Third Trimester Bleeding

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Maternal Fetal Medicine
Causes of antepartum bleeding

- Labor
- Cervical bleeding
- Placental abruption
- Placenta previa
- Vasa previa

Bleeding from a site above the cervix
Bleeding in Labor

- Bleeding during labor is common
- Effacement and dilation of the cervix causes tearing of small vessels
- Often called “bloody show”
Cervical bleeding

- Cervix my be friable due pregnancy or infection
- Cervical polyps
- Ask about recent intercourse
Placental abruption

* Separation from its site of implantation before delivery
* Occurs 1 in 200 deliveries
  * Cause of fetal death 1 in 1600
* 10% of all 3\textsuperscript{rd} trimester stillbirth due to abruption
Initiated by hemorrhage in to the decidua basalis

The decidual hematoma leads to separation, compression, and destruction of the adjacent placenta

In the early stages there may be no clinical symptoms

The blood may dissect the membranes from the uterine wall and escape through the cervix
* The blood can be retained between the placenta and uterus resulting in a concealed abruption
* Concealed abruption likely go undiagnosed till delivery and are associated with a higher rate of DIC
<table>
<thead>
<tr>
<th>Risk factor</th>
<th>Risk Factor Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prior abruption</td>
<td>10 - 25</td>
</tr>
<tr>
<td>Preterm ruptured membranes</td>
<td>2.4 – 4.9</td>
</tr>
<tr>
<td>Preeclampsia</td>
<td>2.1 – 4.0</td>
</tr>
<tr>
<td>Chronic hypertension</td>
<td>1.8 – 3.0</td>
</tr>
<tr>
<td>Multifetal gestation</td>
<td>2.1</td>
</tr>
<tr>
<td>Polyhydramnios</td>
<td>2.0</td>
</tr>
<tr>
<td>Cigarette smoking</td>
<td>1.4 – 1.9</td>
</tr>
<tr>
<td>Increased age and parity</td>
<td>1.3 – 1.5</td>
</tr>
<tr>
<td>Cocaine use</td>
<td></td>
</tr>
<tr>
<td>Uterine fibroids (esp. if behind placental implantation site)</td>
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</tbody>
</table>
Most common associated condition

Can be chronic, gestational, or preeclampsia

Seen in half of women with abruption severe enough to kill the fetus

Abruption occurs in 1.5% of women with chronic hypertension
External trauma

* Rare cause of abruption
  * Implicated in only 3 of 207 cases in one study
* Usually associated with severe trauma
* After minor trauma (low speed MVA, fall) monitor the fetus for 2 – 6 hours in the absence of bleeding, contraction, or tenderness
* Bleeding with abruption is almost always maternal except in cases of severe trauma that result in a tear within the placenta
Diagnosis of abruption

* Signs/symptoms extremely variable
* From profuse vaginal bleeding to no external bleeding
* One women presented with a nose bleed and was diagnosed with an IUFD and DIC due to abruption
* Bleeding and abdominal pain are the most common findings
* In 22% PTL was the diagnosis till fetal distress or death occurred
<table>
<thead>
<tr>
<th>Signs and symptoms of abruption</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Vaginal bleeding</td>
<td>78%</td>
</tr>
<tr>
<td>Uterine tenderness or back pain</td>
<td>66%</td>
</tr>
<tr>
<td>Fetal distress</td>
<td>60%</td>
</tr>
<tr>
<td>Preterm labor</td>
<td>22%</td>
</tr>
<tr>
<td>High frequency contractions</td>
<td>17%</td>
</tr>
<tr>
<td>Hypertonus</td>
<td>17%</td>
</tr>
<tr>
<td>Dead fetus</td>
<td>15%</td>
</tr>
</tbody>
</table>
Ultrasound infrequently confirms the diagnosis of abruption

- Negative findings do not rule out abruption
- Useful to rule out previa
Consumptive coagulopathy

- Occurs in 30% of women with abruption severe enough to cause IUFD
- Characterized by low fibrinogen (<150 mg/dL)
- Decreases in other clotting factors
Management of abruption

- Depends on the gestational age of the fetus and status of the mother
- Vaginal delivery is not contraindicated
- Consider coagulopathy before cesarean
- Close observation of the mother and fetus with facilities for immediate intervention necessary
* Expectant management possible
* Tocolytics contraindicated
* Rupture of membranes and oligohydramnios are frequently seen
* The placenta may further separate instantaneously
* Maternal blood transfusion can be used for maternal anemia
Placenta previa

* When the placenta is located over or near the internal os of the cervix
* 1 in 300 deliveries
* Perinatal morbidity and mortality from preterm delivery
* Maternal morbidity and mortality from hemorrhage and need for cesarean delivery
* Complete previa: the placenta covers the cervix
* Low-lying placenta: the placenta edge is < 2cm from the internal os, but does not cover it
Risk factors for previa

