

diction of late-IUGR could be hardly be made in third trimester.

Placental growth factor (PIGF) has recently emerged as a promising biomarker in the prediction of placental disease, including intrauterine foetal death.

Prediction of severe disease would be possible early in the pregnancy allowing to activating prevention strategies. Deeper investigation should be carried on for the prediction of late and mild placental disease.

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The role of ultrasonography in prediction of obstetric hemorrhage

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Obstetric haemorrhage is the single most significant cause of maternal mortality worldwide accounting for 25–30% of all maternal deaths. Life-threatening postpartum haemorrhage (PPH) occurs in approximately 1:1000 deliveries in the developed world. Although the risk of dying from pregnancy decreased dramatically during the last century, 60–90% of deaths from PPH are potentially preventable with better medical care.

Ultrasound is an unique diagnostic technique for many obstetric hemorrhage.

Types of obstetric hemorrhage:

Antepartum (early and late) hemorrhage

- Early pregnancy hemorrhage: abortion (medical or spontaneous) and ectopic pregnancy
- Late pregnancy (antepartum) hemorrhage: placenta previa, placental abruption, placenta accreta (accreta, increta & percreta) and vasa previa.

Early pregnancy hemorrhage: abortion (medical or spontaneous) and ectopic pregnancy. Vaginal bleeding in the first trimester of pregnancy can be caused by several different factors. Bleeding affects 20% to 30% of all pregnancies. Transvaginal ultrasound is an excellent diagnostic imaging technique for early normal and complicated pregnancy. The hemorrhages arising from uterine anomaly, presence of subamniotic and subchorionic hematomas, abnormal placentation, abnormal embryonic location and the other pathological situations are well diagnosed by ultrasound in early gestational age.

Late pregnancy (antepartum) hemorrhage: Antepartum haemorrhage is defined as bleeding from the genital tract after 24 weeks of gestation and has an incidence of 2-5% of all preg-

nancies beyond 24 weeks. The most causes of antepartum bleeding are placental abruption, placenta previa, abnormal placentation and uterine rupture. Central and marginal subchorionic hemorrhages of placental abruption are well diagnosed by ultrasound examination. Placenta previa can be well diagnose by transvaginal ultrasound during all stages of pregnancy, especially in the second half of gestation. Abnormal placentation is also can be diagnosed by transvaginal ultrasound in early period, especially if placenta located on uterine scars, such as cesarean section. If the obstetric hemorrhage originated from uterine rupture, intra abdominal hematoma or fluid can be diagnosed by ultrasound examination.

Intrapartum hemorrhage

Intrapartum hemorrhage complicates about 5% of all deliveries. Uterine rupture, cervical rupture, episiotomy, abruption placenta, placenta previa variations and prolonged labor.

Postpartum hemorrhage

- Early postpartum hemorrhage: uterine atony, uterine rupture, uterine inversion, retained products, invasive placentation, intrauterine hematoma, myomas, coagulopathy and lacerations of genital tract (lower and upper)
- Late postpartum hemorrhage: retained products, uterine enlargement, infections, subinvolution of placental site, coagulopathy and uterine varix

Postpartum haemorrhage (PPH)

The incidence of postpartum hemorrhage is about 1 in 5 pregnancies, but this figure varies widely due to differential definitions for postpartum hemorrhage. PPH can be divided into 2 types: early (<24 hours after delivery) and late (24 hours to 6 weeks after delivery). Most cases of PPH (>99%) are early. PPH can be categorized as an abnormality of one or more of the following: uterine tone, retained tissue, trauma and coagulopathy. Uterine atony, defined as the lack of efficient uterine contractility after placental separation, is the most common cause of PPH and complicates approximately 1 in 20 deliveries. Diagnosis of uterine atony is difficult made by ultrasound, however, the ultrasound examination is useful for if presence intrauterine hematoma, retained tissue, uterine fibroids. Abnormal placentation is abnormal attachment of the placenta to the uterine wall and includes accreta, increta, and percreta, depending on the extent of uterine invasion. Important risk factors are the presence of placenta previa and a history of prior Caesarean deliveries. In generally, abnormal placentation can be diagnose by ultrasound antenatally. In addition, the ultrasound examination is useful for retained tissue, uterine infection and the other pelvic organs pathologic situations.