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ALVEOLAR BILIARY VESICULAR: A Case Report on A Rare Anatomical Variation

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Abstract: Multiseptate gallbladder is a congenital alteration in the formation of this organ, resulting in septa in the lumen of the gallbladder. Cases of patients with this condition is quite rare in the world database, which means that the amount of papers published on this subject can be hard to find and in a few numbers. These conditions usually do not lead to symptoms in which a patient can live the entire life without a diagnosis; however, some patients may present an association with another pathology, especially in the abdominal region, which leads to an evaluation of the gallbladder and diagnosis of this septa. The main ways to diagnose this condition are through imaging tests, such as ultrasonography and computed tomography, which allow the perception of the wall, volume, consistence and lumen of this organ. Therefore, the present case report presents a picture of an asymptomatic patient diagnosed with multiseptate gallbladder. In addition, a review of the literature on the similar case reports presents in databases such as PubMed is included. Applying the knowledge acquired from the literature found it's possible to understand that this condition occurs because of an alteration on the process that forms the gallbladder and it can manifest with symptoms or it can stay asymptomatic and just be found by accident. When this condition

creates symptoms, the patient may need to go through a surgical procedure, like a cholecystectomy, but its only necessary in the presence of manifestations, otherwise, the patient can live a normal life with treating this alteration.

Keywords: Multiseptate gallbladder. Honeycomb gallbladder. Anatomic variation. Case report.

INTRODUCTION:

The multiseptate gallbladder, also known as "honeycomb gallbladder," is a rare congenital condition characterized by multiple septa within the gallbladder, dividing its lumen into smaller compartments of varying sizes. The first reported case dates back to 1963 and involved a pediatric patient. Since then, only a limited number of cases have been identified worldwide. This condition can mimic other gallbladder pathologies, presenting either symptomatically or asymptomatically. Asymptomatic cases pose greater diagnostic challenges and are often diagnosed later in life (Amgad et al. 2024).

Worldwide, there is less than 150 case reports of patients with the same condition. Initially the reports were sporadically, but later, with the usage of image exams for diagnosis, more cases could be found and described within recent decades. The study made from Terkawi, 2021 analysed 97 case reports observed that patients could be identify from all ages and sex. The age gap observed were was over 84 years, being the youngest patient with 9 months and the oldest was 84 years old. This shows that the identification of a multiseptate gallbladder case can be found in any patient and that people can live a long time with suffering any symptom (Terkawi, 2021).

From the initial reports on the rare congenital anomaly around the mid-20th century, multiseptate gallbladder has become a more frequently study subject compares to the firsts cases reported. This condition has the specific and unique characteristic of multiple thin walls inside the gallbladder, called septa, that are fused to the inner wall of this organ, which results in a distinctive appearance of a honeycomb. This rare condition is described in very few patients over the world and the physiological mechanism behind the development of the septa still very unclear to this day, but some theories have been published. In addition, this anatomic variation divides the patients into two groups, symptomatic and asymptomatic, but it is generally associated with a benign anatomical variation (González et al., 2023).

Symptomatic patients typically report upper abdominal pain and other hepatobiliary symptoms. Multiseptate gallbladders can be further characterized by anatomical variations in size, shape, position, and the number of septa. Despite the variety of nonspecific clinical manifestations, the absence of reported malignancies suggests that this anatomical variation is benign (Hsieh et al. 2021).

It is very common that the diagnosis of this condition occurs bay incident. This means that, normally, a patient presenter some condition unrelated to the gallbladder and by an evaluation, there is the diagnosis of the multiseptate gallbladder. This can be seen in many case reports publish and it show that the finding of this condition can be difficult, therefore rare. In addition, this also presents that most patients can be asymptomatic for the biliary alteration. This does not mean that all people with this condition will not present some kind manifestation, it means that, normally, the symptoms that a person will present, might not be related to this anatomic variation. This can justify the fact that some patients can present abdominal manifestations, like abdominal pain, but it frequently associated with other conditions, like cholecystitis, and after a intervention, for example, a cholecystectomy, the multiseptate gallbladder can be find and diagnosed (Desai, Gianchandani, 2023).

The manifestations behind patients with a multiseptate gallbladder creates two groups. People with symptoms that can directly relate to this anatomic variation are call symptomatic and patients that presents similar characteristics but does not present symptoms are called asymptomatic. The cases that are not related to a manifestation related to the honeycomb gallbladder can be difficult to be diagnose and are frequently found be accident in the routine's examinations. The main way to diagnose the patients that presents this variation is by imaging examination which, normally, are made after a susception of cholecystitis, for example (Hopmann, 2022).

