The importance of placental evaluation following perinatal death

Abstract

Although uncommon, abnormalities of the placenta are important to recognise owing to the potential for both maternal and fetal morbidity and mortality. The placenta is often overlooked in the routine evaluation of a normal gestation, receiving attention only when an abnormality is detected. During the formal scan to confirm a fetal death, the information gathering process to elucidate a possible cause of death begins, yet, even in this instance, the placenta is seldom examined. We aim to draw attention to the importance of placental assessment by presenting a case of a stillbirth where the answer to the cause of death lay in the placenta.

Keywords: chorangioma, placental ultrasound, stillbirth.

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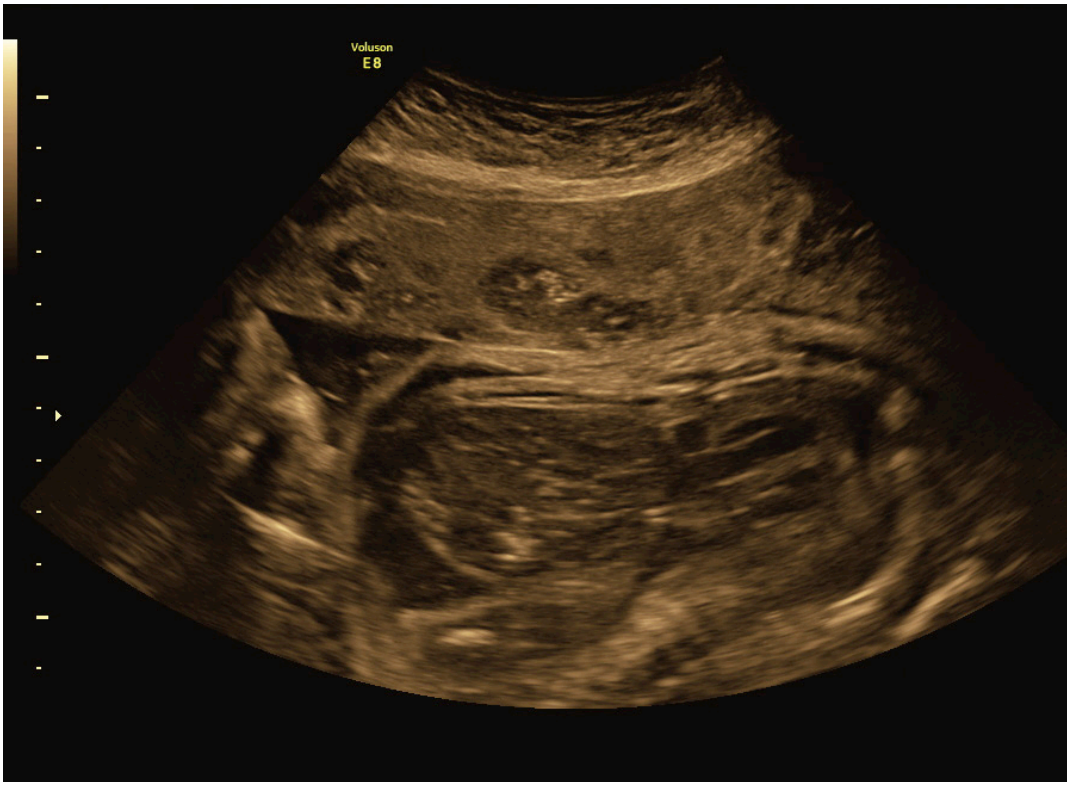

Figure 1: Numerous hypeoechic lesions in the placenta.

Case report

A 31-year old female, G2P0, presented to the fetal medicine unit at 38 weeks gestation with a history of reduced fetal movements. Ultrasound confirmed fetal death. The amniotic fluid volume was norma; biometry was suggestive of undetected fetal growth restriction, and no fetal anomalies were identified. Targeted placental ultrasonography revealed numerous hypo-echogenic lesions scattered throughout most of the substance of the placenta (Figures 1 & 2). The standard protocol for investigating a perinatal death[1] was followed. Amniotic fluid was collected and sent for microarray analysis, which ruled out an underlying chromosomal abnormality. The parents consented to a full post mortem and placental examination.

