Third Trimester Bleeding

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Maternal Fetal Medicine

Causes of antepartum bleeding

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

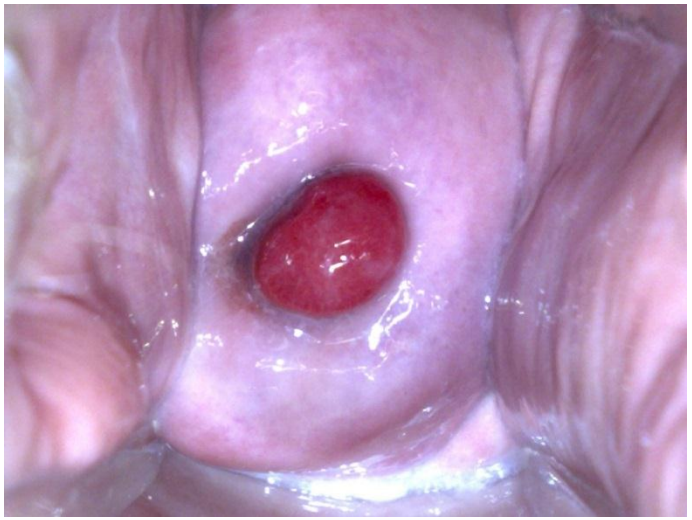
} Bleeding from a site above the cervix

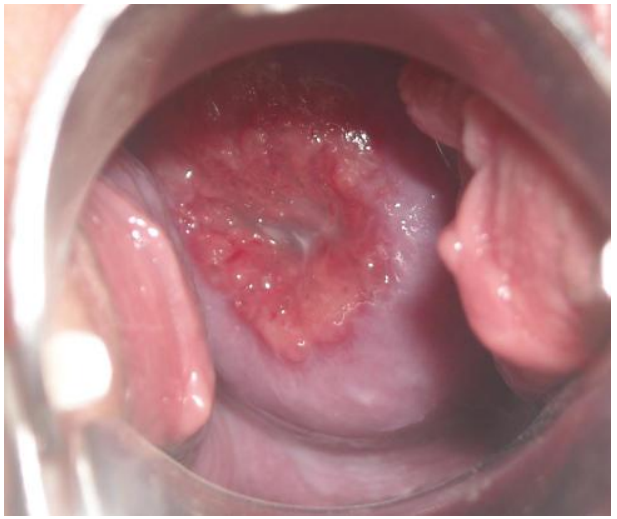
Bleeding in Labor

* 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



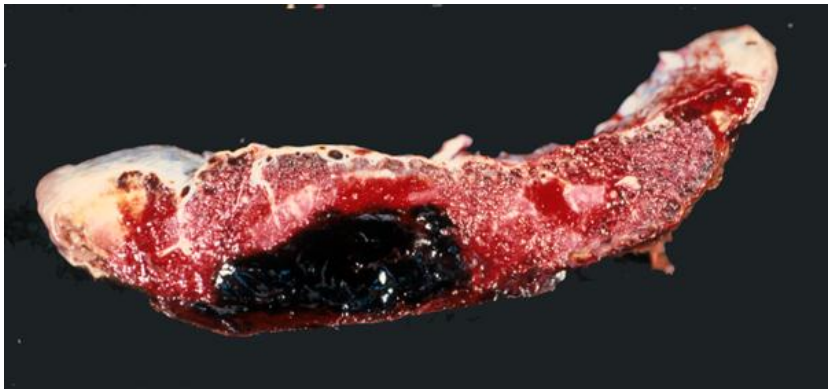


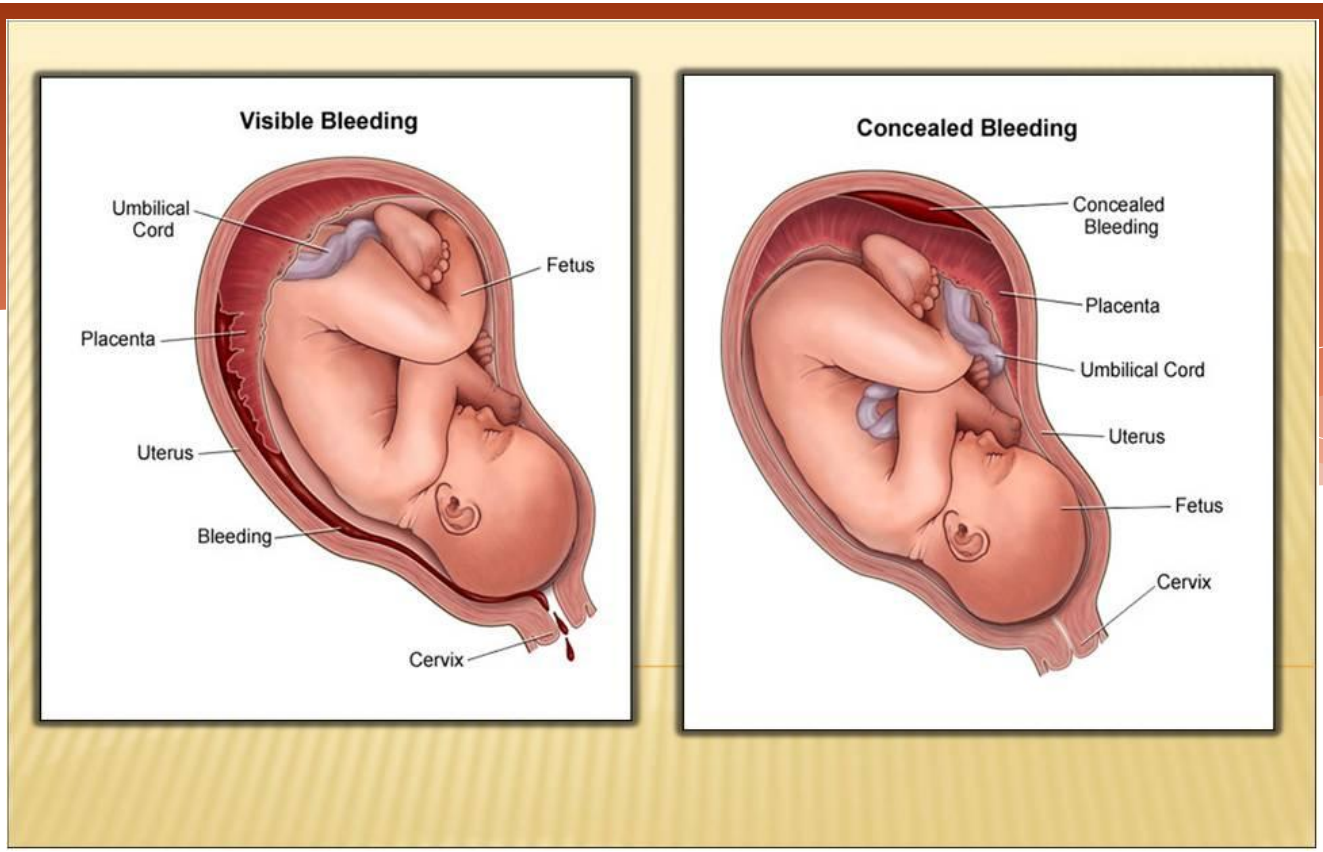
Placental abruption

* Separation from it's site of implantation before delivery
* Occurs 1 in 200 deliveries
  * Cause of fetal death 1 in 1600
* 10% of all 3rd trimester stillbirth due to abruption

Pathology of 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

Risk factors for abruption

Prior abruption	10 - 25