The exact pathophysiology of multiseptate gallbladder development remains unclear, but several theories exist. A leading hypothesis suggests a defect in early embryological maturation, specifically an anomaly in gallbladder development resulting in incomplete vacuolization of the vesicular lumen. Another theory proposes a defect in vesicle folding associated with vesicular growth outpacing lumen development (Faraj et al., 2024).

The objective of this study is to describe the findings involving a patient that has a multiseptate gallbladder. In addition, compare this report with the papers publish

on PubMed and discuss about this rare anatomical variation in the gallbladder. It's expected that the multiseptate gallbladder can be consider a rare condition and it may or may not be associated with a pathological process or it can be developed without a disease.

MATERIALS AND METHODS

This study is a case report was caried out through clinical care and medical follow-up that happened for one year, of a patient with a rare anatomical variation in the gallbladder, that later was define as multiseptate gallbladder. The patient was admitted by doctor Wander Costa Matos in his office for a routine consultation, when he presented abdominal pain creating the need for an image evaluation, therefor, an ultrasonography was recommended. The results showed a multiseptate gallbladder. To this end, the question formulated to justify this case report was: "Is there scientific evidence on anatomical variations of alveolar gallbladder and its impact on health?", Soon after, a search was carried out in the Medical Literature Analysis and Retrieval System online (MEDLINE/PubMed), Latin American Literature in Health Sciences (LILACS), SCIELO (Scientific Electronic Library Online), to sustain the discussion of this work using scientific articles published in full that addressed the main theme. There were 9 references selected to sustain the findings of the study. The papers were selected by the following criteria: published in the past 5 years and the use of "Multiseptate gallbladder" keyword. The reference that was excluded involved patients that had other conditions that influenced in their health and necessity or interventions.

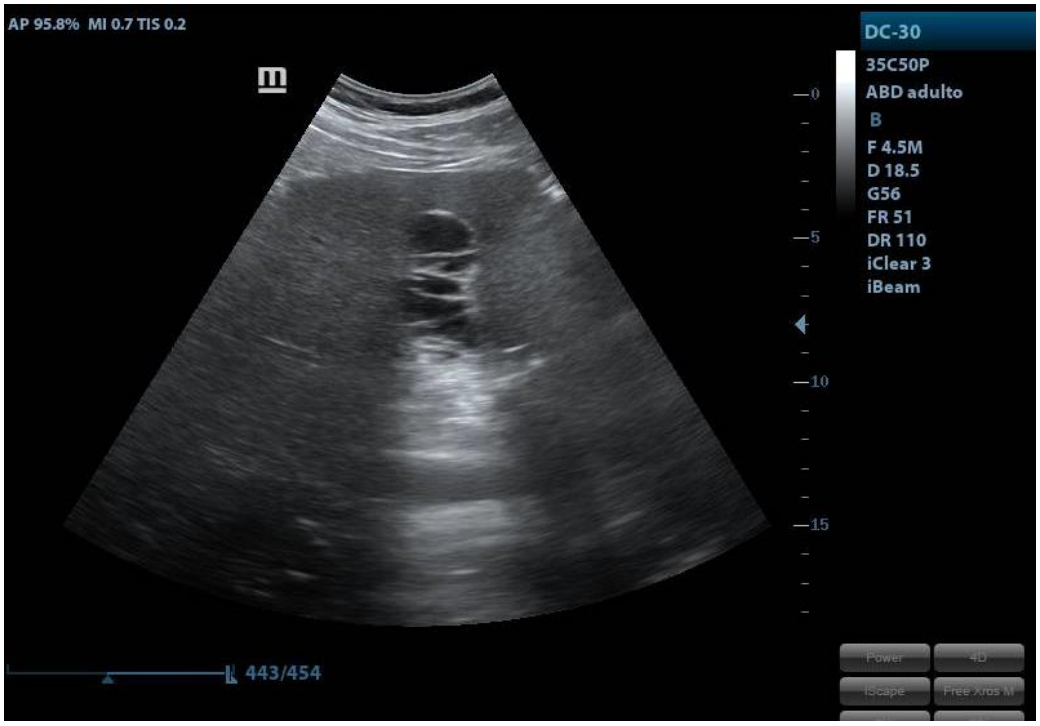
RESULTS

The patient, a 64-year-old male patient, retired, arrived at the office for routine exams, denying symptoms or previous history of surgeries. He performs similar tests annually due to the presence of metabolic syndrome. The patient is hypertensive controlled on captopril 25mg, twice a day. He is overweight, according to his BMI of 27. He also has mild hepatic steatosis. He denies diabetes or insulin resistance, alcoholism and smoking.

