بسم الله الرحمن الرحيم

University of medical science and technology

Master degree of advanced ultrasound in obstetrics and gynecology

Ian Donald international school of advanced ultrasound in obstetrics and gynecology

Case report on

ISOLATED UMBILICAL CORD CYST IN SECOND AND THIRD TRIMESTERS

A case report is submitted for the partial fulfillment of master degree of advanced ultrasound in obstetric and gynecology

Reported By:

Dr.khadeeja Yahya Othman Idees

MBBS university of science and technology

Specialist obstetrics and gynecology

Supervised by:

Dr.hassan Osman Ali Hemet

Consultant obstetrics and gynecology

Master degree advanced ultrasound in obstetrics and gynecology

2020- 2022

بسم الله الرحمن الرحيم

University of medical science and technology

Master degree of advanced ultrasound in obstetrics and gynecology

Ian Donald international school of advanced ultrasound in obstetrics and gynecology

Case report **on**

ISOLATED UMBILICAL CORD CYST IN SECOND AND THIRD TRIMESTERS

A case report is submitted for the partial fulfillment of master degree of advanced ultrasound in obstetrics and gynecology

Reported By:

Dr.khadeeja Yahya Othman Idrees

MBBS University of science and technology

Specialist obstetrics and gynecology

Supervised by:

Dr.hassan Osman Ali Hemet

Consultant obstetrics and gynecology

Master degree advanced ultrasound in obstetrics and gynecology

2020- 2022

Dedication

This research is lovingly dedicated to my beloved family for their support and trust on me . to the soul of Dr.Helmi Nour who made this dream to be real . to my teachers Dr.hassan hemat , Dr.nadia hamed and my colleages in King Fahad Hospital without their love and support this project would not have been made possible **.**

Acknowledgement

I would like to thank all those who lended hands to us and spare no effort to build our capacıty and ımprove our skılls performıng obstetrıcs and gynecology ultrasound

Firstly ı would like to send my prayers to the soul of **Dr. Helmi Nour** wıthout whom this master would not be possıble . may his soul rest on peace

Especial thanks to **prof.Mamoon hemaida** for his care and support to the program.

My scensere thanks and appreciation for the helpfull and dedecated instructors for thier endless skillfull support provided to us full of love and patience aiming to improve our skills and knwoledge .

Dr. Nadia Hamid
Dr.Hassan Hemmat
Dr. Mohammed salah
Dr.Omer Aljazar

Kind thanks and appreciations also go to **prof baderaldeen ahmend and dr. Kareem** those whom the distences did not stop them from transmitting thier rich knowledge

My thanks also extend to the lovely and helpfull **miss. Mastora** for her good cooperation and kind arrangemnets for the daily secssions.

List of content

Introduction:

The umbilical cord provides a critical connection between mother and baby during pregnancy. It contains blood vessels that carry food and oxygen from the placenta to the fetus. An umbilical cord cyst is a rare medical condition (less than 1 percent of women get them), and it generally does not pose a threat to the baby.

The widespread use of high-resolution obstetric ultrasound has allowed accurate evaluation not only of the embryo and fetus, but also of the placenta and umbilical cord. Cysts of the umbilical cord have been identified using ultrasound at various stages of gestation. . The prevalence of umbilical cord cysts in the second and third trimesters is unknown and, to date, relevant investigations have been confined to case reports or small series6-20. There is a difference in the clinical significance and the prognosis between first-trimester and second/third-trimester umbilical cord cysts.

Umbilical cord cysts are usually classified as true cysts or pseudo cysts. True cysts are derived from the embryological remnants of either the allantois or the omphalomesenteric duct, are located typically towards the fetal insertion of the cord and range from 4 to 60 mm in size21-23.Pseudocysts are more common than true cysts and can be located anywhere along the cord;

Cysts can be multiple or single, and can be central or located near the fetal or the placental insertion of the cord. According to several studies there might be an association between the morphologic characteristics of cord cysts and the risk of fetal abnormalities.

The finding of an umbilical cord cyst in a pregnant woman raises one main question: what is the clinical significance of this finding and is there an association with chromosomal disorders and fetal structural defects?

Prognosis of Isolated cases is good although persistent urachus should be excluded after delivery

There is no increased risk of recurrence of umbilical cord cyst in isolated cases

While in case of of trisomies is 1%.

Case report:

History:

35 years old lady (G6P3A2) all NVD. Came first booking to king Fahad hospital for ANC at 26 wk. of induced pregnancy due to 6 years secondary infertility. Pregnancy was uneventful, pt. had regular antenatal visit in private health center.

Medical, surgical and family history of the pt. are unremarkable.

