

# **Cystic Liver Lesions: Differential Imaging Features**

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## **Learning Objectives:**

- To describe the differential imaging features of cystic liver lesions and review multimodality imaging (ultrasound, CT, and/or MRI).
- To correlate findings with ancillary features such as patient demographics and clinical history.
- To identify the clinical importance of accurate diagnosis of cystic liver lesions.

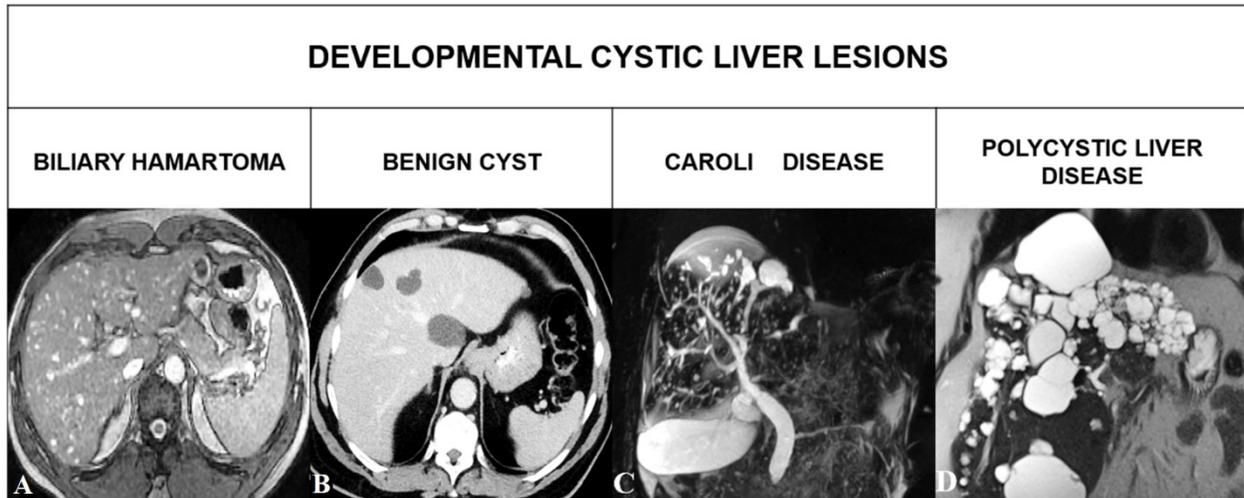
## **Background:**

Cystic liver lesions are a common incidental imaging finding, the vast majority of which are benign in nature. However, these lesions can occasionally be malignant or potentially fatal, therefore accurate diagnosis is crucial for appropriate clinical management. Cystic liver lesions can be classified based on etiology: developmental (Figure 1), infectious/inflammatory (Figure 2), neoplastic (Figure 3), post-traumatic (Figure 4), and miscellaneous (Figure 5).

The assessment of cystic liver lesions is based on imaging characteristics as well as patient demographics, clinical findings, and pertinent history. Important basic imaging features include number, size, location, and distribution of lesions, along with simple or complex morphology. Other significant findings include the presence of mural nodularity, solid components, calcification, and associated enhancement patterns.

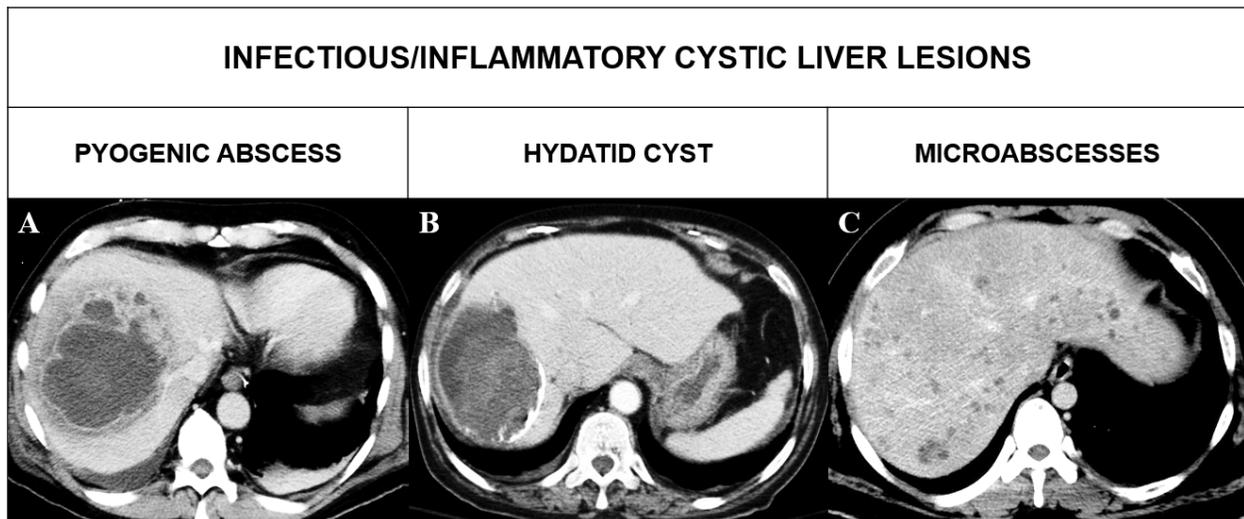
Clinical history is of utmost importance in the accurate diagnosis of cystic liver lesions. Examples include a history of malignancy, trauma, previous surgery, polycystic disease, pancreatic disease, cirrhosis, immunocompromised state, systemic infection, and travel to sites with endemic parasitic disease.