During the targeted anamnesis, he reported absence of jaundice throughout his life, abdominal pain, choluria or fecal acholia. He also describes never having undergone surgical procedures or previous hospitalizations worthy of note.

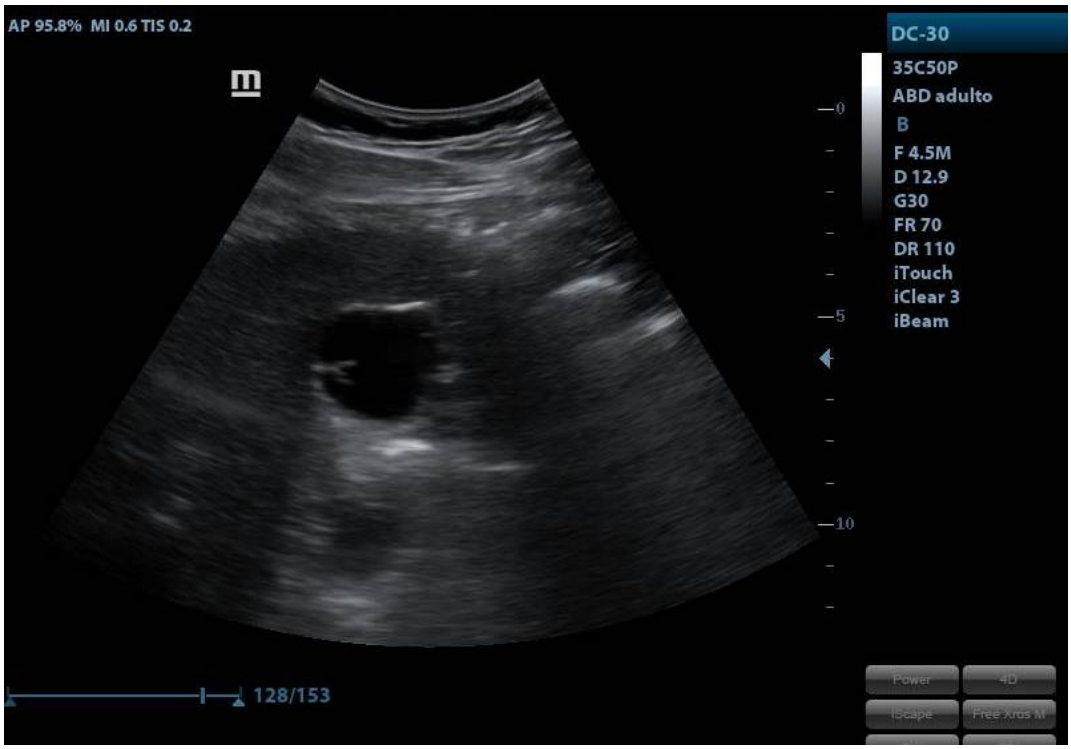
On May 20, 2024, at the hospital in Nova Veneza – Goiás, the patient underwent a total abdominal ultrasound. The results of the examination are shown below (Figures 01 and 02).

Figure 01: Longitudinal section of the gallbladder.



Legend: Gallbladder section in longitudinal pattern. The presence of several complete and thin septations occupying the interior of the gallbladder is observed. Source: author, 2024.

Figure 02: Cross-section of the gallbladder.



Legend: Gallbladder section in a cross-sectional pattern. Presence of incomplete septation within the gallbladder lumen. Source: author, 2024.

It is noted that a topical, normodistended gallbladder has anichogenic content, well-defined contours, thin walls, but with the presence of multiple complete and incomplete septations that communicate the internal walls of the gallbladder. Dimensions: 6.2 x 3.1 x 3.4 cm - (Long x AP x T). The wall thickness measures 1.6 mm. In addition, additional findings were found from the examination, which consists of simple bilateral renal cysts and mild hepatic steatosis.

The patient's last evaluation was in February 2024 and the patient is currently asymptomatic, with no laboratory abnormalities.

In view of the situation, the physician in charge took the case for discussion among the health professionals responsible for the patient, after conducting searches in the main databases, such as PubMed, based on images and similar conditions, the definition of a multiseptate gallbladder condition was concluded.

