fresh frozen plasma, cryoprecipitate, platelets) will be readily available, if needed, and repeat the blood count and coagulation studies.

## *Transfusion goals are:*

- Maintain hematocrit at 25 to 30 percent or greater
- Maintain platelet count  $\geq 75,000/\mu\text{L}$
- Maintain fibrinogen  $\geq 100 \text{ mg/dL}$ .
- Maintain a prothrombin and partial thromboplastin time less than 1.5 times control

Administer standard medications to women likely to deliver:  
magnesium sulfate for neuroprotection for pregnancies <32 weeks of gestation, antenatal corticosteroids for pregnancies <34 weeks of gestation, and group B streptococcus prophylaxis according to local guidelines.

# SUBSEQUENT MANAGEMENT BASED ON THE CLINICAL SETTING

— *The most important factors impacting the decision to deliver a patient with placental abruption versus expectant management are:*

- Fetal and maternal status, which reflect the severity of the abruption
- Gestational age

## *Dead fetus* —

The optimal route of delivery in these cases minimizes the risk of maternal morbidity or mortality.

Blood and blood product replacement is often necessary and expeditious delivery is desirable because the frequency of coagulopathy and continuous heavy bleeding is much higher in abruptions in which fetal death has occurred. Placental separation is often greater than 50 percent.

*Unstable mother* —

Cesarean delivery is often the best option when vaginal delivery is not imminent and rapid

## *Stable mother* —

Vaginal delivery is preferable. These patients are often contracting vigorously, so amniotomy may be all that is required to expedite delivery. Oxytocin is administered, if needed to induce or augment labor.

# *Nonreassuring fetal status*

- **Category III tracing**
  
- *Category II tracing* - .

## *Reassuring fetal status* —

If the fetal heart rate pattern (category I tracing) or biophysical profile score is reassuring, then the decision to deliver versus expectant management depends on both maternal hemodynamic status and gestational age.

## *Less than 34 weeks of gestation*

— When the fetus and mother are both stable and there is no evidence of ongoing major blood loss or coagulopathy, conservative management with the aim of delivering a more mature fetus is the main goal before 34 weeks of gestation

*Administer corticosteroids*

*Tocolytic ???*

## ● *Antenatal fetal assessment* –

- NST.BPP, at least weekly.
- also perform serial sonographic estimation of fetal weight to assess growth since these fetuses are at risk of developing growth restriction over time

● *Hospitalization* –

until the bleeding has subsided for at least 48 hours, fetal heart rate tracings and ultrasound examinations are reassuring, and the patient is asymptomatic.

At that point, discharge may be considered. Importantly, the patient should be counseled to return immediately if she has further bleeding, contractions, decreased fetal movement, or abdominal pain.

*In patients with sonographic evidence of a large hematoma, we believe it is prudent to keep the patient in the hospital for a longer period for close monitoring.*



*Delivery* –  
at 37 to 38 weeks

*Delivery before 37*

, fetal growth restriction,  
preeclampsia,  
premature rupture of membranes,  
nonreassuring fetal assessment,  
recurrent abruption with maternal instability

Placental abruption occurring in the second trimester  
carries an especially poor prognosis when accompanied  
by oligohydramnios

( routinely : send placenta for pathology  
Abnd ABG umbilical cord )

### *36 weeks to term gestation* —

deliver all pregnancies with acute abruption at  $\geq 36$  weeks of gestation

*Vaginal delivery is preferable*, if there are no obstetrical indications for cesarean delivery (eg, malpresentation, prior cesarean). With a clinically significant abruption, the patient is often contracting vigorously, but if she is not in active labor, then amniotomy and administration of oxytocin frequently result in rapid delivery

## ***COUVELAIRE UTERUS*** —

In severe abruptions, blood may extravasate into the myometrium (called a Couvelaire uterus), and this can be seen at cesarean.

The Couvelaire uterus is **atonic** and prone to **postpartum hemorrhage**.

, these women are at high risk for requiring **hysterectomy**

## *POSTPARTUM CARE* —

Postpartum, we administer an intravenous oxytocin infusion as the first-line uterotonic agent.

Maternal vital signs, blood loss, urine output, uterine size and consistency, and laboratory results (hemoglobin/hematocrit, coagulation studies) are monitored closely to ensure that bleeding has been controlled and that coagulopathy (if present) is resolving, and to guide replacement of fluids and blood products, as needed.

## *MANAGEMENT OF FUTURE PREGNANCIES*

Recurrence risk —

Placental abruption resulting from trauma is not likely to recur in the absence of recurrent trauma, so these women can be reassured

*Timing of delivery* —

For most patients with an abruption in a prior pregnancy who have no bleeding, growth restriction, or preeclampsia, we provide routine prenatal care until spontaneous labor ensues or perform a repeat cesarean delivery at 39 to 40 weeks of gestation. We deliver all patients with a history of abruption by 40<sup>0/7th</sup>s weeks

For patients who have had a prior perinatal death or more than one prior abruption, we offer late preterm or early term delivery at 36 to 37 weeks after documentation of fetal lung maturity. (lamellar body count, and deliver if the count is above 50,000 per microliter; alternatively, a lecithin/sphingomyelin ratio may be performed.)

If fetal lung maturity tests indicate immaturity, we delay delivery until 39 weeks as long as the patient is stable.

*THANKS*