Images for this section:



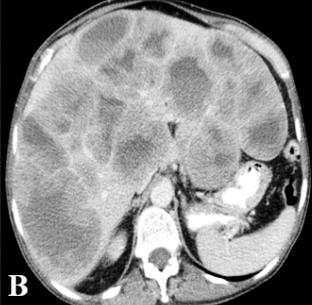
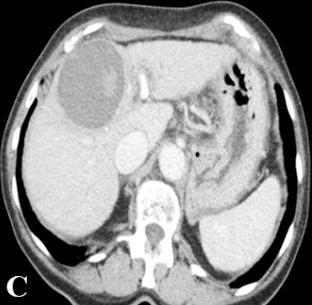
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**Figure 1.** Developmental cystic liver lesions. (A) Biliary hamartoma: axial FIESTA MR image demonstrates numerous small, homogenous, simple cystic lesions with slightly irregular outline throughout the liver. (B) Simple hepatic cyst: axial CT image shows multiple smooth, homogenous, simple fluid filled masses. (C) Caroli disease: 3D MRCP image shows multiple saccular cysts communicating with biliary tree. (D) Polycystic liver disease: coronal T2 weighted image shows innumerable simple and hemorrhagic cysts of various sizes randomly distributed throughout the liver.



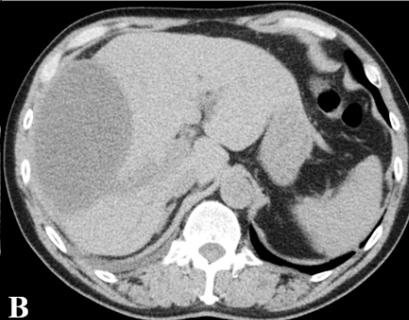
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**Figure 2.** Infectious/inflammatory cystic liver lesions. (A) Pyogenic abscess: axial CT image shows a multiloculated hypoattenuating lesion surrounded by an enhancing inner rim and low attenuation periphery comprising the “double target” sign. (B) Hydatid cyst: axial CT image shows a peripherally calcified lesion in the right lobe with heterogenous loculation and no internal enhancement. (C) Microabscesses: axial CT image demonstrates innumerable small, confluent cystic lesions with subtle peripheral enhancement scattered throughout the liver.

NEOPLASTIC CYSTIC LIVER LESIONS			
BILIARY CYSTADENOMA AND CYSTADENOCARCINOMA	CYSTIC METASTASIS	CYSTIC HEPATOCELLULAR CARCINOMA	GIANT HEMANGIOMA
			
<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>

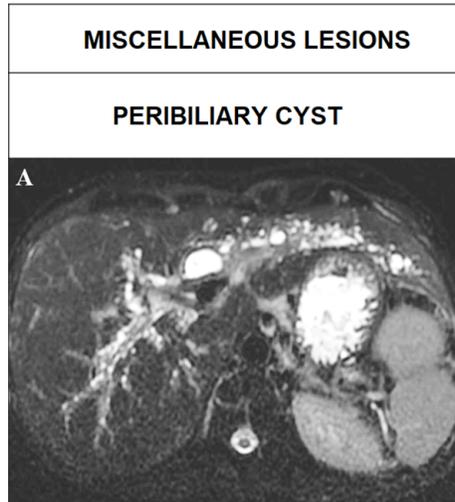
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**Figure 3.** Neoplastic cystic liver lesions. (A) Biliary cystadenocarcinoma: Axial T1-weighted post contrast MR image demonstrates a multilocular, lobulated cystic lesion with well-defined thick capsule, enhancing internal septations, and mural nodules. (B) Cystic metastasis: axial CT image shows innumerable lesions with central hypodensity, solid thick rind, and peripheral enhancement throughout the liver. The cystic components of these lesions can be mucin, hemorrhage, and/or necrosis. (C) Cystic hepatocellular carcinoma: axial CT image shows a complex cystic lesion with an internal nodule and cirrhotic liver morphology. (D) Giant hemangioma: axial CT image demonstrates a single large, hypodense lesion with peripheral nodular enhancement.

POST-TRAUMATIC CYSTIC LIVER LESIONS		
BILOMA	HEMATOMA	LACERATION
		
<b>A</b>	<b>B</b>	<b>C</b>

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**Figure 4.** Post-traumatic cystic liver lesions. (A) Biloma: axial CT image demonstrates a well-defined, slightly irregular fluid collection. (B) Subcapsular liver hematoma in the chronic stage: axial CT image shows a well-defined elliptical unilocular fluid collection. In the acute or subacute stage, hematomas are usually hyperdense. (C) Hepatic laceration: axial CTA image demonstrates an irregular wedge-shaped hypoattenuating region in the liver.



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**Figure 5.** Miscellaneous lesions. (A) Peribiliary cysts: Axial T2-weighted fat saturated MR image shows multiple small cysts without communication between the cysts and bile ducts along the portal tracts of liver. (B) Intrahepatic pseudocyst: axial CT scan shows a well-defined, homogeneous, subcapsular hypodense surrounded by a thin fibrous capsule.