The post mortem examination revealed a growth restricted but otherwise normally appearing female infant. There was evidence of chronic hypoxia and congestive cardiac failure. No developmental malformations were identified.

The placental disc was noted to be smaller than expected for the gestational age, but otherwise, externally, appeared essentially normal. Multiple,

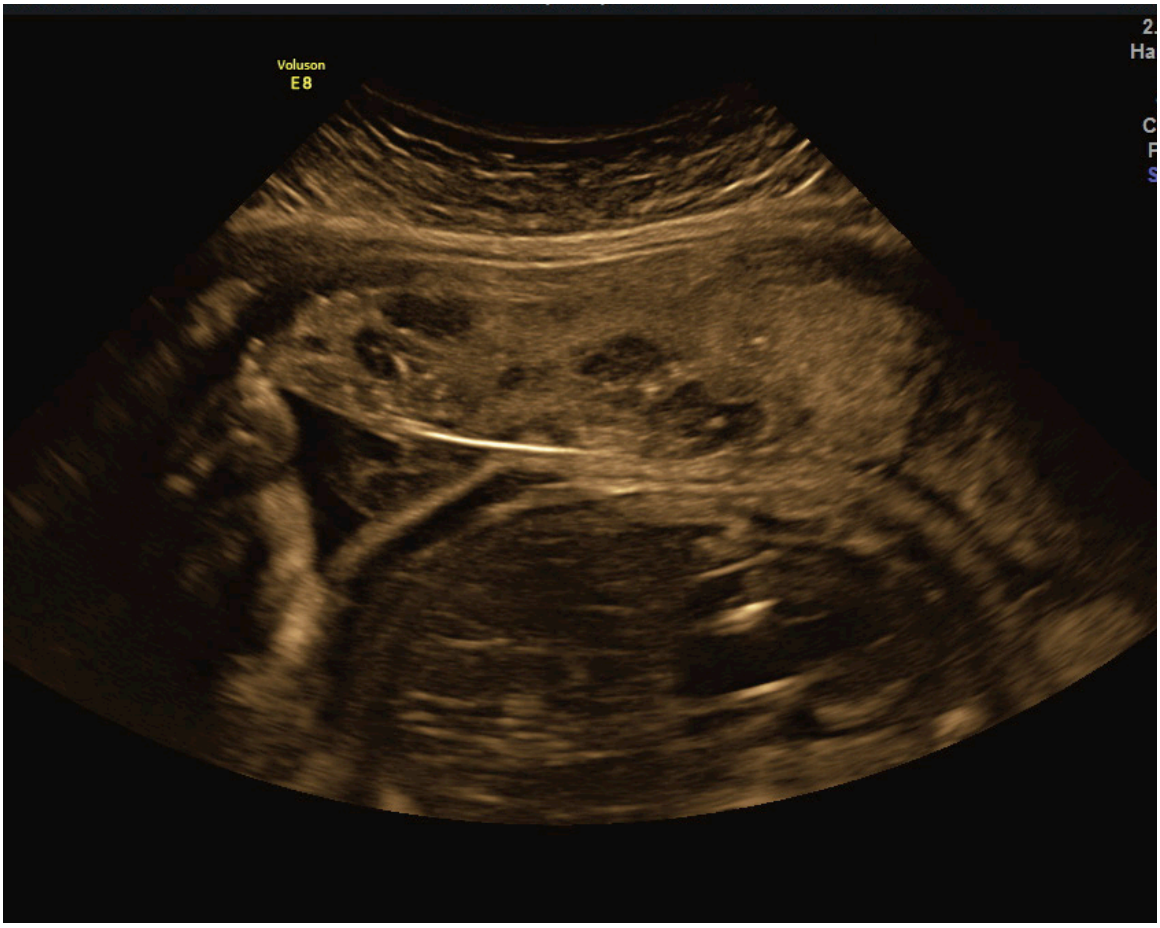

Figure 2: Numerous hypeoechic lesions in the placenta.

