

## UMBILICAL CORD CYST: A CASE REPORT

Nwankwo NC<sup>1</sup>, Manuel BA<sup>\*1</sup>, Dariah PS<sup>2</sup>

<sup>1</sup>Department of Radiology, University of Port-Harcourt Teaching Hospital, Alakahia, Rivers state, Nigeria; <sup>2</sup>Department of Obstetrics and Gynaecology, Mind Aid Clinical Services, Rumuogba Estate Road, Rumuola, Port Harcourt.

**Corresponding Author:** Dr Belema Manuel; **E-mail:** babenebo@hotmail.com

### ABSTRACT

**Background:** Ultrasonography has become a routine investigation carried out during antenatal period especially due to its non-invasive nature. It is used for monitoring foetal viability, gestation and growth as well as detection of foetal anomalies. Umbilical cord cysts are among the anomalies that can be detected by ultrasound. Chromosomal and structural abnormalities are seen in up to 20% of foetuses with umbilical cysts detected in the second and third trimesters.

**Method:** We report the case of umbilical cord cyst detected by ultrasound at 15 weeks gestational age in Mrs. A. B. a 34 year old Gravida2 Para 1+0.

**Results:** The pregnancy outcome was an intrauterine foetal death at 34 weeks gestational age. Post mortem confirmed presence of umbilical cord cyst and multiple foetal congenital anomalies.

**Conclusion:** The association of umbilical cord cysts with foetal anomalies and adverse foetal outcomes should always be kept in mind. The importance of ultrasound in detection and follow up cannot be overemphasized.

**Keywords:** Umbilical cord cyst, Foetal anomalies, Ultrasound.

### INTRODUCTION

Umbilical cord cyst refers to any cystic lesion associated with the umbilical cord.<sup>1</sup> The prevalence of cord cysts varies between trimesters, in the first trimester various studies put the prevalence between 0.4 - 3.4%.<sup>2,3</sup> The prevalence in the second and third trimester has not been established.

Cord cysts in the first trimester may disappear by the second or third trimester. Previous studies have found that cysts detected in the second and third trimesters

are associated with foetal anomalies. This association with foetal anomalies is also observed in cases where first trimester cord cysts persist till the second and third trimesters<sup>4</sup>. Chromosomal and structural abnormalities are seen in up to 20% of cases of umbilical cysts in the second and third trimesters including Trisomy 18 and 13.<sup>5</sup>

Cord cysts may be true cysts or pseudocysts. True cysts are derived from embryological remnants of the omphalomesenteric duct or the allantois thus they have epithelial lining.

The pseudocysts are more common than the true cysts. Pseudocysts represent liquefaction of Whartons jelly or oedema and lack epithelial lining.<sup>6,7</sup> It is not possible to differentiate between true cysts and pseudocysts sonologically due to their similar appearance.<sup>8</sup>

Ultrasound examination of the foetus can be used in the detection of foetal anomalies such as umbilical cord cysts. The examination is safe and non-invasive. It can be used as a screening tool to detect pregnancies that may benefit from foetal karyotype testing.

This case is reported due to its rarity in our environment and the role of ultrasound in its management.

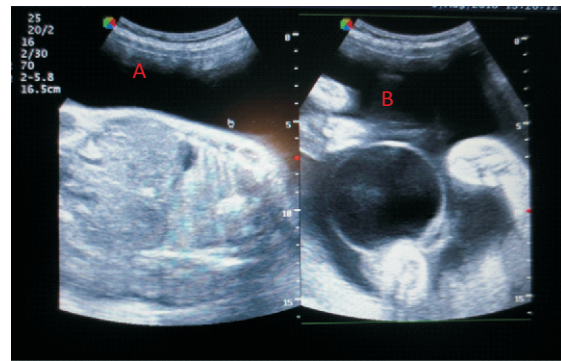
### CASE REPORT

Mrs. A.B. is a 34-year-old Gravida 2 Para1+0 woman who was seen at an industrial clinic for ultrasound scan at 15 weeks gestational age. She is a known Sickle cell anaemia (HbSS) patient who had In-vitro fertilization(IVF) treatment in the index pregnancy with a history of a previous caesarean section. The antenatal period was uneventful until the first ultrasound at 15 weeks gestational age revealed a cystic mass in the umbilical cord. The mass was an anechoic round mass with a thin smooth wall. It measured 6.2cm in diameter. No internal septations within it. No colour flow was visualized within the cyst on doppler examination.

Subsequent ultrasound examinations revealed an increase in the size of the cyst (up to 16.5cm) as well as development of

polyhydramnios. The pregnancy outcome was an intrauterine foetal death (IUFD) at 34 weeks gestational age. The patient however had to have a repeat caesarean section as the foetus was in transverse lie.

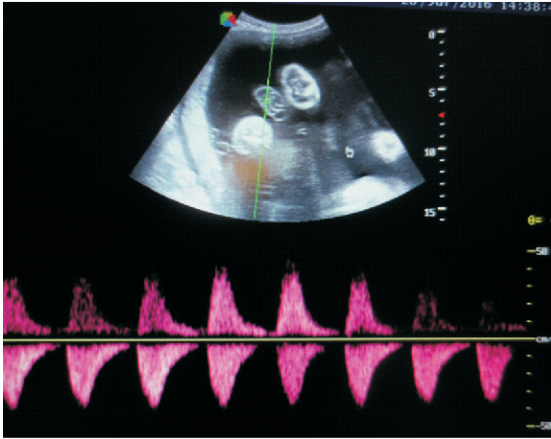
Post mortem examination confirmed a large cyst abutting the anterior abdominal wall. It was discovered that the foetus had multiple congenital anomalies including a single cardiac ventricle, webbed neck, low set ears and polydactyl. Fluid was also present in the peritoneal cavity.



