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## Original Article

## Prenatal diagnosis of umbilical cord cyst: Clinical significance and prognosis



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## ABSTRACT

**Objective:** Clarify the prognosis of the prenatal ultrasound diagnosis of umbilical cord cysts at any gestation trimester and to assess the ultrasound findings and chromosomal alterations associated to this entity.

**Materials and methods:** Between 2003 and 2015 a multicenter study was carried out, collecting, in five centers in Spain, the associated findings and perinatal outcomes of 27 cases of umbilical cord cysts, regardless of gestational age of diagnosis. A bibliographic review was conducted to identify previous studies in order to compare them with our data.

**Results:** In our sample, the prognosis of this finding and the neonatal outcome, when isolated, is favorable, regardless of gestational age at diagnosis, multiple or unique presentation or vanishing or persistent cysts.

**Conclusions:** It is important to properly assess the umbilical cord cyst and when is diagnosed, it is recommended to conduct a meticulous ultrasound examination searching for other associated malformations. In our study the prognosis of this finding seems to be favorable when isolated. Also, there is no relation between prognosis and gestation weeks at diagnosis. On the other hand, when we find this entity with associated anomalies, it is recommended to assess the need to carry out a karyotype.

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## Introduction

Although umbilical cord cysts are a relatively common, they cannot be considered a non-pathological ultrasound finding. Some reviews indicate that small cysts can be found in up to 3% of pregnancies in the first trimester. Sometimes are associated with other structural and/or chromosomal malformations (even up to 20%), [1–7]. If they are persistent and progressive in size, they can compromise the fetus by restricting blood flow through the umbilical cord, either by compression or thrombosis [1,8].

With the widespread use of the ultrasound for prenatal control (for example, in Spain for low-risk pregnancies, three ultrasound scans are performed during pregnancy), intrauterine abnormalities involving the umbilical cord are routinely diagnosed, being umbilical cysts the second most frequent disorder founded [9].

This is the first work published so far in which data has been collected and compared from cases diagnosed in any of the gestation trimesters, trying to clarify the prognosis associated to prenatal diagnosis of this entity. Also, the ultrasound findings more frequently associated to this entity and related to chromosomal alterations are described for a better management during pregnancy.

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## Material and methods

IRB: CP03/2015. The study was conducted between 2003 and 2015 involving five Spanish centers. Three public hospitals, Miguel Servet University Hospital in Zaragoza and Gregorio Marañón

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University hospital in Madrid (both referral center for high-risk obstetrics) and Puerta de Hierro University Hospital (first level general hospital) in Madrid. Also, two private hospitals joined the study (Nuevo Belén Universitario Hospital and Alcorcón South Hospital). Data and findings were collected from 27 fetuses diagnosed with umbilical cord cysts, regardless gestational age. Ultrasounds were performed as part of the routine prenatal pregnancy program. High-resolution equipment with transabdominal or transvaginal ultrasound probe – depending on the time of diagnosis – was used.

The presence of a single or multiple well defined anechoic images, well delineated and with a hyperechoic limit at umbilical cord level, was considered as umbilical cord cyst diagnosis. Color Doppler was used in all cases to rule out the presence of flow and to help assess the relationship with the umbilical vessels and their location. [Figs. 1,2 and 3](#).

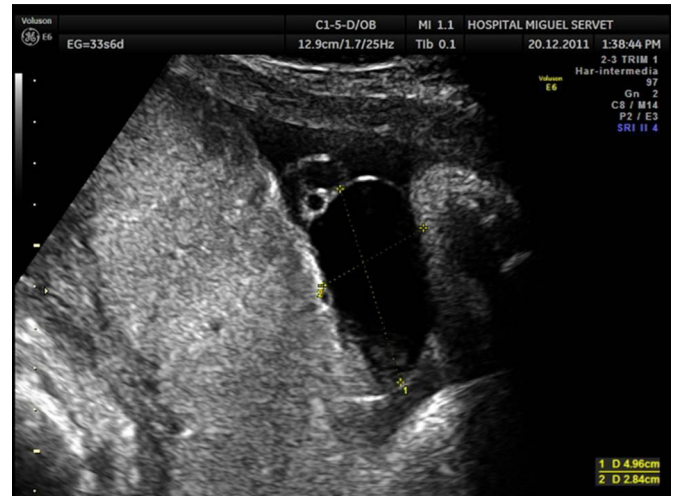
For each pregnant woman included in the sample, a range of data was collected according to:

- Maternal epidemiological characteristics.
- Gestational history.
- Ultrasonographic variables related to the cysts.
- Other ultrasonographic findings of prenatal diagnosis.
- Perinatal data in those pregnancies that achieved full term.