Preterm ruptured membranes	2.4 – 4.9
Preeclampsia	2.1 – 4.0
Chronic hypertension	1.8 – 3.0
Multifetal gestation	2.1
Polyhydramnios	2.0
Cigarette smoking	1.4 – 1.9
Increased age and parity	1.3 – 1.5
Cocaine use	
Uterine fibroids (esp. if behind placental implantation site)	

Hypertension and abruption

* 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

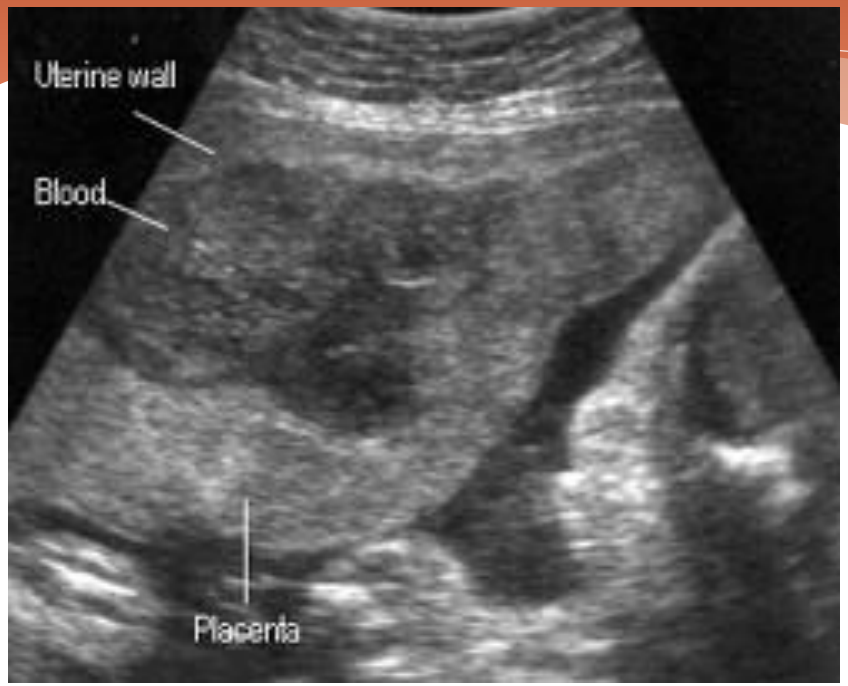
Diagnosis of abruption

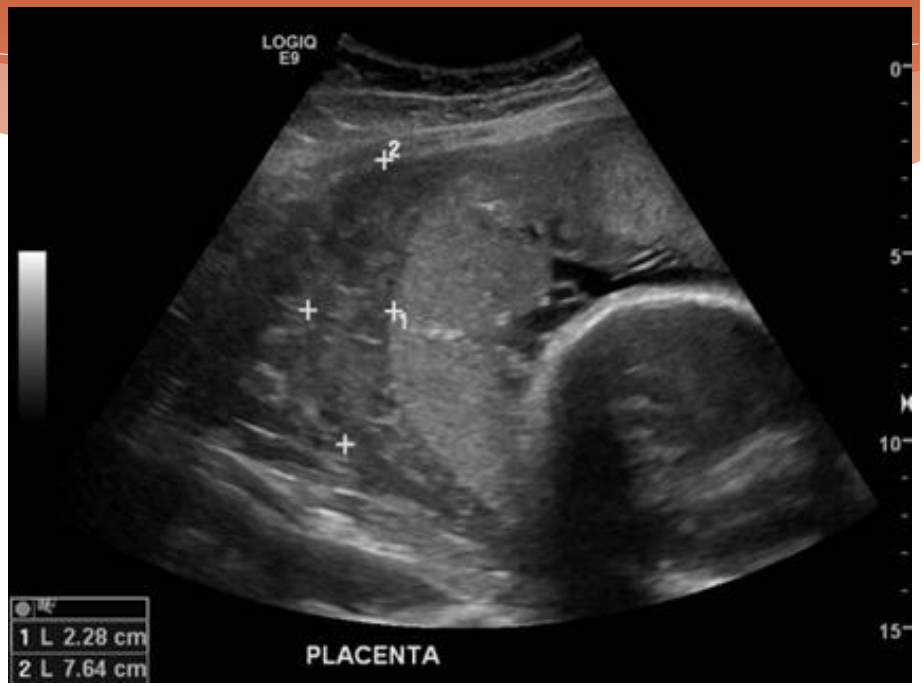
* Signs/symptoms extremely variable
* From profuse vaginal bleeding to no external bleeding
* One women presented with a nose bleed and was diagnosed with an IUFD and DIC due to abruption
* Bleeding and abdominal pain are the most common findings
* In 22% PTL was the diagnosis till fetal distress or death occurred

