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Excerpts from

The Placenta: To Know Me Is To Love Me

A reference guide for gross placental examination

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Placental Indication: Placenta Previa

Placenta previa is the implantation of the placenta in the lower uterine segment over or near the internal cervical os. Consequently, it is in front of the presenting fetal part, constituting an obstruction to vaginal delivery. It occurs in about 1:200 pregnancies and is associated with maternal cigarette smoking, multigravida, increasing maternal age, prior cesarean section or other uterine surgery, uterine leiomyoma; 10% are associated with abruptio placentae.

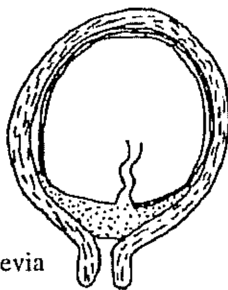
Placenta previa may be classified based upon how much of the internal cervical os is covered by the placenta at complete (10 cm) cervical dilation. Since the cervix retracts as the internal os dilates and the lower uterine segment forms, but the placenta does not, the cervical dilation causes a shearing of the placental pericervical-cervical attachment. If the placental edge, before cervical dilation, is palpable at the center of the internal os, at complete cervical dilatation about half of the area of the internal os would still be covered by placenta. This constitutes *50% placenta previa.* If the placental edge is palpable 6 cm away from the center of the non-dilated internal os, at complete cervical dilation only an area of internal os having a radius of 2 cm would be covered by placenta. This constitutes *20% placenta previa.*

In 20% of cases there is ***total or central placenta previa***, i.e., the placenta covers the entire cervix. In ***partial placenta previa,*** only part of the internal cervical os is covered. In ***marginal placenta previa,*** the placenta extends to the edge of the cervix but does not lie over the internal cervical os. However, in late pregnancy when the cervix effaces and dilates, a marginal previa may be transformed into a partial previa. With a ***low lying placenta,*** the placenta is implanted in the lower uterine segment in close proximity to, but not reaching, the internal cervical os.

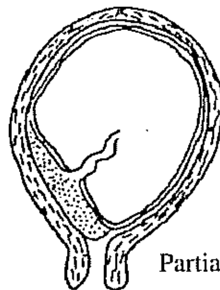
It is thought low uterine implantation results when the endometrium and decidua of the upper uterus are deficient. Uneven blood flow to the endometrium might explain why leiomyomas, old surgical scars, cigarette smoking and maternal age are risks for placenta previa. Cigarette smoking and advanced maternal age are associated with marked vascular sclerosis of small myometrial arteries and arterioles. Because such lesions are unevenly distributed, blood flow could be restricted to some but not all of the endometrium. This may result in a placenta with a larger surface area, having grown wider in order to obtain an adequate blood supply. The poorly perfused endometrium associated with leiomyomas and old surgical scars may be inadequate for implantation, forcing the blastocyst to implant lower than normal in the uterus.

Although there may be spotting in the first and second trimesters, placenta previa is the most frequent cause of third trimester bleeding and may be life threatening for mother and fetus. The bleeding may be sudden, profuse and painless (*cardinal sign*), usually after the 28th week; it usually does not cause shock and is rarely fatal. The bleeding presumably arises from villous disruption at the placental edge when the cervix begins to dilate in late gestation, or as the result of intravaginal manipulation. Differential diagnosis includes partial abruptio placentae of a normally implanted placenta or circumvallate placenta.

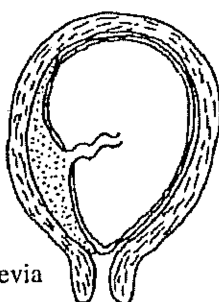
Placenta previa discovered in early pregnancy may resolve due to trophotropism; however, when the placenta initially completely covers the cervical os, the condition usually persists. Trophotropism (placental migration, dynamic placentation) is the modification of the original placental implantation site during pregnancy. This "modification" or movement is not accomplished by the placenta unseating and relocating itself, but rather via progressive villous atrophy over the poorly vascularized lower uterine segment and simultaneous villous growth in the well vascularized upper uterine segments, and through the natural thinning of the lower uterine segment. This process also explains how placenta previa may convert to marginal previa or a higher-lying placenta during the



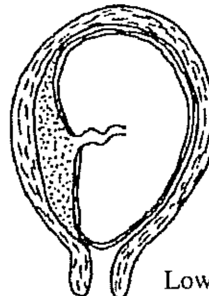
Total Placenta Previa



Partial Placenta Previa



Marginal Placenta Previa



Low Lying Placenta

Classification of Placenta Previa

Placental Location

By Postpartum Palpation
Anterior 53%
Posterior 39%
Lateral 8%
Fundal position 2%
Fundal and upper segment 42%
Upper segment 47%
Upper and lower segment 9%

	By Sonography		
Site	10-20 wks (%)	21-31 wks (%)	32-40 wks (%)
Anterior	25	41	44
Posterior	37	28	26
Anterior-Fundal	9	6	8
Posterior-Fundal	17	18	15
Fundal	12	7	7

progress of pregnancy. The point should be made—an opposite migration never takes place.

The gross placenta may show nothing unusual. However, there may be placenta extrachorialis (circumvallate placenta), it may have a larger surface area, abnormal cord insertion site, and/or marginal atrophy or infarcts. There may be an area of disruption and hemorrhage at the placental edge, on the fetal surface and/ or maternal surface. There may be old blood clots over the portion of villous tissue overlying the cervical os which may be laminated and brown, friable loose blood to partly decomposed material, and which may sometimes be green from hemosiderin. There are no microscopic changes inherently associated with placenta previa.

Ten percent of placenta previa cases are associated with abruptio placentae (25% go into labor within a few days) and there is an increased incidence of placenta creta. Fifteen percent present in transverse or oblique lie. Generally there is no evidence of fetal distress, unless complicated by hypovolemic shock, abruption or cord accident. Prematurity due to placenta previa accounts for 60% of perinatal deaths, many a result of intrauterine asphyxia or birth injury. It is also associated with neurological abnormalities including cerebral palsy and lesser motor abnormalities accompanied by mental retardation. Placenta previa associated perinatal mortality rate is about 15-20%, or at least 10 times that of normal pregnancy.