firm, cream to dark-red well-circumscribed lesions, measuring between 3 to 35 mm in diameter, were identified when the placenta was sliced (Figures 3 & 4). These lesions involved 60-70% of the entire placental disc volume, and were identified as multiple chorangiomas on histopathology (Figures 5 & 6). Calcification and infarction was evident in some of the tumours. Additionally, multiple foci of chronic lymphohistiocytic villitis, affecting terminal and basal villi, were identified. In the absence of a cultured organism, this was classified as chronic villitis of unknown etiology (VUE).

Discussion

A stillbirth is a heartbreaking outcome for any family but even more devastating is our failure to properly investigate such a death. Professor Ruth Fretts from Harvard Medical School called it the 'Stillbirth Scandal' in a recent RANZCOG publication.[2] Many stillbirths that are thought to be 'unexplained' are actually incompletely investigated. When the unthinkable happens, we should be striving to find answers. It is tempting to think all answers will come from high end testing, but sometimes the answers lie in front of our eyes, if we would only take the time to have a careful look. During the formal scan to confirm a fetal death, we advocate that a detailed study should be mandatory. Circumstances permitting, one should aim to specifically, document the fetal presentation and placental site, search for fetal and placental anomalies, perform biometry and measure the amniotic fluid volume. Following a stillbirth, many parents often opt for limited investigations, and in these cases, the findings from this ultrasound scan, together with the external examination of the baby performed following delivery, will form the basis of perinatal loss counselling. In our case, targeted placental ultrasonography, together with corroboratory information obtained from the post mortem and placental histopathology examinations identified the cause of death. Had these parents not agreed to investigations, in the absence of a detailed ultrasound study, this stillbirth too had the potential of being classified as yet another unexplained loss.

Chorangiomas are analogous to haemangiomas in other parts of the body, and can be observed in 0.5% of placentas.[3] They develop after the first trimester, and whilst small solitary lesions are often inconsequential, the larger and multiple lesions are of concern, and necessitate closer pregnancy surveillance by a specialist. These tumours essentially function as arteriovenous shunts, causing a prolonged and persistent disruption of fetal cardiac function. Consequently, affected fetuses exhibit a varied tendency towards high output cardiac failure, which is not only associated with the development of hydrops and an increased risk of subsequent fetal/neonatal demise, but, may also predispose to abnormal neurodevelopment in childhood. Fetal growth restriction, anaemia and hypoxia are thought to occur because of preferential shunting of blood through the low-pressure system within the chorioangioma thereby depriving functioning villi of adequate blood flow and nutrient exchange.[4] The development of chorioangiomas is associated with high altitude pregnancies, multiple pregnancies and other conditions associated with a low oxygen tension, suggesting the influence of vascular growth

