



## Succenturiate lobe of placenta with vessel anomaly: a case report of prenatal diagnosis and literature review



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### ARTICLE INFO

#### Article history:

Received 1 November 2013  
Received in revised form 22 January 2014  
Accepted 22 January 2014

#### Keywords:

Succenturiate placenta  
Placental anomalies  
Fetal vascular anomalies  
Doppler ultrasonography  
Placenta

### ABSTRACT

We report the case of a 33-year-old woman with antenatal ultrasound diagnosis of succenturiate placental lobe at 33 weeks confirmed by B-flow rendering, describing the advantages of the application of color Doppler to diagnosis and management of placental anomalies. We searched studies about antenatal diagnosis of succenturiate placental lobe, including only cases in which color Doppler was used. This case underlines the importance of color Doppler in increasing the accuracy of diagnosis and achieving an improved differential diagnosis.

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### 1. Introduction

Perinatal death is most frequent in pregnant women with abnormalities of placenta, umbilical cord, and fetal membranes. Despite advances in perinatal medicine, approximately 2% of low-risk pregnant women still require an emergency cesarean section after the onset of labor [1,2]. The succenturiate placenta is a clinically relevant diagnosis in which one or more small accessory lobes develop in the membranes apart from the main placental body to which they are usually connected by vessels of fetal origin [3]. Although Callen [4] and Benirschke [5] reported an incidence of succenturiate lobes of placenta of 5%–6%, Cunningham [6] and Suzuki [7] encountered them very infrequently. Advanced maternal age and in vitro fertilization, both increasing, are considered risk factors for succenturiate lobe, probably because of the underlying progressive vascular damage that involves placenta in both conditions [7,8]. The diagnosis of this placental anomaly often occurs at birth, and only very few cases of prenatal diagnosis with ultrasound are reported. The antenatal diagnosis of succenturiate lobe involves strictly differential diagnosis among other conditions because the presence of vessels running between the two parts can appear similar to amniotic band or uterine septum at ultrasound examination [9,10].

Moreover, this placental anomaly should be differentiated from the conditions described below: firstly, the bipartite or bilobed

placenta that is described as two placentas of equal or near-equal size separated by a membrane [11], and secondly, the chorionicity in multiple pregnancies that could be identified during the first trimester by the visualization of two separated placentas in the case of dichorionicity. In cases with a single or fused placenta, evaluation of the intervening membrane can help distinguish between dichorionic and monochorionic placentation. Separate membrane thickness, number of layers, and the presence of either the lambda or T-sign at the base of the membrane, evaluated by ultrasound, can be useful to the diagnosis [12].

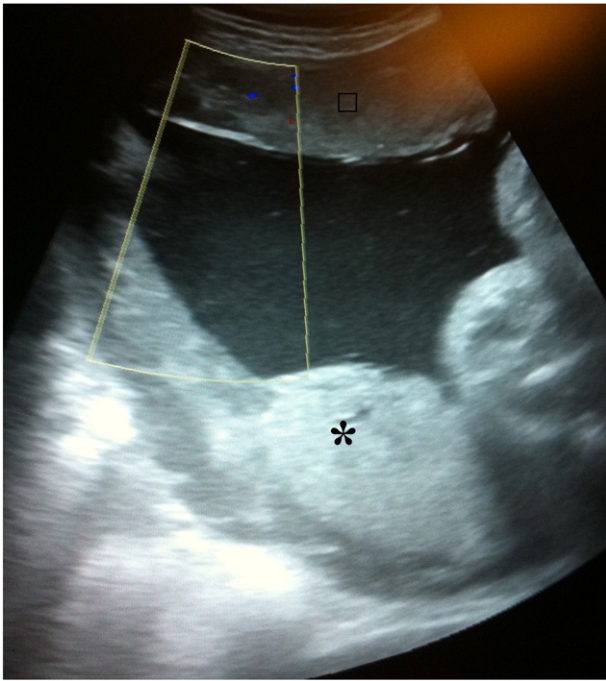
Some studies also suggest that the succenturiate lobes are the effective cause of sudden fetal death, particularly when vessels cross the cervical os as vasa previa [13–16]. Moreover, considering that its presence can alert the obstetrician to wait for delivery of both portions of the placenta during the final stage of labor, antenatal detection allows to avoid the morbidity (postpartum hemorrhages and infections) associated with unsuspected retained products of conception [17]. The accuracy of prenatal diagnosis could be very important in improving the management and the outcome of these pregnancies, and color Doppler imaging represents a useful instrument for a correct diagnosis of succenturiate lobe and related vascular anomalies.

