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Horseshoe-shaped Placenta and Preterm Labour: A Case Report

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ABSTRACT

Horseshoe placenta is a variant of ring-shaped placenta. Ring-*shaped placenta* is a rare anomaly seen in fewer than 1 in 6000 deliveries, which could be seen as horseshoe shape due to atrophy in a portion of the ring. This report refers to a possible relationship between the horseshoe shape placenta and preterm labor; although it has not been yet validated in the literature. In this case report we present the placenta of a 35 years-old G2L1 woman who was referred to delivery unit of Shohada Hospital in Ghouch, Iran with starting of labor pain at 34 weeks of gestation who gave birth to a live-born female baby with 6/8 APGAR score. The amniotic fluid was meconium-stained. The patient had no evidence of fever, bleeding, infection. It is concluded that due to the risks to the fetus and mother caused by horseshoe placenta, its timely diagnosis during pregnancy using ultrasound is important and leads to early detection and better management of pregnancies complicated with placental abnormalities.

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Introduction

Fetal development is a complex process, which depends on a variety of growth factors such as availability of nutrients and oxygen for the fetus. The placenta appears as the source of oxygen and nutrients for the fetus, therefore, it plays a central role in fetal growth. Placental processes depend on the size, morphology, blood flow, and transporter abundance of the placenta (1-4).

In terms of placental morphology, the shape of the chorionic plate of the human placenta is commonly round, with the umbilical cord roughly inserted at the center (4, 5). However, Salafia (2010) states that very few placentas appear truly round with a centrally inserted umbilical cord.

The placental shape has been commonly described as round, oval, bi- or multi-lobate, or otherwise irregular (6). Benirschke suggests that the mechanism by which a non-round placenta develops is unclear. However, the findings support the notion of a secondary conversion from more normal placentation (7).

In less than 1 in 6,000 deliveries, the placenta is annular in shape, and sometimes a complete ring of the placental tissue is present. However, due to tissue atrophy in a portion of the ring, a horseshoe-shaped placenta becomes more common (Figures 1 & 2) (5).

Several studies have shown that abnormal placental growth is associated with adverse gestational outcomes, and could result in an impaired delivery of oxygen and nutrients to the fetus, thus leading to an abnormal fetal development (8, 11).

Horseshoe-shaped placenta, as a variant of ring-shaped placenta, appears to be associated with a greater likelihood of ante- and post-partum bleeding and fetal growth restriction (5).

This shape of placenta is so rare that there is no sufficient evidence to explain its

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Figure 1. Fetus surface of a horseshoe shape placenta

Figure 2. Maternal surface of a horseshoe shape placenta

correlation with adverse gestational outcomes. Therefore, considering the importance of this type of placenta, due to its association with some fetal and maternal complications, in this report, we aimed to address a rare case of horseshoe-shaped placenta.

Case Report

Herein, we report a horseshoe-shaped placenta with a non-central umbilical cord insertion (marginal cord). The subject was a 35 year-old gravida 2, para 1 woman, who was referred to the labour and delivery unit of Shohada Hospital in Quchan, Iran.

The subject had labor pain at 34 weeks' gestation and gave birth to a liveborn female infant, with cephalic presentation after two hours of labor, followed by a preterm vaginal delivery. The amniotic fluid was meconium-stained, and one- and five-minute APGAR scores were 6 and 8, respectively.

On first vaginal examination, the cervix was 70% effaced and 4 cm dilated, and the patient had no signs of fever, bleeding, infection, or history of medical complications throughout or before the pregnancy. The course of pregnancy was uneventful, and the subject received antenatal care in an outpatient unit.

Discussion

In this report, by considering a possible relationship between the horseshoe-shaped placenta and preterm labor, an association between placental abnormality and other unidentified consequences can be suggested; however, the presence of such association has not been confirmed in the literature review.

Unfortunately, placental pathology is rarely included in the training of either obstetricians or pathologists. As a result, the potential benefits of routine placental examination are in question. Salafia (1990) states that these benefits include the clarification of the causes of many adverse gestational outcomes, the improvement of future pregnancy risk assessments, and ascertainment of neonatal risk factors for long-term neurodevelopmental sequelae (12).

Penfold et al. (1979) demonstrated that there was no evidence regarding the association between fetal growth (its condition at birth) and cord eccentricity, placental shape and thickness, or the dimensions of the cord (13).

On the other hand, Yampolsky et al. (2009) showed that placental proportions, such as deviations of the placental shape from round and the relative thickness of the placenta modify placental functional efficiency, and in particular, explain some possible birth weight ranges in a normal population delivered from similar placental weights (4). Additionally, they indicated that the placenta with a displaced cord shows a markedly reduced transport efficiency, reflected in a larger value of β-*HCG*, and hence a smaller birth weight for a given placental weight (4).

Similarly, in our case, the displaced cord and placental shape might be caused by preterm labor due to reduced transport efficiency. In addition, according to Alwasel's findings (2013), tissue along the breadth of the placental surface may be more important than the tissue along the length in the transfer of nutrients from the mother to the fetus. In our case, the breadth of the placental surface was less than its length.

Costa et al. (2008) indicated that the determination of uterine artery Doppler and placental morphology (its shape and texture)

with ultrasound at 18-23 weeks of gestation could predict adverse perinatal outcomes. In their study, the placental shape was considered abnormal when depicting the following characteristics: placental length less than 10 cm, thickness more than 4 cm, or the length/thickness ratio less than 2.0 during the second trimester (15).

Therefore, due to the risks associated with horseshoe-shaped placenta for both the fetus and the mother, timely diagnosis during pregnancy (using ultrasound) is essential, and can lead to the early detection and proper management of pregnancies complicated with placental abnormalities.

Conclusion

This report presented a possible relationship between the horseshoe-shaped placenta and preterm labor.

Conflict of Interest

No conflict of interest exists.

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