**Figure 1:** Greyscale ultrasound image showing A, foetal abdomen and B, Umbilical cyst



**Figure 2:** Greyscale ultrasound showing Umbilical cyst and polyhydramnios



**Figure 3:** Ultrasound image showing reduced diastolic blood flow on doppler interrogation of umbilical artery.

### DISCUSSION

The umbilical cord develops at around the 7th week of gestation, and can be visualized by transabdominal ultrasound by about the 8th week.<sup>9</sup> Ultrasonography has become a routine investigation carried out during antenatal period especially due to its noninvasive nature. It is used for monitoring fetal viability, gestation and growth as well as detection of foetal anomalies of which umbilical cysts are one example. The exact cause of umbilical cyst is not known, but it is thought to be due to raised hydrostatic pressure in the umbilical vessels.

Umbilical cord cysts may be single or multiple and can be found anywhere along the length of the cord.<sup>10</sup> A study by Ross *et al* found that cysts located close to either the placenta or foetus had a higher association with structural anomalies than those found along the length of the cord. The foetus in this case report had the umbilical cyst close to the

anterior wall and had multiple structural anomalies which supports that observation. The cyst in this case report was discovered in the second trimester and persisted with an increase in size into the third trimester which is also another pointer towards increased risk of foetal anomalies." Although studies have shown that most first trimester cysts will disappear in the later trimesters and thus pose no risk to the foetus<sup>11</sup> other authors disagree. They propose that the presence of an umbilical cyst regardless of gestational age is an indication for foetal karyotyping and intensive monitoring with ultrasound

Umbilical cord cysts may be classified as True cysts or Pseudocysts. True cysts tend to be found at the insertion of the cord into the placenta or the foetus. They are less common and vary in size, typically between 4 to 60mm. True cysts are associated with hydronephrosis, patent urachus and omphalocele. Pseudocysts of the umbilical cord are more common and can be found at any point along the cord. It is associated with chromosomal abnormalities, patent urachus, omphalocele and hemangiomas.

On ultrasound examination, umbilical cord cysts appear as a well-defined anechoic structure with hyperechoic border adjacent to the umbilical cord. These structures may be single or multiple. Doppler examination shows no flow within them and establishes the relationship with the cord. In this case the cyst was single, anechoic and showed no flow within it. In cases of persistent and enlarging cord cysts; doppler examination of the cord may also show restriction of blood flow to the foetus. This was the situation in this index

case. Restriction of blood flow through the cord is thought to be due to compression or thrombosis,<sup>12</sup>

Previously most publications on umbilical cysts were case reports but in recent years, studies have been carried out to determine the significance of umbilical cord cysts. It is believed that improvement in ultrasound technology has improved the detection of these cysts, thus their effect on pregnancies and foetal outcomes need to be studied.

#### CONCLUSION

A case of umbilical cord cyst in the second trimester is reported. The association of this entity with foetal anomalies and adverse foetal outcomes should always be kept in mind. The importance of ultrasound in detection and follow-up cannot be overemphasized.

#### REFERENCES

1. Ratan SK, Rattan KN, Kalra R, Maheshwari J, Parihar D, Ratan J. Omphalomesenteric duct cyst as a content of omphalocele. *Indian J Pediatr* 2007;**74**:500-502.
2. Skibo LK, Lyons EA, Levi CS. First-trimester umbilical cord cysts. *Radiology*1992;**182**:719-722.
3. Ross JA, Jurkovic D, Zosmer N, Jauniaux E, Hackett E, Nicolaides KH. Umbilical cord cysts in early pregnancy. *ObstetGynecol* 1997;**89**: 442-445.
4. Zangen R, Boldes R, Yaffe H, Schwed P, Weiner Z. Umbilical cord cysts in the second and third trimesters: significance and prenatal approach. *Ultrasound ObstetGynecol* 2010;**36**:296-301.
5. Ghezzi F, Raio L, Di Naro E, Franchi M, Cromi A, Dürig P. Single and multiple umbilical cord cysts in early gestation: two different entities. *Ultrasound ObstetGynecol* 2003;**21**:215-219.
6. Frazier HA, Guerrieri JP, Thomas RL, Christenson PJ. The detection of a patent urachus and allantoic cyst of the umbilical cord on prenatal ultrasonography. *J Ultrasound Med* 1992;**11**:117-120.
7. Bunch PT, Kline-Fath BM, Imhoff SC, Calvo-Garcia MA, Crombleholme TM, Donnelly LF. Allantoic cyst: a prenatal clue to patent urachus. *PediatrRadiol* 2006;**36**:1090-1095.
8. Kilicdag EB, Kilicdag H, Bagis T, Tarim E, Yanik F. Large pseudocyst of the umbilical cord associated with patent urachus. *J ObstetGynaecol Res* 2004;**30**:444-7.
9. Bhavesh DR, Preethi T. Umbilical Cyst with Edward Syndrome. *Indian J Neonatal Med Res*. 2016; 10(4): 2192
10. Ruiz CL, Saviron CR, Gamez AF, Martinez-Payo C, Perez PP, Garrido FP, Lerma PD. Prenatal diagnosis of umbilical cord cyst: clinical significance and prognosis. *Taiwan J ObstetGynaecol* 2017; **56**:622-627.
11. Szpejankowski K, Guzik P, Chechlinski P, Jach R, Ostrowski B. Pseudocyst of the umbilical cord-case report. *Przegl Lek*. 2015;**72**:394-396.
12. Rempfen A. Sonographic first-trimester diagnosis of umbilical cord cyst. *J Clin Ultrasound* 1989;**17**:53-55.