### 2. Case report

A 33-year-old woman, gravid 2 with a previous cesarean section, was admitted to our third-level center because of a diagnosis of vascular placental anomaly at 33 weeks. The suspicion was a free-floating vessel in the amniotic cavity or vasa previa. A previous first-level ultrasound scan at 21 weeks of gestation reported the placenta as

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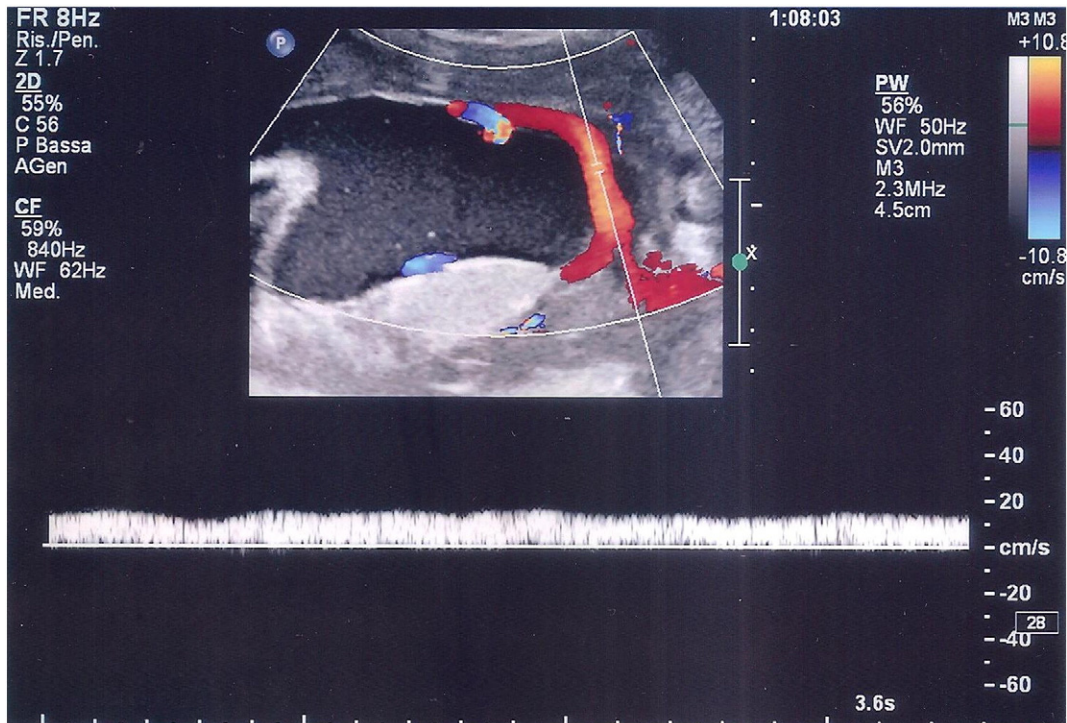
**Fig. 1.** Transabdominal grayscale ultrasound shows the main anterior placenta (□) and the succenturiate posterior lobe (\*) completely apart from the placenta.

located on the anterior wall with no fetal or placental abnormalities. At 33 gestational weeks, we performed a transabdominal ultrasound scan that evidenced a succenturiate lobe located on the posterior wall and completely apart from the anterior placenta (Fig. 1). Color Doppler technology revealed a vessel running from the anterior placenta to the posterior lobe and compatible with a venous type (Fig. 2). Moreover, it permitted the study of the vascularization of

both placental lobes (Fig. 3). The application of a 3-dimensional rendering B-flow allowed us to confirm that the vessel was not free in the amniotic fluid as suspected before. B-flow technology digitally enhances signals from weak blood reflectors from vessels and, at the same time, suppresses strong signals from surrounding tissues [18]. The method does not rely on Doppler ultrasonography to display blood flow; it is not angle-dependent and allows relatively high frame rates with excellent spatial resolution. In our case, the vessels did not cross the cervical os as vasa previa. At 37 weeks of gestation, the patient was hospitalized for the onset of contractile activity. The cardiotocography (CTG) revealed tachycardia and reduction of variability. In relation to gestational age and to the nonreassuring fetal CTG, as an American Congress of Obstetricians and Gynecologists Committee Opinion (2004) states [19], a decision for emergency cesarean delivery was taken. The surgical intervention was performed without complications. Placenta appeared inserted on anterior uterine wall with a succenturiate posterior lobe and two vessels connecting them, lying over the membranes (Fig. 4); no vessels free in the amniotic fluid were detected. A female baby was born, birth weight was 2740 g, and Apgar score was 8 at 1 min and 9 at 5 min. No neonatal complications were recorded.

### 3. Discussion

The presence of a succenturiate lobe is usually diagnosed after delivery. The use of ultrasonographic scan could determine misdiagnosis because the vessels between the two parts of placenta can be considered as an amniotic band [13,14]. Before the introduction of the use of color Doppler in the differential diagnosis of the placental anomalies, the grayscale ultrasonographic imaging was the only method used for the diagnosis of placental anomalies [20–22]. Color Doppler imaging, revealing fetal blood flow, is helpful in excluding the suspicion of amniotic band. Furthermore, it is useful in detection of vasa previa that can complicate some cases of succenturiate lobe [23]. A prenatal diagnosis of succenturiate placental lobe could permit the highlighting of the anomaly to the clinician in order to manage in a



**Fig. 2.** Transabdominal color Doppler imaging of the floating vessel inside the amniotic cavity, running between the anterior placenta and posterior lobe and compatible with a venous type as it is confirmed by its spectral waveform.

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