Signs and symptoms of abruption

Vaginal bleeding	78%
Uterine tenderness or back pain	66%
Fetal distress	60%
Preterm labor	22%
High frequency contractions	17%
Hypertonus	17%
Dead fetus	15%

Ultrasound and abruption

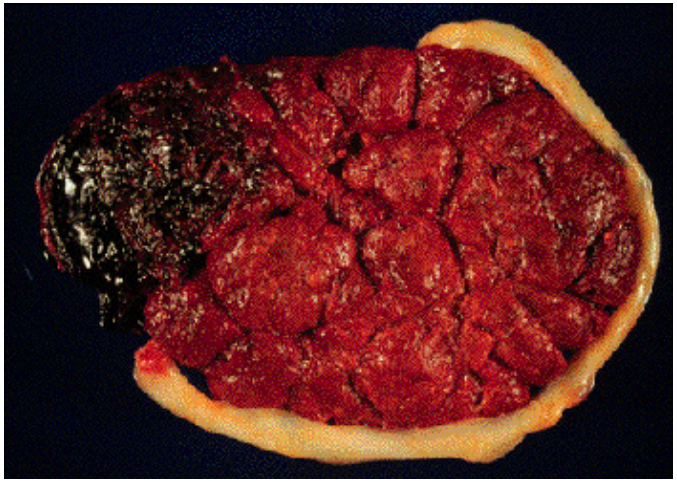




* Ultrasound infrequently confirms the diagnosis of abruption
* Negative findings do not rule out abruption
* Useful to rule out previa

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

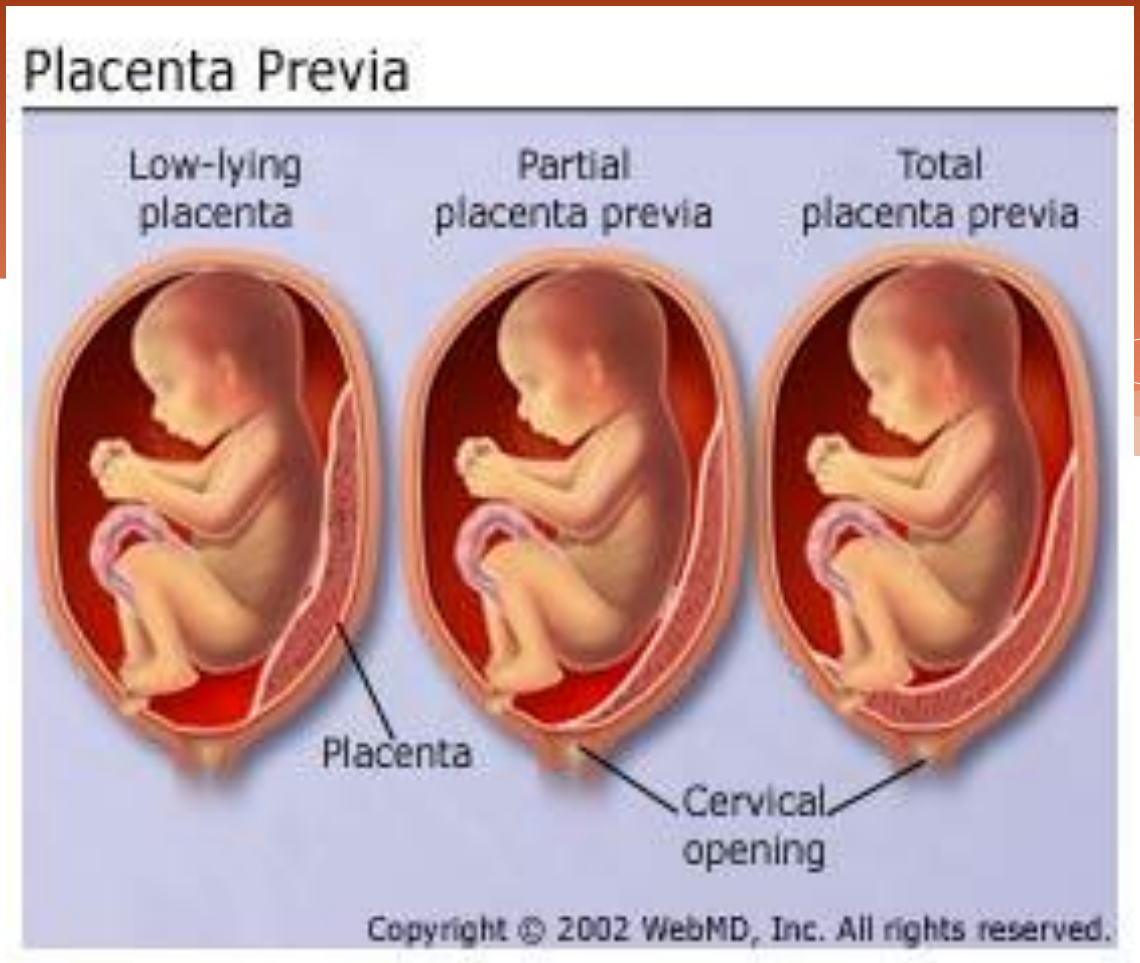
* Depends on the gestational age of the fetus and status of the mother
* Vaginal delivery is not contraindicated
* Consider coagulopathy before cesarean
* Close observation of the mother and fetus with facilities for immediate intervention necessary