DISCUSSION

The incidence of multiseptate gallbladder reported in health databases is low. For example, approximately 65 papers were published between 1964 and 2025, with

only 9 publications in the PubMed database in the past 5 years. Therefore, multiseptate gallbladder is considered a rare congenital condition characterized by multiple septa within the gallbladder's inner wall, dividing its internal space into smaller compartments of varying sizes. The first case was described in 1963, and few cases have been reported since, possibly because the anatomical variation is often asymptomatic (Amgad et al. 2024).

Multiseptate gallbladder is a relatively recent discovery in the medical field, with most case reports appearing after the 1900s. To date, few cases have been reported worldwide, and the underlying physiological mechanisms remain unclear. Due to the lack of associated pathological manifestations, multiseptate gallbladder is considered a rare, benign anatomical variation characterized by multiple septal membranes in the gallbladder lumen, creating a honeycomb appearance (González et al., 2023).

Explaining how the gallbladder is the develop in to the multiseptate form can be a seeing as a challenge for the medical field, but some theories were created along the years. Around 1970, Bhagavan created the embryological hypothesis and he proposed that, in the latest embryological states, there is a failure in the process of disappearing the septa that exists in the inside of the gallbladder. With that process, the inner walls then fuse forming locules that creates spaces in the lumen that are separated by the thin septa, which characterise the condition (Terkawi, 2021).

The diagnosis of multiseptated gallbladder usually happens unintentionally, since most patients who have this anatomical variation do not have symptoms directly related to this condition. In this sense, patients present with other complaints and pathological conditions and changes in the gallbladder are eventually identified. This can be observed, for example, in the case of the patient who presented to the health service with abdominal pain and symptoms characteristic of cholecystitis. After biochemical examinations, other pathologies originating in the liver or blood were excluded, and abdominal ultrasonography defined the diagnosis of cholecystitis, but without any apparent anatomical alteration described in the report. The patient was treated with a cholecystectomy with improvement of cholecystitis, however, after an evaluation of her gallbladder, septa were found in the lumen of the organ, thus characterizing a multiseptated gallbladder (Desai, Gianchandani, 2023).

In view of the frequent asymptomatic condition, most patients diagnosed with this condition presented themselves for another evaluation. In this sense, it is possible to identify two types of patients, those who do not have any type of symptom and, therefore, are diagnosed in routine exams, for example, and those who have some sign or symptom, especially in the abdominal region. In this case, it is possible to identify that the abdominal pain characteristic of biliary colic is recurrent. Therefore, imaging tests such as ultrasound and computed tomography are used for a more detailed evaluation, leading to the identification of this anatomical variation. Even so, there are patients who do not have changes in imaging tests and are only identified after a cholecystectomy, for example (Hopmann, 2022).

The reason around the use of imagen's test to find the variation due to the diseases that are frequently associated to the patient's medical history. The main diseases that are presented by the patients are biliary complications such as cholecystitis, cholelithiasis and congenital biliary dilation that causes abdominal pain. This pain makes the patient seek medical attention and the necessity for the image examination. The finding of multiseptate gallbladder associated of a pathological condition of the gallbladder creates the necessity of a medical intervention. In this case, mainly, surgical procedures are indicated to resolve the pathology, even though the anatomical variation does create the necessity for the procedure (Oyachi et al., 2022).

Normally, the ultrasonographic imaging show the gallbladder with multiple septa and this can be described as multiple linear structures crossing the gallbladder from one internal wall connecting to another point inside the organ, similar to a honeycomb. Septa can be can be seen as smooth and thin tissue that is similar to the inner wall of the gallbladder. They can be seen in different forms of imaging examination, such as CT and MRI, where the inside of the organ shows a heterogeneous signal intensity. When a disease happens, the septa can suffer inflammation and the image characteristics changes, becoming more intense due to a higher intensity signal, for example. The understanding of this alteration is important to define the treatment plan, because it determines when a intervention is appropriate and avoids misdiagnoses, for example (Ichikawa et al., 2021).

The study by Amgad et al. (2024), presents a rare case of multiseptated gallbladder (MSG) in a 4-year-old pediatric patient, who complained of persistent colicky abdominal pain for three months. MSG is a congenital anomaly characterized by the presence of internal septa that divide the gallbladder into multiple compartments, which can make diagnosis and clinical management difficult. The patient was diagnosed through ultrasonography and magnetic resonance imaging, which showed MSG with bile sludge, but without stones. Despite normal initial laboratory results, the decision for laparoscopic cholecystectomy was made due to the persistence of symptoms, resulting in a complete recovery without complications over six months. The article highlights the scarcity of cases in the literature, with 37 pediatric cases reviewed, predominantly in girls, and emphasizes the importance of imaging techniques for accurate diagnosis. Although many cases are asymptomatic and can be managed conservatively, surgical intervention is recommended for those with persistent symptoms.