She is nit on chronic medication except tonics

Examination:

Pt. looks well not pale or cyanosed

Bp 100/80 P 100/min RR20 Temp 30c BMI 30

FL 30 WK Which is corresponding to date

Investigation:

Hb 11gm BG: AB+ve UG: clear LFT: normal RFT: normal

Karyotyping not done due lack of the facilities

U/S: The initial sonogram demonstrated a 3 cm, unilocular cyst within the cord, within 1 cm of the umbilicus. The ventral wall was intact. Echo texture within the cyst was uniform and similar to that of amniotic fluid. Umbilical vessels splay around cyst. *See fig 1a, 1b and fig 2*

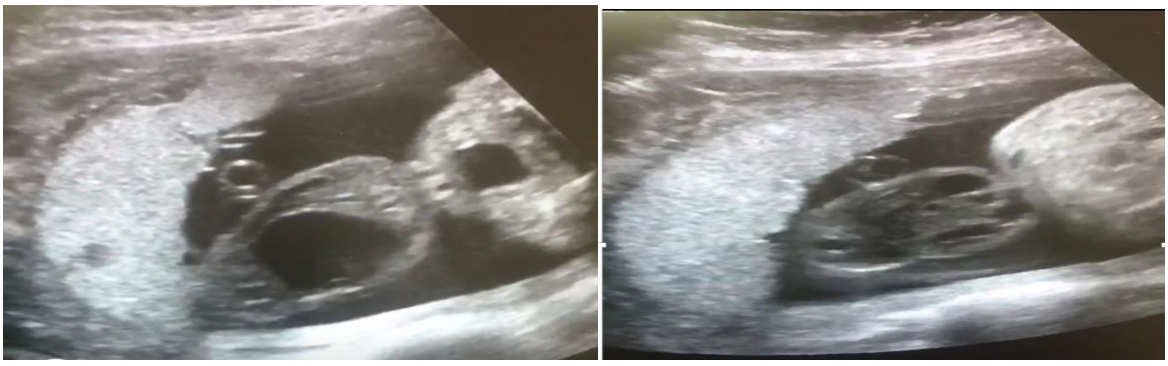

Figure 1 a, 1b unilocular cyst within the cord with homogenous echo texture similar to amniotic fluid, ventral wall is intact

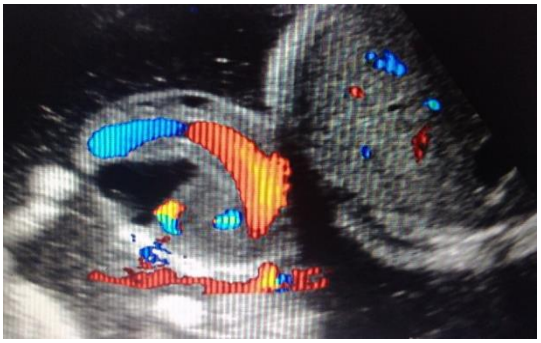

Figure 2 umblical vessels seen splay around the cyst

The presumptive diagnosis of allantoic cyst of the cord was made. A repeat sonogram at 30 weeks showed the cyst to increase in size to 4.6 cm in diameter. See fig 3

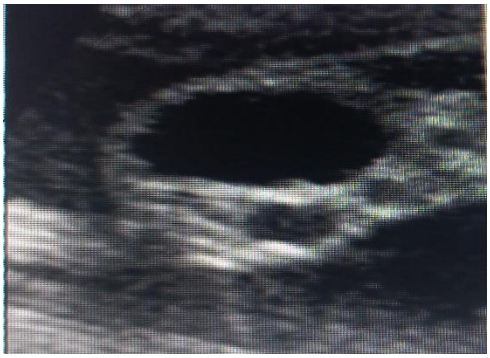

Figure 3 Umbilical cord at 30 weeks. Cross sections through the cord showing vessels splaying around a central cyst and more peripheral pseudo cyst

Serial sonograms showed normal fetal growth, fluid, and umbilical cord Doppler studies, but cord edema developed at 30 weeks gestation. Twice weekly fetal monitoring and amniotic fluid assessments were reassuring.

Management:

Pt. sent for fetal medicine unit and congenital malformation were excluded. So pt. planned for 2 wks regular ANC for growth monitoring and detection of any signs of IUGR and she is planned for normal vaginal delivery unless there is any fetal indication for CS like severe IUGR, abnormal umblical artery Doppler

After delivery, baby is planned to be seen by Pediatric urn-surgery to exclude /mange persistent urachus if any.

Literature review

The umbilical cord provides a critical connection between mother and baby during pregnancy. It contains blood vessels that carry food and oxygen from the placenta to the fetus. When the umbilical cord develops a problem, such as prolapse or cord knots, it can cause complications with the pregnancy and child development. *(3)*