Preterm abruption

* 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

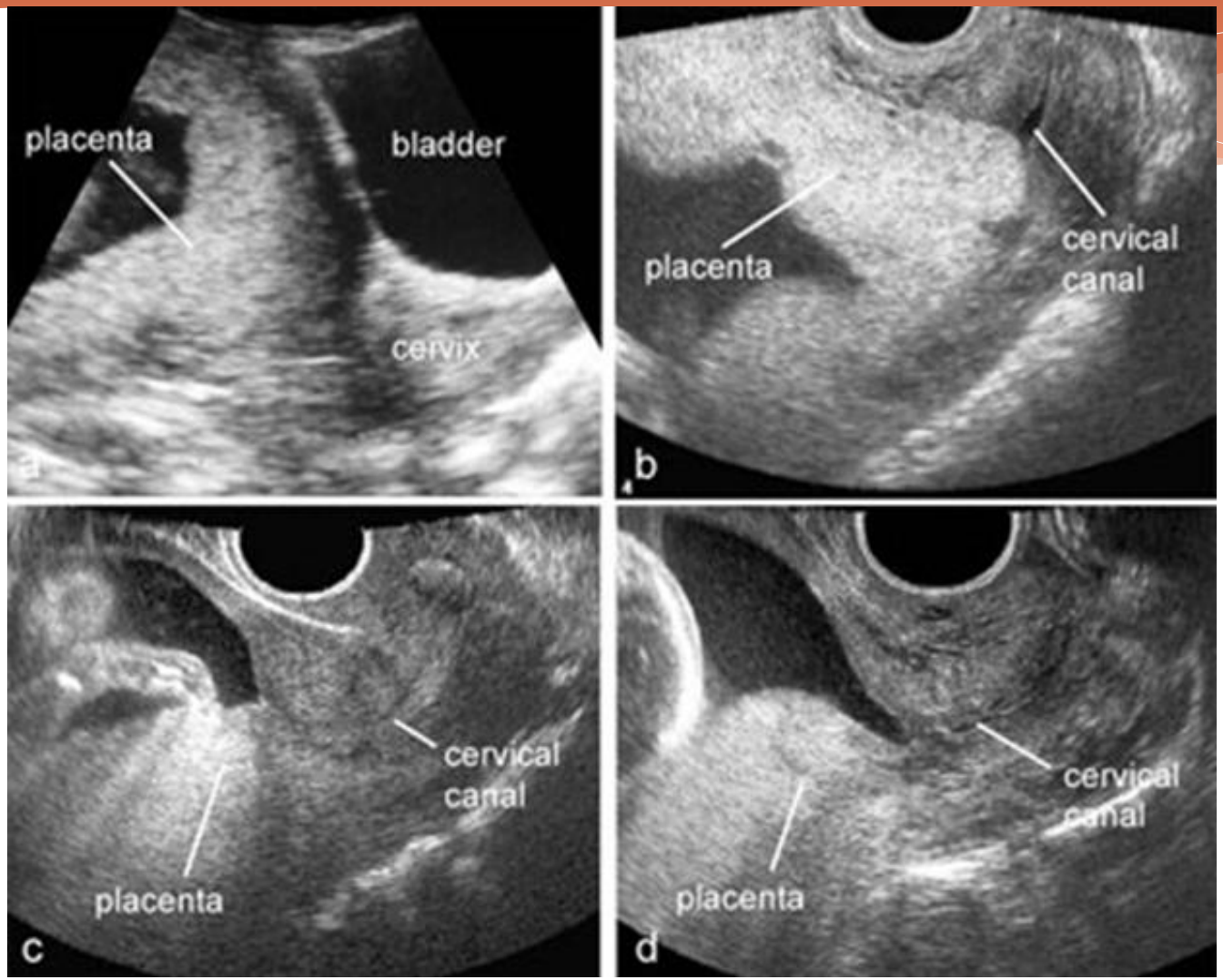
Risk factors for previa

* 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

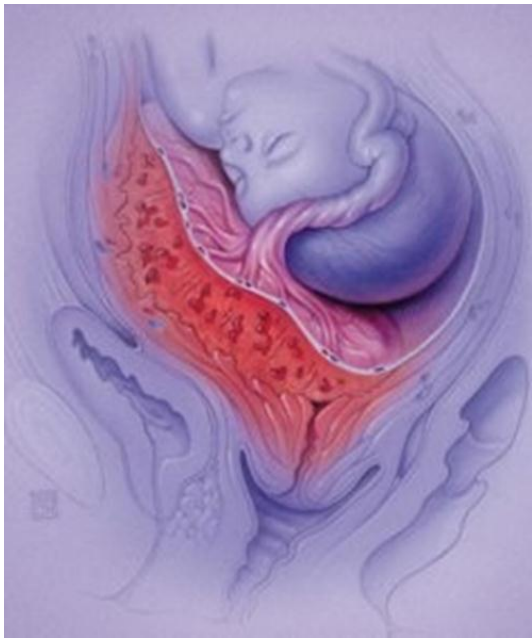
* Should always be on differential in a women with bleeding in the later half of pregnancy
* Before ultrasound this diagnosis was made by digital exam – THIS CAN CAUSE SEVERE HEMORRHAGE
* Most precise and safest method is ultrasound
* Transvaginal technique is superior to transabdominal

Diagnosis of previa



Placental migration

* 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 only40% persisted
* Restriction of activity not necessary



