

## DIRECT PLACENTOGRAPHY

by

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The author investigated Reid's soft tissue technique for placentography using conventional roentgen-ray equipment. The method relies on straight roentgenography with the fetus acting as a contrast medium. The principle is based on the fact that the placenta occupies space and, where there is no space, there is, therefore, no placenta, provided there is space available for it. In studying a patient suspected of placenta previa, an attempt is first made to show that there is no space between the presenting part and the brim of the pelvis, thereby excluding this diagnosis. If there is space between the presenting part and the brim of the pelvis under other conditions, such as a full bladder, full rectum, or soft tissue tumors, must be considered and excluded, if possible.

The examination consists of taking an erect lateral roentgenogram of the pelvis and a lateral roentgenogram of the abdomen with the patient lying on the right side, supplemented, on occasions, by an antero-posterior spine roentgenogram and oblique roentgenograms, all made with a differential wedge filter over the tube aperture.

The author distinguishes types of placenta previa, by location, as fol-

lows: In Type I, the mass of the placenta is above the brim of the pelvis, with the margin dipping down into the pelvis slightly and displacing the presenting part. In Type II, the mass of the placenta is at the brim with the margin usually not extending as far as the internal os. In Type III, the mass of the placenta is slightly below the brim with the margin probably covering the internal os. In Type IV, the mass of the placenta is in the pelvis. Thus, this roentgenologic typing is determined by the position of the mass of the placenta, in contrast to the obstetric classifications which are determined by the position of the margin of the placenta. Roentgenologic and clinical classifications, therefore, may not always agree, but the discrepancy should not be greater than one type. The greatest difficulty will be experienced in discriminating between Type I and no placenta previa, and between Types II and III.

The author concludes that the positive demonstration of placenta previa largely eliminates the need for diagnostic vaginal examination with its attendant risks. It indicates whether caesarean section is preferable to vaginal delivery and frequently permits a diagnosis prior to the onset of bleeding. The roentgenologic exclusion of placenta previa may be valuable in differentiating accidental haemorrhage from placenta previa.

Soft tissue placentography is such a simple, safe and reliable procedure that its use spares the patient a prolonged, unnecessary period of hospitalization when the findings are negative.

The position of the previa part of the placenta is significant. The lower uterine segment projects more deeply into the pelvis posteriorly than anteriorly, and it follows that a pos-

teriorly positioned placenta previa will encroach more upon the space available in the pelvic brim than an anteriorly positioned placenta previa.

Consequently, the posterior placenta previa is more likely to interfere with engagement of the presenting part, and bleeding resulting from its separation is less readily controlled by descent of the presenting part.

## DIAGNOSIS OF PLACENTA PRAEVIA BY SOFT-TISSUE RADIOGRAPHY

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The placenta is important clinically because it is associated with the most serious complications of pregnancy—premature separation of a normally implanted placenta and placenta previa. Total placenta previa completely covers the internal uterine os; placenta lateralis partially covers the os; placenta marginalis reaches to the edge of the os; placenta cervicalis in-creta extends into the wall of the cervical canal; low placental insertions are above the margin of the os.

Roentgenologic methods of placental localization are either direct soft tissue roentgenography or indirect methods such as cystography, vertex displacement, amniography, angiography, and radioisotope loca-

lizations. Reliable placentography allows prophylactic care of positive cases, differentiates incidental haemorrhage, and locates placental site for special intrauterine obstetrical manoeuvres. The first reported direct visualization of a placenta previa roentgenographically was by Baumann in 1930, but Snow and Powell in 1934 described a simple procedure for soft tissue visualization of the placenta in 80 per cent of cases. In a review of 22,000 roentgen studies in 1949, Snow reported the placenta on the anterior or posterior wall in 90 per cent of cases. He also used air cystography in cases of central placenta previa. Snow demonstrated abruptio placentae as a localized bulge on either the anterior or posterior uterine wall at the site of the haemorrhage.

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The subcutaneous fat, surrounding the fetus, casts an important black line which is helpful in differentiating the broad, crescent soft tissue shadow of the placenta. Hydramnios hinders placental recognition because its appearance may be identical in density. Dipple and Brown advocated the lateral soft tissue roentgenogram as sufficient to show the placenta clearly in pregnancy of twenty-four weeks or more. Vaughan introduced the wedge filter to equalize the roentgenographic density in 1942 using a plastic screen. Other workers developed copper and aluminium filters.

With the direct placentography method, about ninety per cent of normal and low implantations are on the anterior and posterior uterine walls, rather equally divided, while the remainder are chiefly fundal or previas. Of 70 cases of placenta previa report-

ed by Stevenson, 23 were associated with transverse and oblique fetal presentations. D. Lindsay and Davidson concluded that soft tissue roentgenography of the placenta was accurate in pregnancy of thirty-two weeks or over.

From a review of the literature plus the experience with 132 of his own patients who were roentgenographed for vaginal bleeding during pregnancy, the author recommends soft tissue roentgenography as the most accurate and efficient method for the diagnosis of Types II, III or IV placenta previa. He feels that the roentgenologic findings may be uncertain in Type I placenta previa, or in the presence of malpresentation, hydramnios, a small or deformed fetus, fibroid tumor, multiple pregnancy, and in cases of lateral placental implantation.