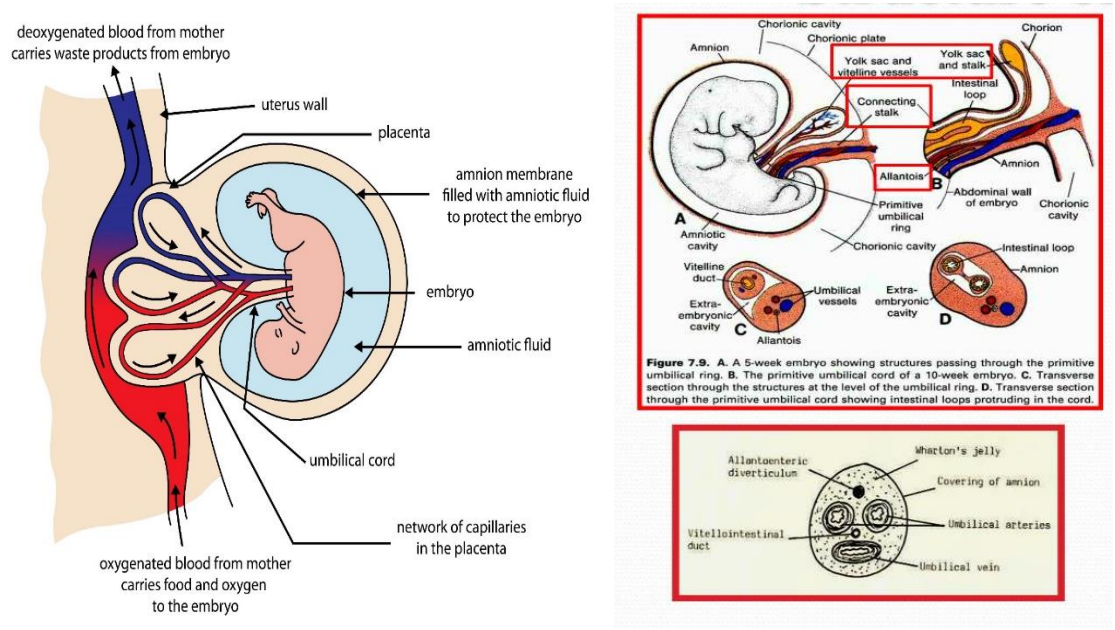

Figure 4 a, b umbilical cord and how it functions

There are several abnormalities that can be recognized in the umbilical cord and may affect pregnancy outcome and especially neonatal outcomes. They can be identified and classified as follows: (1) structural or morphologic anomalies, meaning that either the cord does not have its typical three-vessel structure or that it shows some alterations deviating from the normal anatomy described above; (2) anomalies leading to cord compression within a condition of normal structure, which is the largest group; and (3) conditions of histological cord pathology, with a normal structure and morphology, which includes obstetrical emergencies involving the umbilical cord during or before labor.(4)
The table below summarizes the above mentioned classes of cord anomalies, but the reader might take into account that an overlapping of different classes of anomalies is always possible, since the division into groups is only an attempt to provide a clearer description of such a challenging subject. It is indeed absolutely possible that an umbilical cord with an abnormal structure or morphology becomes

affected because of compression, or that it acquires histologic changes due to an additional pathologic event.

Class of anomaly	List of anomalies included in the class
Structural or morphologic anomalies	Single umbilical artery
	Persistent right umbilical vein
	Marginal or velamentous insertion of the umbilical vessels
	Vasa previa
	Furcate cord insertion
	Cord varix
	Cysts of the umbilical cord
	Aneurysms and hemangiomas of the umbilical cord
	Abnormal coiling
	Anomalies of cord diameter or length
Anomalies leading to cord compression	Cord entanglements
	Knots of the umbilical cord
	Cord prolapse
Conditions of histological cord pathology	Funisitis (FIRS)
	Meconium-associated damage of the umbilical cord

Table 1 Classification of cord anomalies

An umbilical cord cyst is a rare medical condition (less than 1 percent of women get them), and it generally does not pose a threat to the baby. The widespread use of high-resolution obstetric ultrasound has allowed accurate evaluation not only of the embryo and fetus, but also of the placenta and umbilical cord. (5)

Cysts of the umbilical cord have been identified using ultrasound at various stages of gestation. During the first trimester, the prevalence of umbilical cord cysts ranges from 0.4 to 3.4%. The prevalence of umbilical cord cysts in the second and third trimesters is unknown and, to date, relevant investigations have been confined to case reports or small series. There is a difference in the clinical significance and the prognosis between first-trimester and second/third-trimester umbilical cord cysts. According to most studies, the majority of first-trimester cysts are transient findings that have no adverse effect on pregnancy outcome .Yet, the prognosis in cases with persistent cysts seems to be similar to that of second-trimester cysts.(6)

Umbilical cord cysts are usually classified as true cysts or pseudo cysts. True cysts are derived from the embryological remnants of either the allantois or the

omphalomesenteric duct, are located typically towards the fetal insertion of the cord and range from 4 to 60 mm in size.

Pseudo cysts are more common than true cysts and can be located anywhere along the cord; they have no epithelial lining and represent localized edema and liquefaction of Wharton's jelly.

It is rarely possible to differentiate between true cysts and pseudo cysts on ultrasound imaging. Histological confirmation of the ultrasound diagnosis has been obtained in only a minority of reported cases, which makes it difficult to define the clinical significance of different types of cord cysts. (7)

Cysts can be multiple or single, and can be central or located near the fetal or the placental insertion of the cord. According to several studies there might be an association between the morphologic characteristics of cord cysts and the risk of fetal abnormalities.