A bibliographic review in MEDLINE was conducted in order to identify previous studies of umbilical cord cysts diagnosed at any gestational trimester since 1980–2014, and to compare them with data obtained in our cohort.

## Results

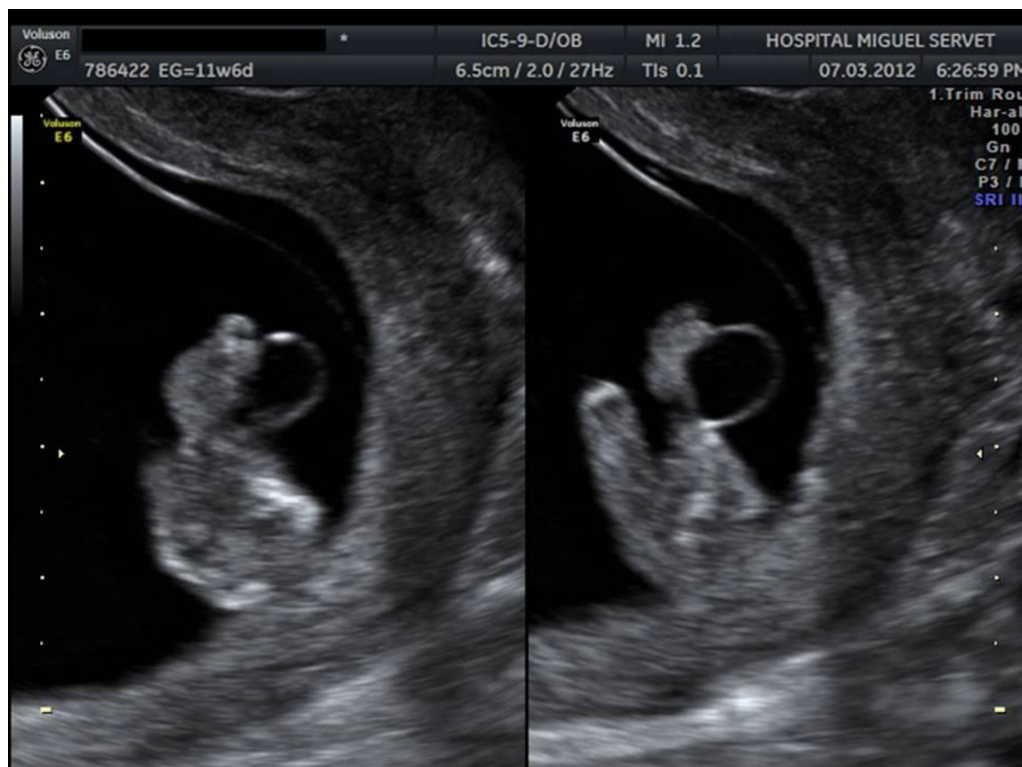
A total of 27 cases were diagnosed by ultrasound examination within the normal gestation control protocol ([Tables 1 and 2](#)). The



**Fig. 2.** Umbilical cord cysts in the third trimester.

average maternal age of the total sample at the time of diagnosis was 32.5 years (22–39). The inclusion of cases was carried out at the time of diagnosis in any trimester of the pregnancy. 11 of them (40.7%) were diagnosed during the first trimester, and the other 16 (59.3%) correspond to ultrasound findings in the 2nd or 3rd trimester, 8 in the second trimester (29.6%) (14–28wk.) and 8 in the third trimester (29.6%) (>28wk). The median of the weeks at diagnosis was 16 weeks.

In 21 cases there was a single umbilical cord cyst and in the remaining 6 cases there were multiple cord cysts. The persistence of cord cysts is influenced by the time of diagnosis in our sample, since those cysts diagnosed in the first trimester are more likely to disappear during the rest of the pregnancy (out of the eleven cases



**Fig. 1.** Umbilical cord cyst in the first trimester near placental insertion.

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