Another case report that presents a similar finding is from a 5 years old girl that present acute abdominal pain and it was admitted at the emergency service for further investigation. In the abdominal evaluation, she presented fever and sensitivity for pain in the right iliac fossa. These manifestations are characteristic of inflammation of the appendix and that creates the necessity of sonographic analysis. The image examination, the diagnosis was confirmed and it was possible to identify multiple septa on the biliary gallbladder. This is another example of how the multipleseptate gallbladder is investigated and diagnosed in an asymptomatic patient, but it's important to understand that some patients will present manifestation (Faraj et al., 2024).

CONCLUSION

The multiseptated gallbladder is a congenital anatomical variation that usually does not have specific symptoms, so its diagnosis can be complex. Patients who present this alteration in the formation of the gallbladder may never present symptoms and therefore are identified when they undergo routine exams, such as the patient presented, or they may present manifestations of other abdominal diseases, so they seek assistance from health services and are then diagnosed with the septate gallbladder. In this sense, it is observed that when patients present some form of clinical manifestation, there is a high frequency of abdominal symptoms, such as abdominal pain characteristic of biliary colic. That said, the main imaging tests used in this diagnosis are ultrasonography and computed tomography. These tests allow the identification of changes in the wall, volume and lumen of the gallbladder leading to the diagnosis. In addition, cholecystectomy can also be a form of diagnosis in some patients.

REFERENCES

AMGAD, A. *et al.* Multiseptate gallbladder in a pediatric pateint: A case report and review of literature. **International Journal of Surgery Case Reports**, v. 123, 2024. Disponível em: https://pubmed.ncbi.nlm.nih.gov/39303484/.

DESAI, K., GIANCHANDANI, S. Multi-Septate Gallbladder in a Patient With Acute Cholecystits. **Cureus**, v. 15, n. 10, p. 1-5, 2023. Disponível em: https://pmc.ncbi.nlm.nih.gov/articles/PMC10632181/pdf/cureus-0015-00000046762.pdf.

FARAJ *et al*. Multiseptate Gallbladder in an Asymptomatic Child: Case Report and Review of the Literature. **Radiol. Case Rep.**, v. 19, n. 4, p. 1401-1403, 2024. Disponível em: https://pmc.ncbi.nlm.nih.gov/articles/PMC10803780/.

GONZÁLES, L. O. *et al.* Multiseptate gallbladder in pediatric patient. **Aten. Primaira**, v. 55, n. 12, p. 1-3, 2023. Available in: https://pubmed.ncbi.nlm.nih.gov/37714064/..

HOPMANN, P. *et al.* Multiseptate gallbladder presenting with biliary colic. **Journal of Surgical Case Reports**, v. 9, p. 1-2, 2022. Disponível em: Multiseptate gallbladder presenting with biliary colic - PubMed.

HSIEH, Y. *et al.* Multisepstate gallbladder: A case report and literature review. **Medicine**, v. 100, n. 49, p. 1-6, 2021. Disponível em: https://pmc.ncbi.nlm.nih.gov/articles/PMC8663827/pdf/medi-100-e27992.pdf.

ICHIKAWA, S. *et al*. Key Imaging Findings for the Prospective Diagnosis of Rare Diseases of the Gallbladder and Cystic Duct. **Korean Journal of Radiology**, v. 22, n. 9, p. 1462-1474, 2021. Available in: https://pubmed.ncbi.nlm.nih.gov/34132078/.

OYACHI, N. *et al.* Multiseptate Gallbladder Coexisting with Pancreaticobiliary Maljunction Treated by Laparoscopic Cholecystectomy: report of a pediatric case. **Surgical Case Reports**, v. 8, n. 16, p. 1-6, 2022. Available in: https://pubmed.ncbi.nlm.nih.gov/35061125/.

TERKAWI, R. S. *et al.* Understanding multiseptated gallbladder: A systematic analysis with a case report. **JGH Open**, v. 5, n. 9, p. 988-996, 2021. Available in: https://pmc.ncbi.nlm.nih.gov/articles/PMC8454487/.