Placenta previa

* 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

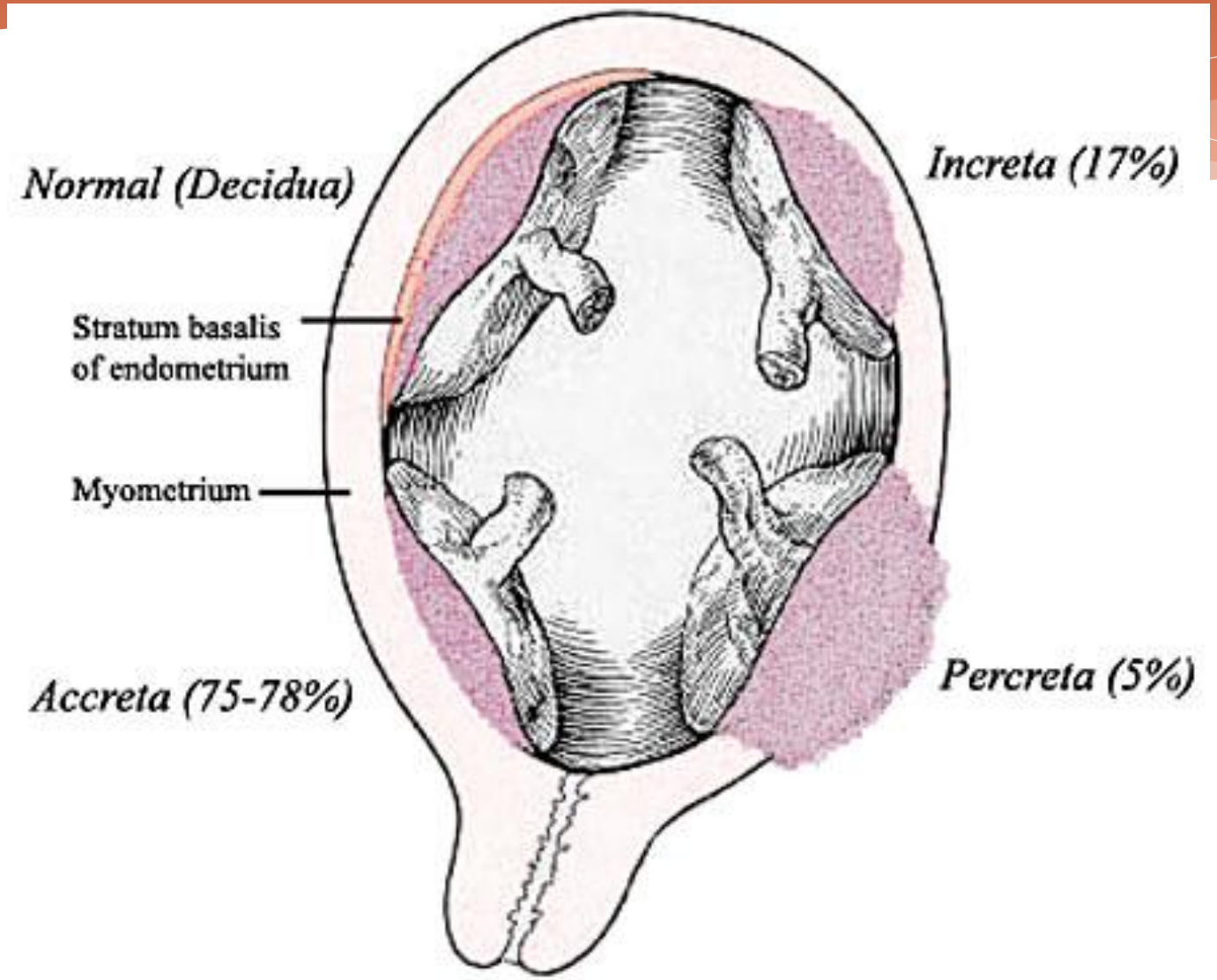
Management of previa

* 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



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

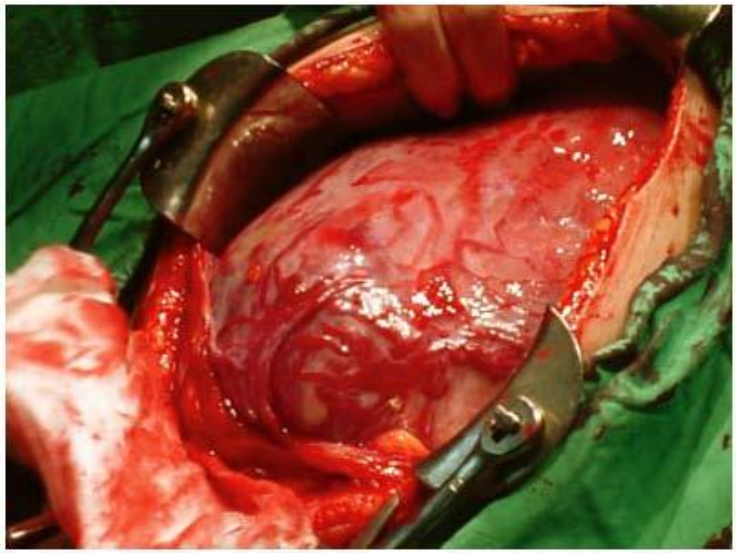
Table 5. Placenta Accreta and Comorbidity

Morbidity	No Accreta (%)	Accreta (%)	*P*
Cystotomy	0.15	15.4	< .001
Ureteral injury	0.02	2.1	< .001
Pulmonary embolus	0.13	2.1	.001
Ventilator	0.3	14	< .001
Intensive care unit	0.8	26.6	< .001
Reoperation	0.26	5.6	< .001
Endometritis	3.34	3.50	.81

Silver RM, et al. Maternal morbidity associated with multiple repeat cesarean deliveries. Obstet Gynecol 2006