The finding of an umbilical cord cyst in a pregnant woman raises one main question: what is the clinical significance of this finding and is there an association with chromosomal disorders and fetal structural defects? In order to answer these questions there were experience with 10 cases of umbilical cord cysts, detected during the second and third trimesters, followed by a review of the literature and suggestions for the clinical approach in these cases.(8)

Table 2. Case details and ultrasound findings

					Ultrasound findings		
Case	**MA (years)**	**GA (weeks)**	**Indication**	**Karyotype**	**Umbilical cord cyst**	**Fetal**	**Outcome**
1	33	29	Routine follow-up	XX	56 × 45 mm; close to placental insertion	None	Normal neonate
2	21	24	IUGR at 21 weeks	Trisomy 18	Paraxial single cyst of 13 mm in a free loop	IUGR, polyhydramnios, clenched hands, heart malformation	TOP at 27 weeks
3	32	34	Premature contractions	NA	66 × 28 mm; close to placental insertion	Moderate polyhydramnios, suspected IUGR	Normal neonate, SGA
4	39	29	Routine follow-up	NA	30 × 34 mm; close to	None	Normal neonate

Case	MA (years)	GA (weeks)	Indication	Karyotype	Ultrasound findings: Umbilical cord cyst	Ultrasound findings: Fetal	Outcome
					placental insertion		
5	24	24	Anatomy scan	XX	Paraxial single cyst of 25 mm next to placental insertion	None	Normal neonate
6	34	16	Early anatomy scan	NA	18 × 31 mm; at placental insertion	None	Normal neonate
7	32	22	Anatomy scan	NA	41 × 40 mm; close to placental insertion	None	Normal neonate
8	26	23	Anatomy scan	NA	51 × 44 mm; close to placental insertion	None	Normal neonate
9	38	23	Anatomy scan	XY	55 × 54 mm; close to placental insertion	VSD, IUGR	VSD + ASD, SGA
10	25	26	Routine follow-up	NA	35 × 35 mm; in a free loop	None	Normal neonate

Table 3. Summary of reported cases of umbilical cord cysts in the second and third trimesters

Reference	GA (weeks)	*n*	Structural anomalies: Abnormal karyotype (*n*)	*n*	Comments	Normal infants (*n*)
Shipp *et al.*[18]	14–37	13	1 (trisomy 13)	4	Patent urachus (*n* = 2), small umbilical hernia and IUGR (*n* = 1), multiple vascular anomalies (*n* = 1)	8
Smith *et al.*[6]	15–39	23	13 (11 with trisomy 18 and two with trisomy 13)	6	Isolated omphalocele which was repaired (*n* = 2), multiple anomalies (*n* = 4)	4

				Structural anomalies		
Reference	**GA (weeks)**	***n***	**Abnormal karyotype (*n*)**	***n***	**Comments**	**Normal infants (*n*)**
Sepulveda *et al.*[8]	15–37	13	7 (five with trisomy 18, one with trisomy 13 and one with trisomy 21)	4	Isolated omphalocele but otherwise normal (*n* = 2), severe malformations (*n* = 2)	2
Case reports [7,13,16,28,34]	14–24	11	NA	3	Patent urachus and VACTERL malformations (*n* = 1), patent urachus and cerebral septal agenesis (*n* = 1), patent urachus, hypospadias and meatal obstruction (*n* = 1)	8 (patent urachus only, which was repaired)

Different results are reported by Sepulveda et al. on 13 fetuses with umbilical cord cysts detected during the second and third trimesters of pregnancy but with additional monographic findings diagnosed in 11 cases. A prenatal karyotype testing was performed in ten of these fetuses, detecting aneuploidy in seven of them. In the three cases with normal karyotype, multiple anomalies were found in two fetuses and isolated omphalocele in one fetus. In a further case with isolated omphalocele, karyotyping was not performed. All chromosomally abnormal fetuses and two chromosomally normal fetuses with associated multiple structural defects died in utero or after birth. There were no perinatal complications in the fetuses with isolated cysts and normal karyotype. Fetuses with omphalocele were born without other defects, and the omphalocele was repaired. In all cases of chromosomal abnormalities, there were additional anomalies detected by ultrasound scans.[9]

Smith et al. reported the outcome of three cases with umbilical cord cysts. One, in which a transient cyst was detected at the end of the first trimester, had a normal outcome, and two, in which the cyst was detected at 23 and 39 weeks of gestation, were diagnosed as having trisomy 18. They reviewed the literature and summarized the outcome of their two, and another 21 cases of persistent second and third trimester umbilical cord cystic masses reported in the literature between 1982 and 1996. Nineteen of these cases were associated with either aneuploidy or congenital anomalies. Karyotype testing was performed in 15 cases and found to

be abnormal in 13, including 11 with trisomy 18 and two with trisomy 13. A VATER syndrome was diagnosed in one of the cases with a normal karyotype. Among the 19 cases with anomalies, omphalocele was diagnosed in eight, and in two cases it was the only anomaly (and successfully repaired). Only four of the 23 reported cases had a normal fetal outcome. In two cases umbilical cord cyst was the only finding besides IUGR. (10)