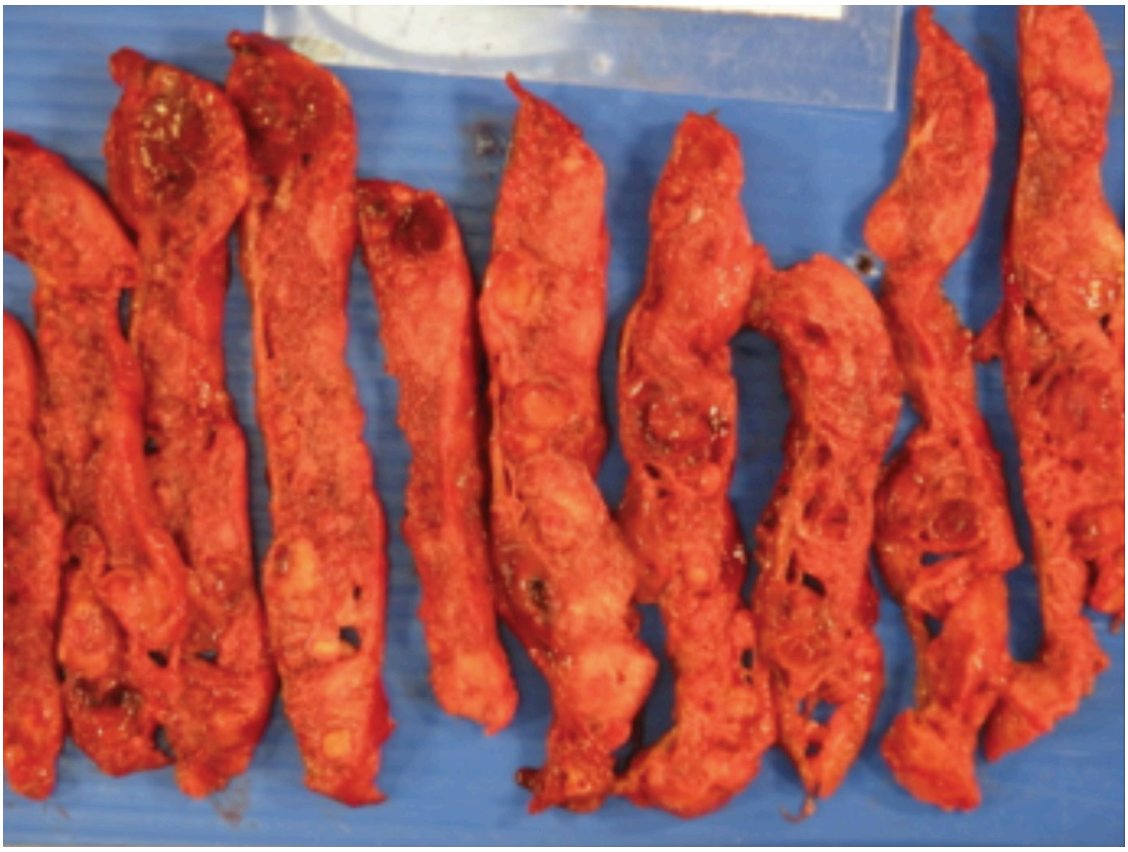

Figure 3: Cut surface of the placenta, demonstrating multiple pale to dark red chorangiomas.

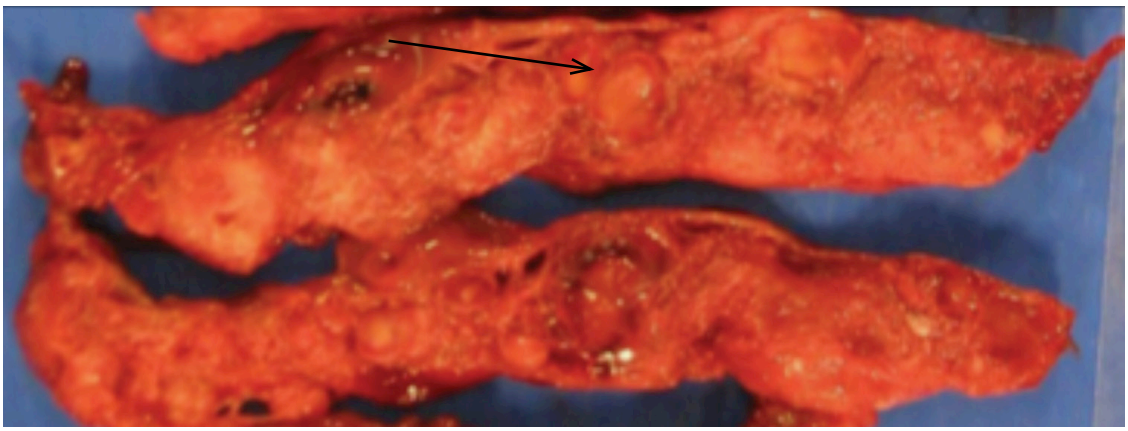

Figure 4: Cut surface of the placenta, demonstrating multiple pale to dark red chorangiomas (indicated by black arrow).

factors induced by hypoxia. This case highlights the importance of submitting the placenta for pathological evaluation as the findings clearly have management implications for subsequent pregnancies.