* Advancing maternal age (1 in 100 for women > 35yo)
* Multiparity
* Multifetal gestations
* Prior cesarean delivery (4% with 3 or more)
* Cigarette smoking
Diagnosis of previa

* Should always be on differential in a women with bleeding in the later half of pregnancy
* Before ultrasound this diagnosis was made by digital exam – THIS CAN CAUSE SEVERE HEMORRHAGE
* Most precise and safest method is ultrasound
* Transvaginal technique is superior to transabdominal
Diagnosis of previa
12% of placentas will be low lying at 18-20 weeks
- Of those not covering the os previa does not persist in the third trimester
- Of those covering the os only 40% persisted
- Restriction of activity not necessary
Placental separation is inevitable with formation of the lower uterine segment and cervical dilation. This can result in bleeding in the late 2nd and early 3rd trimester. “Painless hemorrhage” is characteristic. Sudden onset with no warning. Initial bleed rarely profuse and stops spontaneously.
Management of previa

- Admitted for observation after bleeding
- May be discharged with close follow up or remain in the hospital till delivery
- Being near a hospital with transportation is important
- If bleeding heavy or in labor delivery by cesarean
- Scheduled delivery by cesarean done at 36 – 37 weeks
Placenta Accreta

- Abnormally adherent placenta
- Trophoblastic invasion beyond the decidua basalis
- Attaches directly to the myometrium and beyond
- Normal boundary established by the Nitabuch fibrinoid layer
Three grades of accreta

- Normal (Decidua)
- Increta (17%)
- Accreta (75-78%)
- Percreta (5%)

- Stratum basalis of endometrium
- Myometrium
Placenta Accreta

* Most common cause for peripartum hysterectomy
* Massive transfusion usually unavoidable
* Urologic or vascular injury not infrequent
* Commonly involves ICU admission, prolonged hospitalization, and infectious morbidity
Complications of accreta

<table>
<thead>
<tr>
<th>Morbidity</th>
<th>No Accreta (%)</th>
<th>Accreta (%)</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cystotomy</td>
<td>0.15</td>
<td>15.4</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Ureteral injury</td>
<td>0.02</td>
<td>2.1</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Pulmonary embolus</td>
<td>0.13</td>
<td>2.1</td>
<td>.001</td>
</tr>
<tr>
<td>Ventilator</td>
<td>0.3</td>
<td>14</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Intensive care unit</td>
<td>0.8</td>
<td>26.6</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Reoperation</td>
<td>0.26</td>
<td>5.6</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Endometritis</td>
<td>3.34</td>
<td>3.50</td>
<td>81</td>
</tr>
</tbody>
</table>

Risk factors

- Advanced maternal age
- Parity
- Smoking
- Asherman syndrome
- Uterine anomalies and fibroids
- Placenta previa
- Prior uterine surgery
Abnormal placentation: Twenty-year analysis

Serena Wu, MD, Masha Kocherginsky, PhD, Judith U. Hibbard, MD

Incidence: 1 in 2510 in 1980’s to 1 in 533 for 1982 to 2002
# Maternal Morbidity Associated With Multiple Repeat Cesarean Deliveries

