 DOI: 10.69729/aogp.v20i2a13

# Fetal biliary sludge: A rare finding
# Lama biliar fetal: Um achado raro

Adriana Oliveira[1], Ana Rita Matos[1], Sandra Ferreira[1]
Unidade Local de Saúde do Alto Minho, Viana do Castelo, Portugal

## Abstract

Fetal cholelithiasis is a rare, typically benign and isolated prenatal finding. Most cases are asymptomatic, resolve spontaneously within the first year, and are not linked to genetic syndromes or malformations. This case describes a small-for-gestational age fetus with biliary sludge, which resolved postnatally without intervention. Recognition of this condition is vital to guide parental counselling, avoid unnecessary procedures, and highlight the importance of postnatal follow-up.

**Keywords:** Obstetric ultrasound; Fetal cholelithiasis; Third trimester.

## Resumo

A colelitíase fetal é um achado raro, geralmente benigno e isolado. A maioria dos casos é assintomático, com resolução espontânea no primeiro ano de vida, sem associação a síndromes genéticas ou malformações. Este caso descreve um feto pequeno para a idade gestacional com lama biliar, que resolveu espontaneamente após o nascimento. O reconhecimento desta entidade é fundamental para aconselhamento parental adequado, evitando intervenções desnecessárias e reforçando a importância da vigilância pós-natal.

**Palavras-chave:** Ecografia obstétrica; Terceiro trimestre; Colelitíase fetal.

Fetal cholelithiasis is a rare finding during pregnancy, with an incidence of 0,07-1,15%[1,2,3].

Fetal cholelithiasis, or gallstones, is not associated with genetic syndromes or other malformations. Most frequently, it's reported as an isolated and benign finding[1,4].

It's commonly diagnosed between 34-36 weeks of gestation, during routine third-trimester ultrasounds.

The fetal gallbladder appears as an anechoic structure beneath the right liver lobe, to the right of the intrahepatic portion of the umbilical vein and is commonly visible after 18-20 weeks of gestation. The formation of identifiable stones and/or sludge within the gallbladder appears to be a phenomenon of the third trimester. The echogenic foci may appear as single or multiple and may or may not demonstrate distal acoustic shadowing. Occasionally, the gallbladder is filled with diffuse echogenicity without recognizable discrete foci, known as biliary sludge[1,2,4].

In the presence of a right abdominal hyperechogenic image it's important to exclude certain differential diagnoses such as intrahepatic calcification, calcified liver mass, meconium peritonitis, subphrenic sequestration of the lung, hepatoma, and hemangioendothelioma of the gallbladder[1].

The aetiology and pathophysiology of fetal cholelithiasis remains uncertain, but it's proposed that any feto-maternal factor predisposing to increased indirect bilirubin in the feto-maternal circulation may