Ten cases of umbilical cord cysts of the second or third trimester are presented by Zangen et al. In seven of them, the umbilical cord cyst was the only abnormal finding, and in one case the additional findings were polyhydramnios and suspected IUGR without structural anomalies, despite very careful anatomical screening. In all of these cases, normal neonates were born.(11)

Sepulveda et al. showed a correlation between small multiple cysts and aneuploidy, and Ross et al. showed that the risk of fetal anomalies is increased in the presence of cysts located at the fetal or placental insertions. Yet, from this small cohort of cases, it is difficult, if not impossible, to establish a correlation between the appearance of the cyst and the prognosis.(12)

In conclusion, given the apparent association with lethal chromosomal aneuploidy and/or congenital anomalies, the finding of an isolated umbilical cord cystic mass should lead to further detailed monographic evaluation in a tertiary center. When either IUGR or other anomalies are found, karyotype testing should be recommended.

A persistent urachus is a result of failure of involution at 10–12 weeks gestation of the allantois which communicates from the dome of the bladder to the umbilicus. Embryologically, the allantois is an endodermal diverticulum which becomes the urogenital sinus with the cranial portion developing as the bladder. Persistence of the urachus may be partial resulting in an urachal cyst, diverticulum or sinus, or it may be completely patent allowing communication with the bladder-. Just over 100 cases in the neonatal period have been documented after the first report in the 16th Century (13)

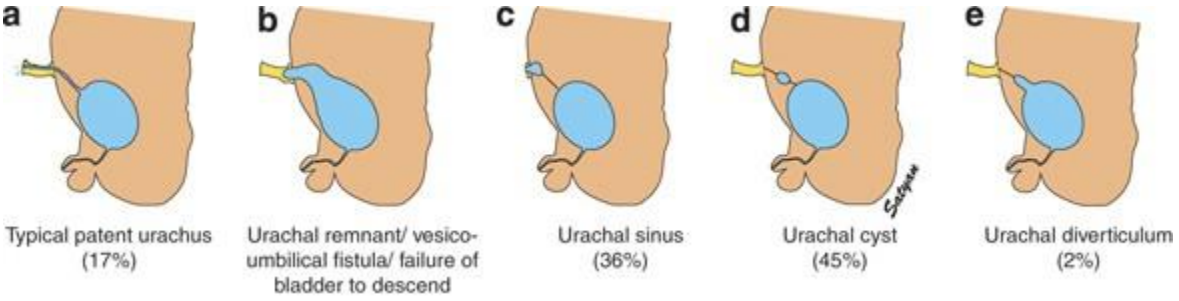

Figure 5 urachus abnormal findings

Differential diagnosis:

Cystic spaces are visible within the umbilical cord in 2% of early pregnancies. These clear spaces may represent true cysts, which have an epithelial lining, or pseudo cysts, which do not. Umbilical cord cysts carry an important association with fetal abnormalities, including chromosomal aneuploidy. The work of Ghezzi and Gilboa suggests that the risk is much lower with an isolated single first trimester cyst that resolves later in pregnancy, and higher with multiple cysts. The frequency of umbilical cord cysts is lower in the second and third trimesters.

When an umbilical cord cyst close to the ventral wall of the fetus is suspected on prenatal solography, color Doppler studies can exclude vascular malformations of the cord, and a comprehensive anatomic survey should be performed to search for associated fetal abnormalities, and to differentiate cord cyst from abdominal wall defects such as omphalocele. (14)

Associated Anomalies:

If an allantoic cyst is present, potential associations with other malformations of the fetus, particularly urinary tract malformations, must be borne in mind. Associated urinary tract malformations include posterior urethral valves and bladder prolapse into the cyst, and Sepulveda and colleagues have reported first trimester megacystic (which may subsequently resolve) as an early sonographic finding in cases subsequently found to have patent urachus. There has been one reported case in which the fetus proved to have trisomy 21, and one in with a coexistent omphalocele (15).

Does an Umbilical Cord Cyst Complicate Pregnancy?

Studies on umblical cord cyst diagnosed in the first trimester have found no association between poor pregnancy outcomes and this medical condition. One

study compared 45 women with umbilical cord cysts to 85 women without, and found no significant difference between the two study groups in terms of birth weight, child development, or pregnancy outcomes. Other researches focusing on fetal outcomes with umbilical cord cysts found that women who receive diagnoses in the first trimester have favorable and normal pregnancy outcomes.

In a case involving a second- or third-trimester diagnosis of umbilical cord cysts, pregnancy outcomes are still likely to proceed normally as long as no other anomalies exist. One study compared two women: one with a first-trimester diagnosis of two cysts and the other with a third-trimester diagnosis of an isolated cord cyst. Both women's pregnancies evolved uneventfully and both women gave birth to healthy children with no congenital anomalies. This study concluded that the prognosis of a third-trimester diagnosis of umbilical cord cyst is "usually excellent."