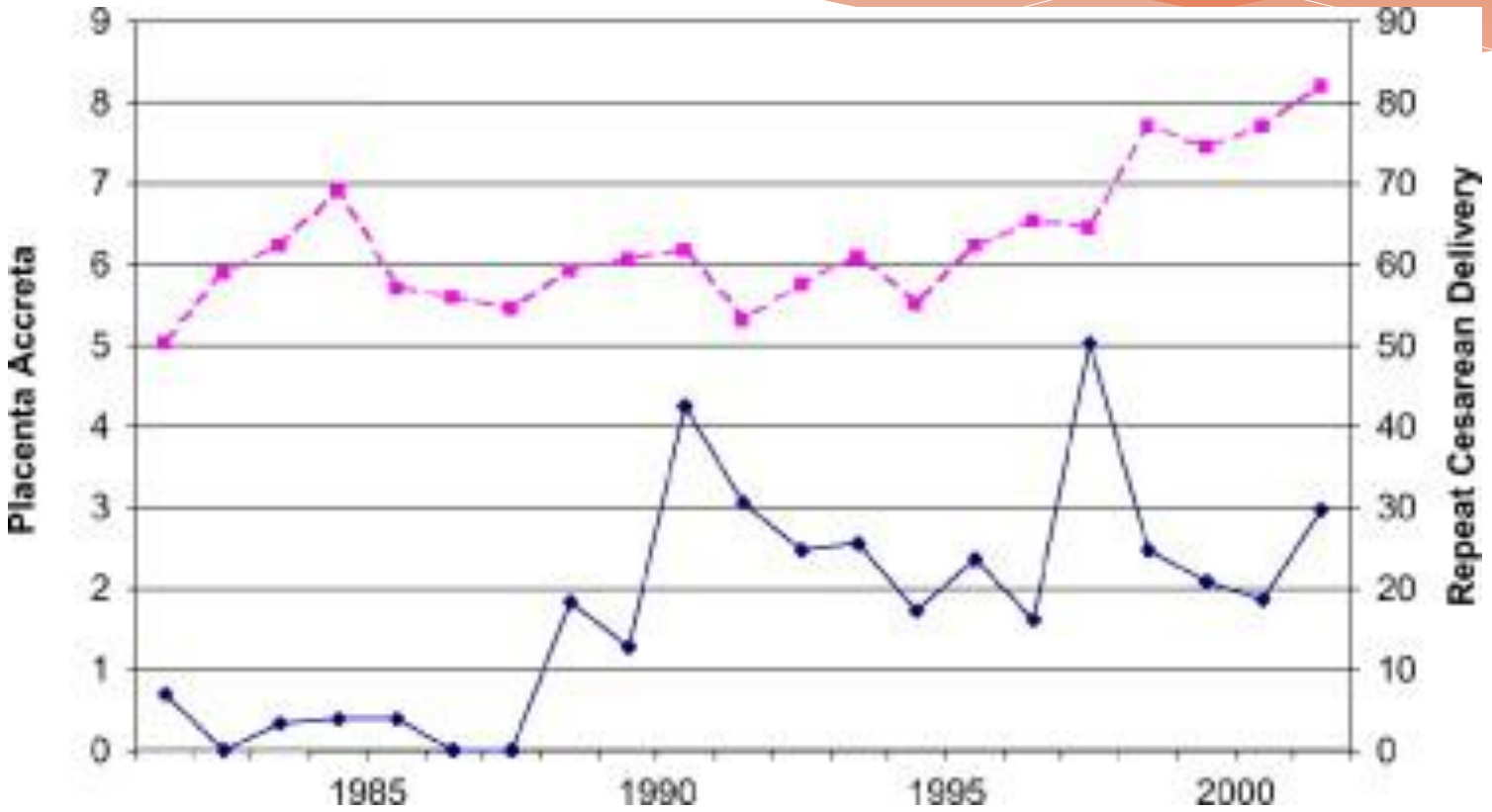
Risk factors

* 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

Morbidity	First CD*		Second CD		Third CD		Fourth CD		Fifth CD		≥ 6 CD		$P^{\dagger}$
No.	6,201		15,808		6,324		1,452		258		89		–
Placenta accreta	15	(0.24)	49	(0.31)	36	(0.57)	31	(2.13)	6	(2.33)	6	(6.74)	< .001
Hysterectomy	40	(0.65)	67	(0.42)	57	(0.90)	35	(2.41)	9	(3.49)	8	(8.99)	< .001
Any blood transfusion	251	(4.05)	242	(1.53)	143	(2.26)	53	(3.65)	11	(4.26)	14	(15.73)	.61
Blood transfusion ≥ 4 units	65	(1.05)	76	(0.48)	49	(0.77)	23	(1.59)	6	(2.33)	9	(10.11)	< .001
Cystotomy	8	(0.13)	15	(0.09)	18	(0.28)	17	(1.17)	5	(1.94)	4	(4.49)	< .001
Bowel injury	7	(0.11)	9	(0.06)	8	(0.13)	5	(0.34)	0	(0.00)	1	(1.12)	.02
Ureteral injury	2	(0.03)	2	(0.01)	1	(0.02)	1	(0.07)	1	(0.39)	1	(1.12)	.008
Placenta previa	398	(6.42)	211	(1.33)	72	(1.14)	33	(2.27)	6	(2.33)	3	(3.37)	< .001
Ileus	41	(0.66)	71	(0.45)	43	(0.68)	13	(0.90)	4	(1.55)	3	(3.37)	.01
Postoperative ventilator	62	(1.0)	33	(0.21)	15	(0.24)	10	(0.69)	2	(0.78)	1	(1.12)	< .001
Intensive care unit admission	115	(1.85)	90	(0.57)	34	(0.54)	23	(1.58)	5	(1.94)	5	(5.62)	.007

Maternal Morbidity Associated With Multiple Repeat Cesarean Deliveries

Table 4. Placenta Previa and Placenta Accreta by Number of Cesarean Deliveries

Cesarean Delivery	Previa	Previa*:Accreta† [n (%)]	No Previa‡:Accreta† [n (%)]
First§	398	13 (3.3)	2 (0.03)
Second	211	23 (11)	26 (0.2)
Third	72	29 (40)	7 (0.1)
Fourth	33	20 (61)	11 (0.8)
Fifth	6	4 (67)	2 (0.8)
≥ 6	3	2 (67)	4 (4.7)