In this case two major placental insults were identified: multiple chorioangiomas and chronic lymphohistiocytic villitis. Individually both of these conditions can cause a compromised, under-perfused, feto-placental circulation that can result in a small placenta, growth-restricted baby and ultimately fetal demise. It should be noted that whilst the recurrence risk of chorioangiomas in a future pregnancy is low, VUE might reoccur in up to 17% of cases.[5]

A final learning point that can be drawn from this case is the reminder that decreased fetal movement is associated with a less-than-optimal outcome in approximately 26% of pregnancies, with unsuspected growth restriction being the most common finding at evaluation.[6] Women presenting with decreased movements, who are scanned, need a comprehensive ultrasound examination, which should include placental sonography. In doing so, we have the potential to avoid a stillbirth by not missing the important message that both mother and baby are trying to make.

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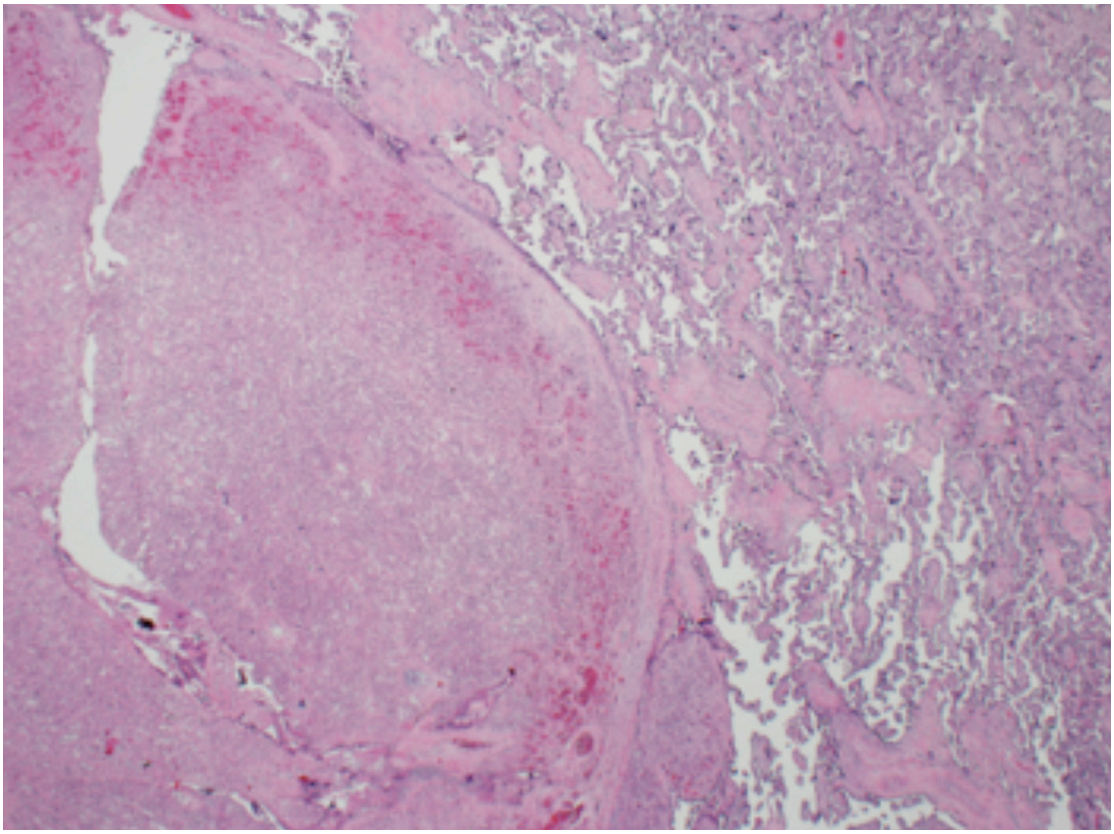