Although a woman with a cyst on her umbilical cord in the first trimester may need additional tests, genetic testing to check for birth defects, and potentially a C-section to prevent cysts from bursting, generally she will not experience any cyst-related pregnancy or birth complications. If the doctor has diagnosed pt. with a later-trimester umbilical cord cyst plus other anomalies, she may need special care.

A persistent urachus is a result of failure of involution at 10–12 weeks gestation of the allantois which communicates from the dome of the bladder to the umbilicus. Embryo logically, the allantois is an endodermal diverticulum which becomes the urogenital sinus with the cranial portion developing as the bladder. Persistence of the urachus may be partial resulting in a racial cyst, diverticulum or sinus, or it may be completely patent allowing communication with the bladder. Just over 100 cases in the neonatal period have been documented after the first report in the 16th Century

Although literature associates the presence of multiple cysts cord – instead of one isolated – with an increased risk of chromosomal abnormalities (mainly trisomy 18, and even more if these multiple cysts persist after the first trimester. the study did not find that association with altered karyotype or poor gestational prognosis. Three cases with multiple cysts belong to the group of cases without ultrasound anomalies, and the other three belong to the group associated with ultrasound anomalies. Trisomy 18 was the chromosomal abnormality most commonly associated to this last group. (16)

Diagnosis and Treatment of Umbilical Cord Cysts

An umbilical cord cyst refers to any cystic lesion, or sac of fluid, on the umbilical cord. They have irregular shapes and may exist anywhere along the umbilical cord, generally between blood vessels. A patient can have a single cyst or multiple cysts. Doctors diagnose umbilical cord cysts most often in the first trimester, using ultrasound technology. Cysts found in the first trimester generally do not affect pregnancy. Cysts that persist into the second or third trimester, however, have higher odds of causing complications. There are two types of umbilical cord cysts:

- True cysts. A true cyst occurs at the placental end of the umbilical cord, close to where it connects to the infant. It contains fluid from the embryo, and is a small remnant of the umbilical vesicle. They most often range in size between four and sixty millimeters. Most true cysts abate on their own.
- False cysts. A false cyst, or pseudo cyst, is more common than a true cyst. They can occur anywhere on the umbilical cord. A false cyst contains fluid from Wharton's jelly, or the cushiony substance between blood vessels. They can grow as large as six centimeters. False cysts may relate to chromosomal anomalies or genetic conditions in the baby.

Second- or third-trimester cysts, combined with other abnormalities, may come with an increased risk of miscarriage or structural anomalies. Umbilical cord cysts in the first trimester generally do not affect pregnancy, fetal growth, or birth. A placental cyst may cause fetal growth retardation if attached close to umbilical cord insertion. A doctor should closely monitor a placental cyst that exists near umbilical cord insertion, to ensure the regular flow of blood through the umbilical cord. (17)

Discussion:

The prevalence of umbilical cord cysts in the second and third trimesters of pregnancy is unknown. Details on affected pregnancies are based mainly on the findings of case reports, and thus the prognosis and outcome for fetuses with this cord anomaly remain unclear. However, there are a few series reporting the outcome of pregnancies with umbilical cord cysts and these may shed some light on this issue.

A study done in UK present a series of 13 cases of umbilical cord cyst abnormalities detected during the second and third trimesters. They reported 2 cases of isolated clear cysts on the umbilical cord with no apparent congenital malformation which resembles the finding of our case report. 2 cases of them reported persistent rachis after post-delivery assessment. and other cases showed one omphalitis and chorioamionitis, , one case of trisomy 13, one case with multiple vascular anomalies (ventricular septal defect, superior vena cava and innominate vein varicosity, and asymmetric venous dilatation of the left side of the body) and one case with a small umbilical hernia and IUGR, in which the cord pathology revealed multiple syncytial knots adjacent to a complex cyst of the cord. Overall, 12 of the 13 newborns survived and the vast majority had a favorable outcome. In a study published a few years later, Sepulveda *et al.***8** reported very different results. They reported the outcome of 13 fetuses with umbilical cord cysts detected during the second and third trimesters of pregnancy Additional sonographic findings were noted in 11 cases. Prenatal karyotype testing was carried out in 10 of these fetuses, which detected aneuploidy in seven. In the three cases with normal karyotype, multiple anomalies were found in two and isolated omphalocele in one case. In a further case with isolated omphalocele, karyotyping was not performed. All chromosomally abnormal fetuses and two chromosomally normal fetuses with associated multiple structural defects died *in utero* or during the neonatal period.

Considering all theses different studies finings and provided that there is no apparent congenital malformation and no IUGR, an it is well planned to exclude persistent urachus by specialist doctor after delivery.

