

Ultrasound findings

Ultrasound examination shows only two vessels in the umbilical cord. Larger studies report the left artery is absent more often than the right (59 versus 41 percent [20]) [1,20,21]. The side (left or right) of the missing artery does not appear to have clinical significance [20-23], with the exception of one study that reported complex fetal anomalies and chromosomal abnormalities occurred exclusively when SUA resulted from the absence of the left umbilical artery.

Most umbilical cords have a normal diameter despite SUA, but the cord may be velamentous or have a small diameter [24,25]. In the longitudinal view, the two-vessel cord frequently appears straight and non-coiled, although occasionally the single artery may loop around the vein.

Absence of one umbilical artery in the cord necessarily implies the absence of the corresponding intraabdominal portion of the umbilical artery.

The SUA is larger than normal. In the normal three-vessel cord, blood flow to the placenta is approximately equally distributed through both arteries. In the two-vessel cord, the entire fetoplacental circulation is transported through only one artery, resulting in a compensatory increase of the arterial diameter. The diameter of the single artery usually measures more than 50 percent of the diameter of the vein, resulting in an umbilical vein-to-artery ratio <2 (figure 1) [26,27]. In contrast, the arteries in a three-vessel cord usually measure less than 50 percent of the diameter of the vein, resulting in an umbilical vein-to-artery ratio >2 . The compensatory increase in the single artery diameter can be seen as early as the early second trimester.

High-resolution color Doppler ultrasound may demonstrate differences in the impedance indices in the pelvic circulation of fetuses with SUA [29,30]. The discordant intraluminal blood flow between common iliac arteries is more marked as pregnancy progresses, which may be due to both the decrease in resistance in the placental circulation and the increase in resistance in femoral arteries.