1. Unidade Local de Saúde do Alto Minho, Viana do Castelo, Portugal.

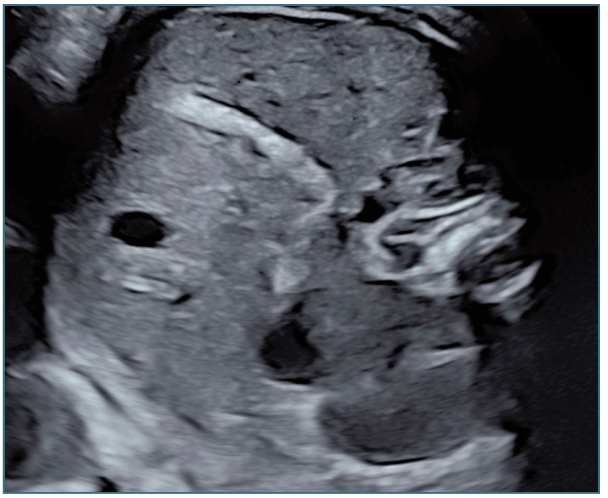

**FIGURE 1.** Distended gallbladder filled with hyperechogenic fluid.

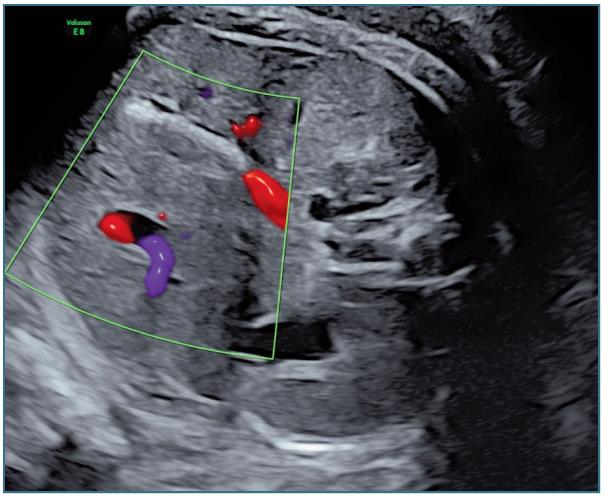

**FIGURE 2.** Distended gallbladder filled with hyperechogenic fluid, no vascularization on color doppler.

contribute to fetal gallstones. Such factors include diabetes, maternal prolonged fasting or enteral nutrition, history of cholelithiasis, ABO or Rh incompatibility, placental abruption, among others. Another proposed theory correlates elevated estrogen levels in pregnancy with increased cholesterol secretion and suppression of bile acid synthesis, potentially resulting in the formation of cholesterol stones. The use of narcotics during pregnancy has also been identified as a risk factor due to potentially slowing gastrointestinal activity, enhancing the propensity for gallstone formation[1].

Fetal cholelithiasis is generally asymptomatic and self-limiting. The stones are thought to resolve due to dissolution or passage through the biliary tract. Over 70% resolve spontaneously within the first three months of life and almost all cases resolve within the first year[1,4,5].

A 28-years-old woman, primigravida, with no significant medical history. The pregnancy was uneventful apart from anaemia. The complementary laboratory tests were consistent with iron deficiency anemia. The third ultrasound revealed normal anatomy and an estimated fetal growth at the 25$^{th}$ percentile.

At 36 weeks, a routine ultrasound detected a small for gestational age (SGA) fetus, with an estimated fetal weight of 2300 g (9$^{th}$ percentile) and a distended gallbladder filled with hyperechogenic fluid (Figure 1), without acoustic shadowing or vascularization on color doppler (Figure 2), consistent with fetal biliary sludge. The doppler evaluation of the umbilical artery and middle cerebral artery, including peak systolic velocity, was normal. There were no indirect signs of fetal anaemia.

The termination of pregnancy was scheduled for 39 weeks, following an uncomplicated vaginal delivery and a newborn with 2935 g (15$^{th}$ percentile), APGAR score 10/10/10 and normal physical examination. A neonatal abdominal ultrasound at the 4$^{th}$ day of live, demonstrated a gallbladder with mild diffuse thickening and multiple echogenic foci. The newborn presented a normal physical examination.

A month later, a follow-up ultrasound showed resolution of the findings and a normal exam. The newborn had normal development. The follow-up continued with ultrasound re-evaluations at 6 and 12 months, which continued normal.

In summary, fetal cholelithiasis is a rare incidental finding, usually benign and isolated. However, it is important to recognize that this may occasionally be associated with underlying conditions that must be excluded. Postnatal surveillance is crucial to detect early complications, such as neonatal jaundice, and optimize possible need for treatment or interventions.

The recognition of fetal cholelithiasis is essential for providing appropriate counselling to parents, helping

to avoid iatrogenic interventions and emphasizing the importance of postnatal surveillance.

## REFERENCES

1. Findlay N. Fetal cholelithiasis. In: Visual Encyclopedia of Ultrasound in Obstetrics and Gynecology [Internet]. ISUOG; 2019 Jan [cited 2025 Oct]. Available from: https://www.isuog.org

2. Agnifili A, Verazo R, Carducci G, et al. Fetal cholelithiasis: a prospective study of incidence, predisposing factors, and ultrasonographic and clinical features. Clin Pediatr (Phila). 1999; 38:371-3.

3. Triunfo S, Rosati P, Ferrara P, Gatto A, Scambia G. Fetal cholelithiasis: a diagnostic update and a literature review. Clin Med Insights Case Rep. 2013; 15;6:153-8.

4. Sepulveda W, Wong AE. Echogenic material in the fetal gallbladder: prevalence, sonographic spectrum, and perinatal outcome in an unselected third-trimester population. J Matern Fetal Neonatal Med. 2020; Apr;33(7):1162-70.

5. Suchet IB, Labatte MF, Dyck CS, Salgado LA. Fetal cholelithiasis: a case report and review of the literature. J Clin Ultrasound. 1993; 21:198-202.

## AUTHOR CONTRIBUTIONS

AO produced the image, collected the data, reviewed the literature, and drafted the paper. ARM and SF reviewed the literature and contributed to drafting and reviewing the paper.

## CONSENT

The patient has provided her informed consent for publication.

## CONFLICT OF INTERESTS

The authors declare no conflict of interests.

## CORRESPONDENCE TO

Adriana Oliveira
E-mail: adrianamaio05@gmail.com
https://orcid.org/0009-0004-3466-6553

**RECEIVED:** 17/12/2025
**ACCEPTED:** 23/03/2026