Although a study called Smith *et al.* reported the outcome of three cases with umbilical cord cysts. One, in which a transient cyst was detected at the end of the first trimester, and disappeared at second trimester with a normal outcome, we can not compare it to this study as there in no first trimester report brought by the pt and the cyst is still and increasing in size till 3rd trimester

Karyotype testing was performed in 15 cases and found to be abnormal in 13, including 11 with trisomy 18 and two with trisomy 13. VATER syndrome was diagnosed in one of the cases with a normal karyotype. Among the 19 cases with anomalies, omphalocele was diagnosed in eight, and in two cases it was the only finding. The association between second- and third-trimester umbilical cord cysts and fetal anomalies is present in all publications. In the reports of Smith *et al.* and Sepulveda *et al.* there were fetal anomalies in 80–85% of the cases. In the study of Ross *et al.*, 100% correlation was reported between persistent second-trimester cysts and anomalies. Shipp *et al.* reported fetal anomalies in 38% of the cases. unfortunately karyotyping not done to this as there is no facilities to do however , absence of apparent congenital malformation reduces the possibilities to have chromosomal abnormalities .(19)

A study done in uk 2015 reported that In seven of the 10 cases presented, the umbilical cord cyst was the only abnormal finding, and in one the additional findings were polyhydramnios and suspected IUGR without structural anomalies, despite very careful anatomical screening. In all of these cases normal neonates were born. And this is what expected for this study to have . although observations confirm previous reports of an association between second/third-trimester umbilical cord cysts and fetal anomalies, but it seems that the prevalence of anomalies is much lower and the clinical outcome is usually favorable.

There are a few explanations for these differences. There is a tendency to report abnormal cases, which might cause a serious bias in the conclusions derived from the current literature. In addition, umbilical cord cysts can be easily overlooked during routine ultrasound screening, although when there are fetal anomalies a detailed ultrasound scan is performed, which will probably detect the cyst as an additional finding. Another reason for the differences can be attributed to the different populations studied. As Sepulveda *et al.* discussed in their study, in cases of aneuploidy it was not

possible to terminate the pregnancy because of legal regulations. This increased the number of aneuploidy fetuses examined in the second half of pregnancy.

Recommendation:

To reduce maternal and neonatal morbidity and mortality due to umbilical cord cyst, I recommend that:

- Obe and gyne doctors should be well trained doing obstetric ultrasound
- Any suspected cord cyst should be referred to fetal medicine unite to confirm the diagnoses.
- Congenital malformation associated with umbilical cord cyst should be ruled out.
- Close growth monitoring for detection of IUGR.
- Multidesplinery team to determine mood of delivery.
- Delivery to be attended by pediatrician.
- Assessment of persistent urachus or any urachus abnormalities should be ruled out after delivery.
- Mother education about the case
- Pt diagnosed with umbilical cord cyst should have detailed ultrasound examination fetal karyotyping for non-isolated cases.

Conclusion

Within the routine ultrasound pregnancy examination, it is important to properly assess the umbilical cord. In case of cord cyst diagnosis it is recommended to perform a comprehensive ultrasound examination looking for other abnormalities and, if these are founded, the need to carry out a fetal karyotype has to be considered. Within the chromosomal abnormalities that may appear associated with umbilical cord cysts, trisomy 18 is frequent, and the ultrasound anomaly that is most closely related is omphalocele

Antenatal ultrasound detection of an umbilical cyst, particularly if located close to the anterior abdominal wall of the fetus should stimulate a search for a patent urachus post-nasally. Laparoscopic surgical correction is the treatment of choice for a baby with a patent urachus. Reduced post-operative morbidity and length of hospital stay are important advantages in comparison to the open surgical approach with both methods being equally successful in closing a patent urachus.

