

**TABLE 369-2** DIAGNOSTIC EVALUATION OF THE GALLBLADDER

Diagnostic Advantages	Diagnostic Limitations	Comment
<b>Gallbladder Ultrasound</b>		
Rapid	Bowel gas	Procedure of choice for detection of stones
Accurate identification of gallstones (>95%)	Massive obesity	
Simultaneous scanning of GB, liver, bile ducts, pancreas	Ascites	
"Real-time" scanning allows assessment of GB volume, contractility		
Not limited by jaundice, pregnancy		
May detect very small stones		
<b>Plain Abdominal X-Ray</b>		
Low cost	Relatively low yield	Pathognomonic findings in: calcified gallstones
Readily available	? Contraindicated in pregnancy	Limey bile, porcelain GB Emphysematous cholecystitis Gallstone ileus
<b>Radioisotope Scans (HIDA, DIDA, etc.)</b>		
Accurate identification of cystic duct obstruction	? Contraindicated in pregnancy	Indicated for confirmation of suspected acute cholecystitis; less sensitive and less specific in chronic cholecystitis; useful in diagnosis of acalculous cholecystopathy, especially if given with CCK to assess gallbladder emptying
Simultaneous assessment of bile ducts	Serum bilirubin >103–205 $\mu\text{mol/L}$ (6–12 mg/dL)	
	Cholecystogram of low resolution	

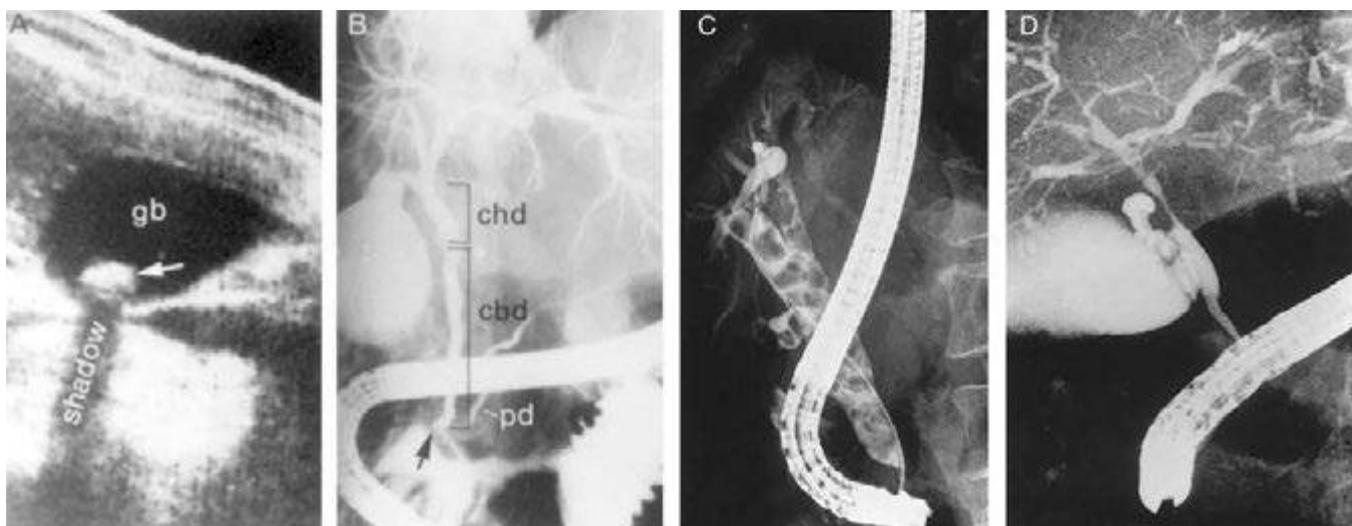
**Abbreviations:** CCK, cholecystokinin; GB, gallbladder.

the blood and are excreted into the biliary tree in high concentration even in the presence of mild to moderate serum bilirubin elevations. Failure to image the gallbladder in the presence of biliary ductal visualization may indicate cystic duct obstruction, acute or chronic cholecystitis, or surgical absence of the organ. Such scans have some application in the diagnosis of acute cholecystitis.

**Symptoms of Gallstone Disease** Gallstones usually produce symptoms by causing inflammation or obstruction following their migration into the cystic duct or CBD. The most specific and characteristic symptom of gallstone disease is biliary colic that is a constant and often long-lasting pain (see below). Obstruction of the cystic duct or CBD by a stone produces increased intraluminal pressure and distention of the viscus that cannot be relieved by repetitive biliary contractions. The resultant visceral pain is characteristically a severe, steady ache or fullness in

the epigastrium or right upper quadrant (RUQ) of the abdomen with frequent radiation to the interscapular area, right scapula, or shoulder.

Biliary colic begins quite suddenly and may persist with severe intensity for 30 min to 5 h, subsiding gradually or rapidly. It is steady rather than intermittent, as would be suggested by the word *colic*, which must be regarded as a misnomer, although it is in widespread use. An episode of biliary pain persisting beyond 5 h should raise the suspicion of acute cholecystitis (see below). Nausea and vomiting frequently accompany episodes of biliary pain. An elevated level of serum bilirubin and/or alkaline phosphatase suggests a common duct stone. Fever or chills (rigors) with biliary pain usually imply a complication, i.e., cholecystitis, pancreatitis, or cholangitis. Complaints of short-lasting, vague epigastric fullness, dyspepsia, eructation, or flatulence, especially following a fatty meal, should not be confused with biliary pain. Such symptoms are frequently elicited from patients with or without gallstone disease



**FIGURE 369-2** Examples of ultrasound and radiologic studies of the biliary tract. **A.** An ultrasound study showing a distended gallbladder (GB) containing a single large stone (arrow), which casts an acoustic shadow. **B.** Endoscopic retrograde cholangiopancreatogram (ERCP) showing normal biliary tract anatomy. In addition to the endoscope and large vertical gallbladder filled with contrast dye, the common hepatic duct (CHD), common bile duct (CBD), and pancreatic duct (PD) are shown. The arrow points to the ampulla of Vater. **C.** Endoscopic retrograde cholangiogram (ERC) showing choledocholithiasis. The biliary tract is dilated and contains multiple radiolucent calculi. **D.** ERCP showing sclerosing cholangitis. The common bile duct shows areas that are strictured and narrowed.