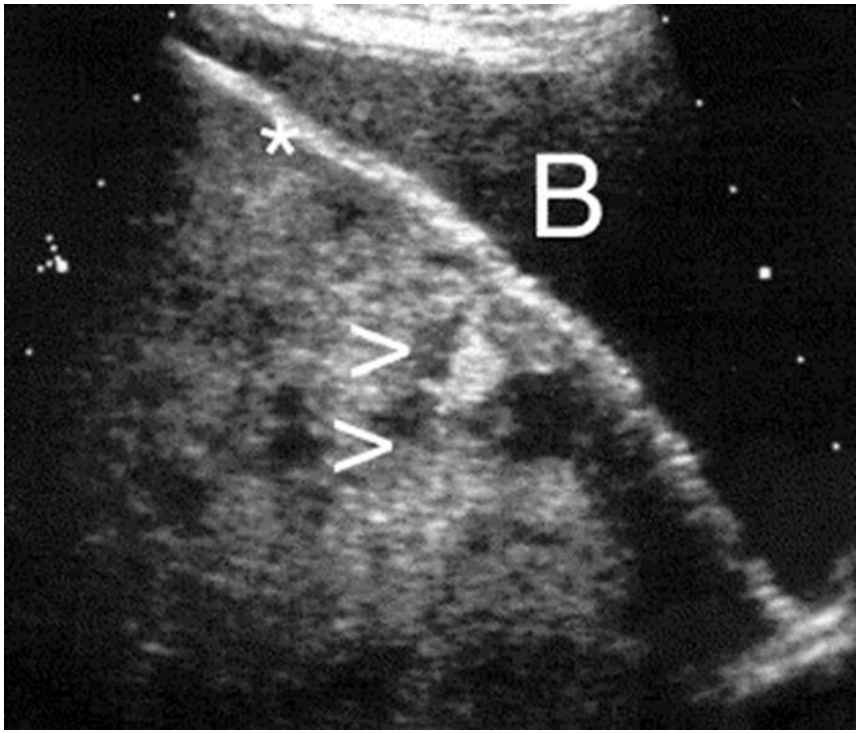
* Percentage of accreta in women with placenta previa.
† Increased risk with increasing number of cesarean deliveries; $P < .001$.
‡ Percentage of accreta in women without placenta previa.
§ Primary cesarean.

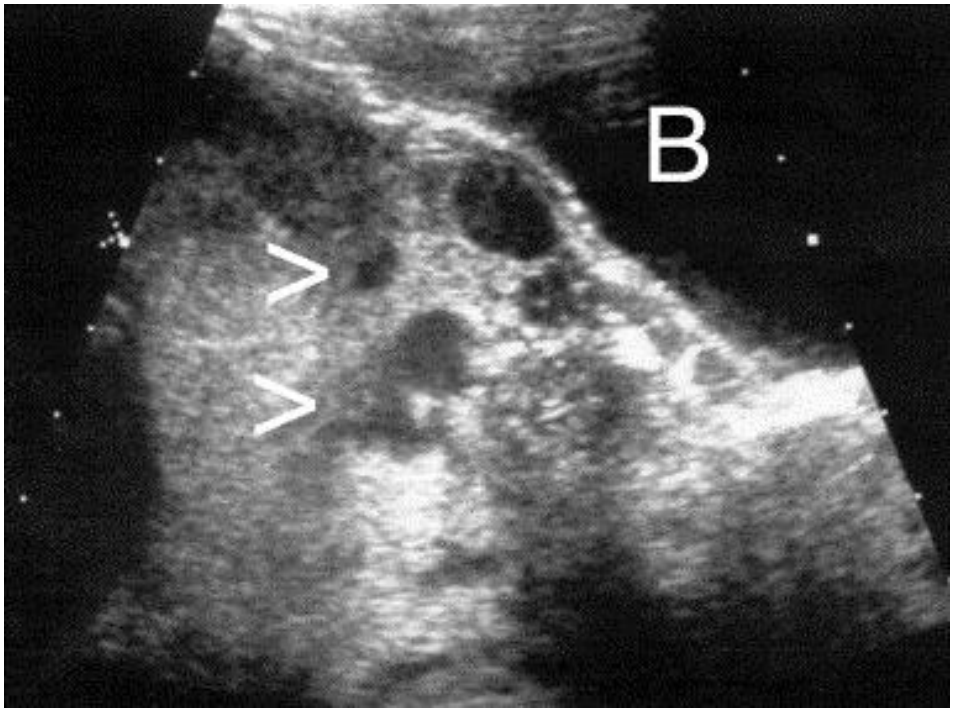
Obstetrics & Gynecology

Diagnosis of accreta

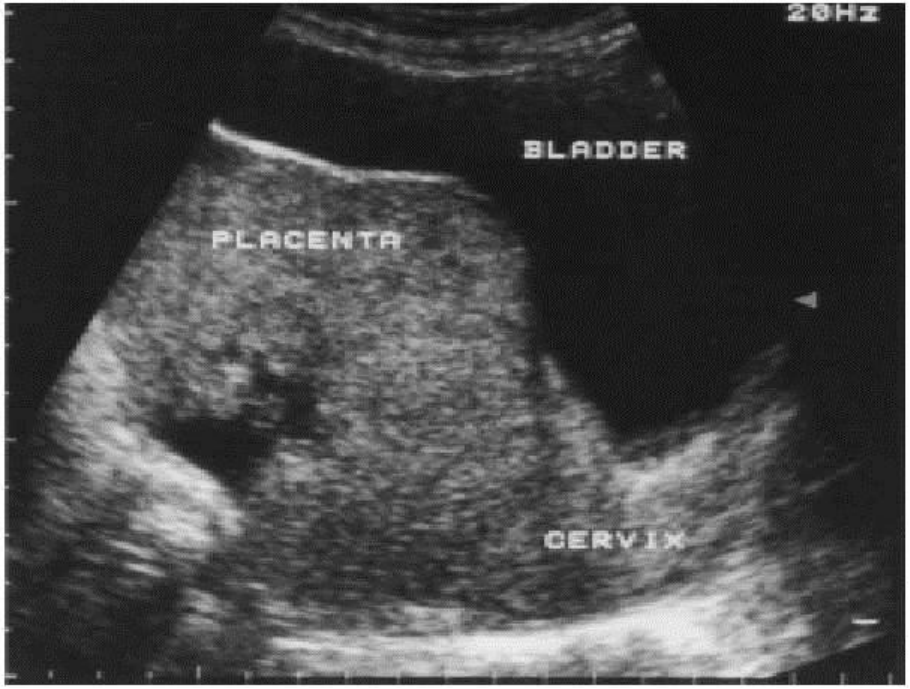
- No method alone affords complete assurance
- Ultrasound
  - Clear zone
  - Venous lakes (lacunae)
  - Interruption of the bladder line
- MRI
- Elevated 2nd trimester MSAFP