References

- 1. Centiles L, Vivet-lefébure A, Patrier S et-al. Umbilical artery aneurysm in a severe growth-restricted fetus with normal karyotype. Prenat. Diagn. 2007;27 (11): 1059-61. doi:10.1002/pd.1817 - Pubmed citation
- 2. Hill AJ, Strong TH, Elliott JP et-al. Umbilical artery aneurysm. Obstet Gynecol. 2010;116 Suppl 2 : 559-62. doi:10.1097/AOG.0b013e3181e7d280 - Pubmed citation
- 3. Berg C, Geipel A, Germer U et-al. Prenatal diagnosis of umbilical cord aneurysm in a fetus with trisomy 18. Ultrasound Obstet Gynecol. 2001;17 (1): 79-81. doi:10.1046/j.1469-0705.2001.00313.x - Pubmed citation
- 4. Shen O, Reinus C, Baranov A et-al. Prenatal diagnosis of umbilical artery aneurysm: a potentially lethal anomaly. J Ultrasound Med. 2007;26 (2): 251-3. J Ultrasound Med (full text) - Pubmed citation
- 5. Sepulveda W, Corral E, Kottmann C et-al. Umbilical artery aneurysm: prenatal identification in three fetuses with trisomy 18. Ultrasound Obstet Gynecol. 2003;21 (3): 292-6. doi:10.1002/uog.69 - Pubmed citation
- 6. Fox H, Sebire NJ. Pathology of the placenta. W B Saunders Co. (2007) ISBN:1416025928. Read it at Google Books - Find it at Amazon
- 7. Zangen R, Boldes R, Yaffe H, et al. : Umbilical cord cysts in the second and third trimesters: significance and prenatal approach. *Ultrasound Obstet Gynecol.* 2010;36(3):296–301 10.1002/uog.7576 [PubMed] [CrossRef] [Google Scholar
- 8. Sepulveda W: Opinion: Beware of the umbilical cord ‘cyst’. *Ultrasound Obstet Gynecol.* 2003;21(3):213–4 10.1002/uog.80 [PubMed] [CrossRef] [Google Scholar]
- 9. Stone NN, Garden RJ, Weber H: Laparoscopic excision of a urachal cyst. *Urology.* 1995;45(1):161–164 [PubMed] [Google Scholar
- 10. Sepulveda W, Corral E, Kottmann C et-al. Umbilical artery aneurysm: prenatal identification in three fetuses with trisomy 18. Ultrasound Obstet Gynecol. 2003;21 (3): 292-6. doi:10.1002/uog.69 - Pubmed citation
- 11. Zangen R, Boldes R, Yaffe H, et al. : Umbilical cord cysts in the second and third trimesters: significance and prenatal approach. *Ultrasound Obstet Gynecol.* 2010;36(3):296–301 10.1002/uog.7576 [PubMed] [CrossRef] [Google Scholar
- 8. Sepulveda W: Opinion: Beware of the umbilical cord ‘cyst’. *Ultrasound Obstet Gynecol.* 2003;21(3):213–4 10.1002/uog.80 [PubMed] [CrossRef]
- 12Tong SY, Lee JE, Kim SR, Lee SK. Umbilical cord cyst: a prenatal clue to bladder exstrophy. Prenat Diagn 2007; 27: 1177– 1179.
- 8Sepulveda W, Gutierrez J, Sanchez J, Be C, Schnapp C. Pseudocyst of the umbilical cord: prenatal sonographic appearance and clinical significance. Obstet

Gynecol 1999; 93: 377– 381. CrossrefCASPubMedWeb of Science®Google Scholar

- 9Stella A, Babbo GL. Omphalocele and umbilical cord cyst. Prenatal diagnosis. Minerva Ginecol 2000; 52: 213– 216. CASPubMedGoogle Scholar
- 10Kuwata T, Matsubara S, Izumi A, Odagiri K, Tsunoda T, Watanabe T, Taniguchi N, Sato I. Umbilical cord pseudocyst in a fetus with trisomy 18. Fetal Diagn Ther 2003; 18: 8– 11. CrossrefCASPubMedWeb of Science®Google Scholar
- 11Tourne G, Chauleur C, Varlet MN, Tardieu D, Varlet F, Seffert P. Prenatal discovery of an omphalocele associated with an inner umbilical cord Meckel's diverticulum. J Matern Fetal Neonatal Med 2007; 20: 427– 430.CrossrefPubMedWeb of Science®Google Scholar
- 12 Wiley Online LibraryCASPubMedWeb of Science®Google Scholar
- 13Matsui F, Matsumoto F, Shimada K. Prenatally diagnosed patent urachus with bladder prolapse. J Pediatr Surg 2007; 42: e7– e10. CrossrefPubMedWeb of Science®Google Scholar
- 14Alimoglu E, Simsek M, Ceken K, Mendilcioglu I, Kabaalioglu A, Sindel T. Umbilical cord pseudocyst in a fetus with Down syndrome. Prenat Diagn 2006; 26: 193– 194. Wiley Online LibraryCASPubMedWeb of Science®
- 15Lugo B, McNulty J, Emil S. Bladder prolapse through a patent urachus: fetal and neonatal features. J Pediatr Surg 2006; 41: e5– e7. CrossrefPubMedWeb of Science®Google Scholar
- 16Kilicdag EB, Kilicdag H, Bagis T, Tarim E, Yanik F. Large pseudocyst of the umbilical cord associated with patent urachus. J Obstet Gynaecol Res 2004; 30: 444– 447. Wiley Online LibraryCASPubMedWeb of Science®
- 17Babay ZA, Lange IR, Elliott PD, Hwang WS. A case of varix dilatation of the umbilical vein and review of the literature. Fetal Diagn Ther 1996; 11: 221– 223. CrossrefPubMedWeb of Science®Google Scholar
- 18. Van der Bilt JD, Van Zalen RM, Heij HA, Bilardo CM, Aronson DC. Prenatally diagnosed ruptured vesico-allantoic cyst presenting as patent urachus at birth. J Urol. 2003 ;169:1478-9.
- 19. Kilicdag EB, Kilicdag H, Bagis T, Tarim E, Yanik F. Large pseudocyst of the umbilical cord associated with patent urachus. J Obstet Gynaecol Res. 2004 ;30:444-7.

20. Sepulveda W. Beware of the umbilical cord 'cyst'.Ultrasound Obstet Gynecol. 2003 ;21:213