## Table 2. Maternal Morbidity of Women Who Had Cesarean Deliveries Without Labor

<table>
<thead>
<tr>
<th>Morbidity</th>
<th>First CD*</th>
<th>Second CD</th>
<th>Third CD</th>
<th>Fourth CD</th>
<th>Fifth CD</th>
<th>≥ 6 CD</th>
<th>P†</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>6,201</td>
<td>15,808</td>
<td>6,324</td>
<td>1,452</td>
<td>258</td>
<td>80</td>
<td></td>
</tr>
<tr>
<td>Placenta accreta</td>
<td>15 (0.24)</td>
<td>49 (0.31)</td>
<td>36 (0.57)</td>
<td>31 (2.13)</td>
<td>6 (2.33)</td>
<td>6 (6.74)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Hysterectomy</td>
<td>40 (0.65)</td>
<td>67 (0.42)</td>
<td>57 (0.90)</td>
<td>35 (2.41)</td>
<td>9 (3.49)</td>
<td>8 (8.99)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Any blood transfusion</td>
<td>251 (4.05)</td>
<td>242 (1.53)</td>
<td>143 (2.26)</td>
<td>53 (3.65)</td>
<td>11 (4.26)</td>
<td>14 (15.73)</td>
<td>.61</td>
</tr>
<tr>
<td>Blood transfusion ≥ 4 units</td>
<td>65 (1.05)</td>
<td>76 (0.48)</td>
<td>49 (0.77)</td>
<td>23 (1.59)</td>
<td>6 (2.33)</td>
<td>9 (10.11)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Cystotomy</td>
<td>8 (0.13)</td>
<td>15 (0.09)</td>
<td>18 (0.28)</td>
<td>17 (1.17)</td>
<td>5 (1.94)</td>
<td>4 (4.49)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Bowel injury</td>
<td>7 (0.11)</td>
<td>9 (0.06)</td>
<td>8 (0.13)</td>
<td>5 (0.34)</td>
<td>0 (0.00)</td>
<td>1 (1.12)</td>
<td>.02</td>
</tr>
<tr>
<td>Ureteral injury</td>
<td>2 (0.03)</td>
<td>2 (0.01)</td>
<td>1 (0.02)</td>
<td>1 (0.07)</td>
<td>1 (0.39)</td>
<td>1 (1.12)</td>
<td>.008</td>
</tr>
<tr>
<td>Placenta previa</td>
<td>398 (6.42)</td>
<td>211 (1.33)</td>
<td>72 (1.14)</td>
<td>33 (2.27)</td>
<td>6 (2.33)</td>
<td>3 (3.37)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Ileus</td>
<td>41 (0.66)</td>
<td>71 (0.45)</td>
<td>43 (0.68)</td>
<td>13 (0.90)</td>
<td>4 (1.55)</td>
<td>3 (3.37)</td>
<td>.01</td>
</tr>
<tr>
<td>Postoperative ventilator</td>
<td>62 (1.0)</td>
<td>33 (0.21)</td>
<td>15 (0.24)</td>
<td>10 (0.69)</td>
<td>2 (0.78)</td>
<td>1 (1.12)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Intensive care unit admission</td>
<td>115 (1.85)</td>
<td>90 (0.57)</td>
<td>34 (0.54)</td>
<td>23 (1.58)</td>
<td>5 (1.94)</td>
<td>5 (5.62)</td>
<td>.007</td>
</tr>
</tbody>
</table>
## Table 4. Placenta Previa and Placenta Accreta by Number of Cesarean Deliveries

<table>
<thead>
<tr>
<th>Cesarean Delivery</th>
<th>Previa</th>
<th>Previa*:Accreta(^\d) [n (%)]</th>
<th>No Previa*:Accreta(^\d) [n (%)]</th>
</tr>
</thead>
<tbody>
<tr>
<td>First(^\S)</td>
<td>398</td>
<td>13 (3.3)</td>
<td>2 (0.03)</td>
</tr>
<tr>
<td>Second</td>
<td>211</td>
<td>23 (11)</td>
<td>26 (0.2)</td>
</tr>
<tr>
<td>Third</td>
<td>72</td>
<td>29 (40)</td>
<td>7 (0.1)</td>
</tr>
<tr>
<td>Fourth</td>
<td>33</td>
<td>20 (61)</td>
<td>11 (0.8)</td>
</tr>
<tr>
<td>Fifth</td>
<td>6</td>
<td>4 (67)</td>
<td>2 (0.8)</td>
</tr>
<tr>
<td>≥ 6</td>
<td>3</td>
<td>2 (67)</td>
<td>4 (4.7)</td>
</tr>
</tbody>
</table>

* Percentage of accreta in women with placenta previa.
† Increased risk with increasing number of cesarean deliveries; \(P < .001\).
‡ Percentage of accreta in women without placenta previa.
§ Primary cesarean.
Diagnosis of accreta

- No method alone affords complete assurance
- Ultrasound
  - Clear zone
  - Venous lakes (lacunae)
  - Interruption of the bladder line
- MRI
- Elevated 2nd trimester MSAFP
Diagnosis of accreta
Diagnosis of percreta
If there is attempted removal of the placenta at the time of delivery massive hemorrhage occurs

Cesarean hysterectomy is recommended

Type and cross (Massive transfusion protocol)

Ureteral stents and balloon occlusion of the internal iliac have been used
Placenta accreta

* Several studies have suggested benefit with planned rather than emergent hysterectomy
* As GA increases women have an increased risk of labor and bleeding
* Decision analysis showed the best strategy was delivery at 34wks after antenatal corticosteroids
* There was no benefit to expectant management beyond 37wks
* Most clinicians plan for delivery between 34 – 37 weeks
Vasa previa

* Fetal vessels coursing in the membrane cross the cervical os below the presenting fetal part
* Incidence 1 in 5200 pregnancies
* Rupture of membranes can tear fetal vessels leading to exsanguination
* Fetal blood volume is so small (78mL/kg) that fetal death is almost instantaneous
* Diagnosis by transvaginal ultrasound
Vasa previa

* Risk factors
  * Bilobed, succenturiate, or low lying placenta
  * Multifetal pregnancy
  * IVF
Vasa previa