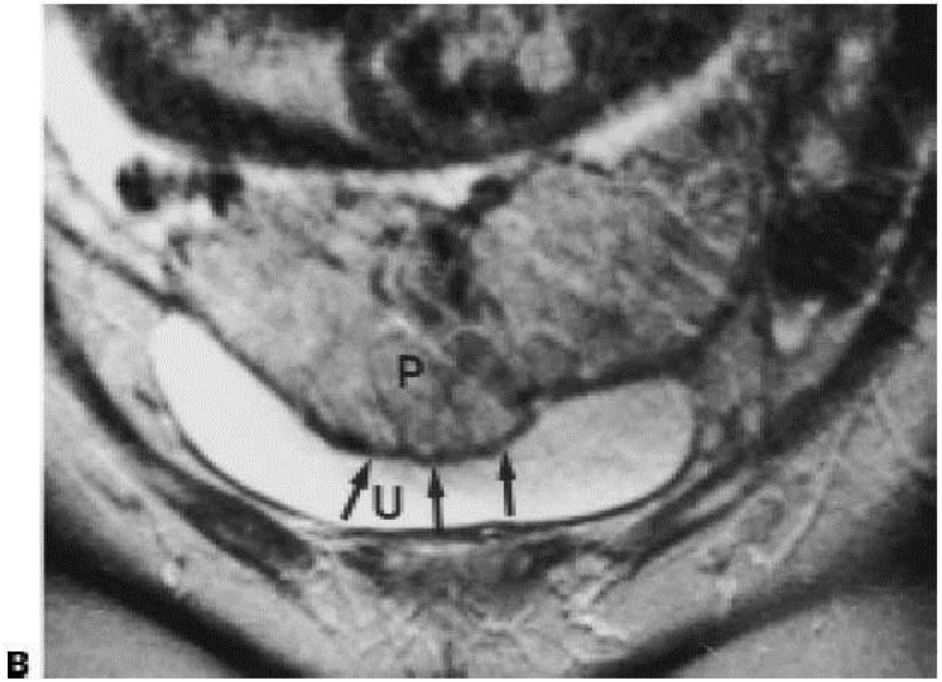
Diagnosis of accreta





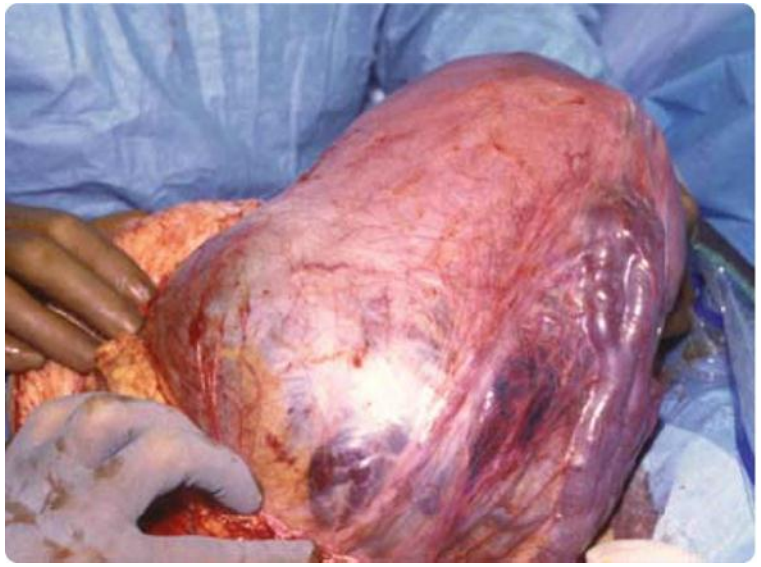
Diagnosis of percreta





Placenta accreta

* 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

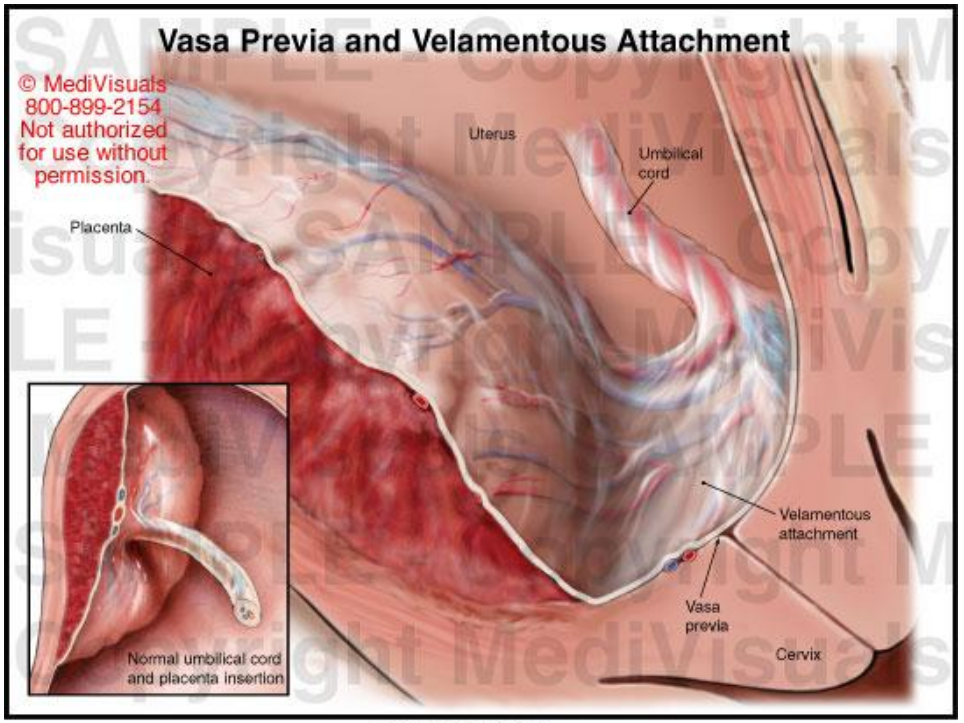
* Several studies have suggested benefit with planned rather than emergent hysterectomy
* As GA increases women have an increased risk of labor and bleeding
* Decision analysis showed the best strategy was delivery at 34wks after antenatal corticosteroids
* There was no benefit to expectant management 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