Figure 5: Low and Medium power magnification show well circumscribed vascular lesions (chorangiomas) surrounded by placental tissue.

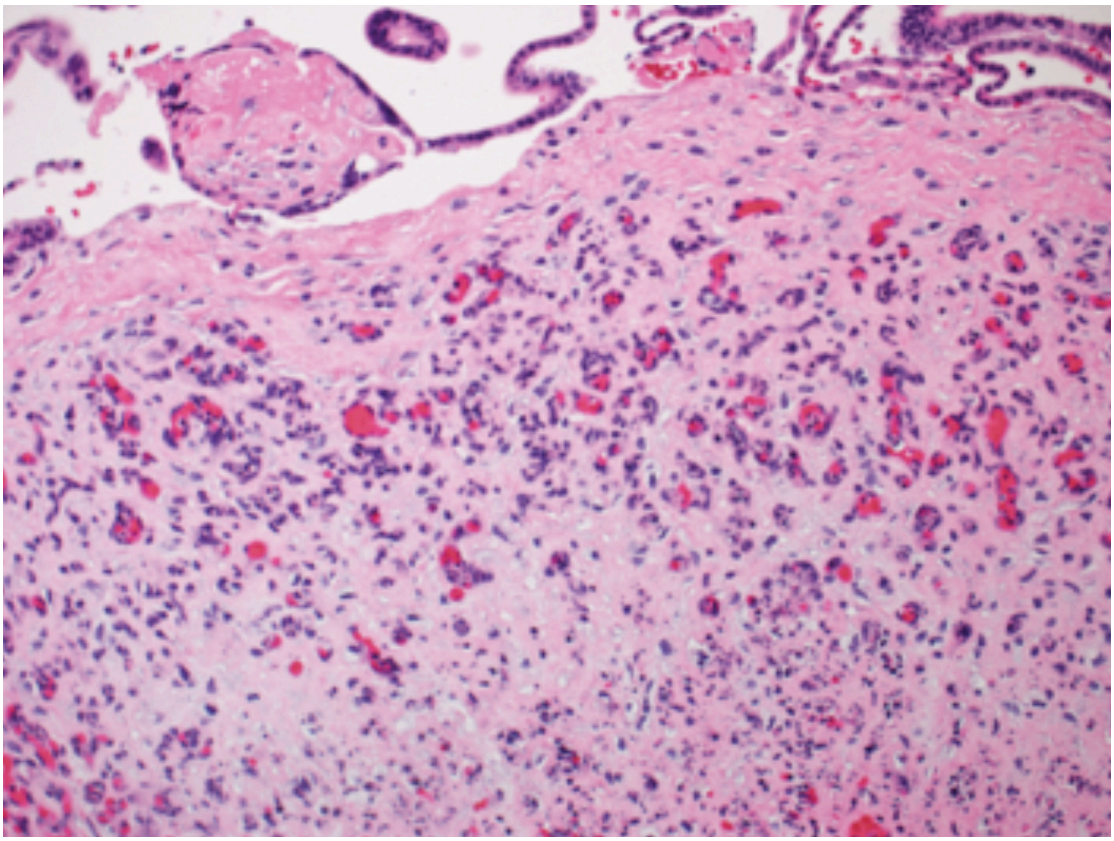

Figure 6: Low and Medium power magnification show well circumscribed vascular lesions (chorangiomas) surrounded by placental tissue.

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