Gallbladder Polyps

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Abstract

Gallbladder polyps are protrusions of the mucosal lining into the lumen, most commonly identified incidentally during abdominal imaging. While the majority are benign, particularly cholesterol and inflammatory polyps, certain neoplastic types, such as adenomas and adenocarcinomas, present a risk for malignancy. Prevalence estimates range from 4% to 7%.

Risk factors include age over 60, Asian ethnicity and chronic inflammatory conditions.

Ultrasound remains the primary diagnostic tool, with polyp characteristics (size, echogenicity, and morphology) guiding risk stratification. Advanced imaging modalities are reserved for suspected malignancy. Current European guidelines (2022) recommend cholecystectomy for polyps ≥10 mm or smaller polyps in symptomatic patients or those with malignancy risk factors.

Histological analysis is essential for definitive diagnosis and to exclude cancer

Although most polyps are clinically insignificant, accurate classification and vigilance is required.

Keywords: gallbladder polyps, characteristics, abdominal imaging

Introduction

Gallbladder polyps are defined as projections from the gallbladder mucosa into the lumen. They are usually asymptomatic and found incidentally on ultrasound / CT, or after cholecystectomy but can occasionally lead to symptoms like those of cholecystitis (right upper quadrant pain, nausea and abdominal discomfort). Most polyps are not neoplastic but are hyperplastic or represent lipid deposits (cholesterolosis).

With the increased use of abdominal ultrasound, gallbladder polyps became more obvious.

However, initial imaging cannot exclude the possibility of gallbladder carcinoma or premalignant adenomas. This paper will review the classification, clinical findings, diagnosis, and management of gallbladder polyps.

Epidemiology

The causes of increased prevalence of gallbladder polyps are unclear. Studies have shown that 4% to 7% of the population may develop gallbladder polyps; the majority are cholesterol polyps. The average age of diagnosis of gallbladder polyps is 40- 50 years old. However, other studies have found the presence of polyps to be more prevalent in older patients [1].

Risk factors

There are a few risk factors associated with gallbladder polyps' formation. Some studies suggest conditions such as :

Familial polyposis, Peutz-Jeghers syndrome, and hepatitis B may be factors associated with polyp formation.

Pseudo or cholesterol polyps can develop when the cholesterol or salt content in the bile is high. This leads to condensation of cholesterol clumps which can adhere to the wall of the gallbladder. This condition may be a precursor to gallstone formation and can also at times be seen in conjunction with gallstones [1][2].

Types of gallbladder polyps

Cholesterol polyps or pseudo polyps: Are the most common type of gallbladder polyps. These account for 60% to 90% of all gallbladder polyps. They are not true neoplastic growths, but they represent a polypoid form of cholesterolosis as cholesterol deposits form as projections on the inner lumen of the gallbladder wall. Cholesterol polyps are usually asymptomatic and diagnosed incidentally on ultrasound. They are usually multiple, homogeneous, and pedunculated polypoid lesions that are more echogenic than the liver parenchyma.

(Figure 1. Ultrasound of a 41-year-old man with chest pain shows two 4-mm GB polyps)
Adenomas: Adenomas are homogeneous, isoechoic with the liver parenchyma, have a smooth surface with internal vascularity on Doppler imaging, and usually do not have a stalk.

Adenocarcinomas: Adenocarcinomas are homogeneous or heterogeneous polypoid structures that are usually isoechoic with the liver parenchyma, are vascular on Doppler imaging, and exhibit a mulberry-like surface [10]. Sessile polyp morphology with a wide base and focal thickness of the gallbladder wall of more than 4 mm are risk factors for malignancy [10]. Adenocarcinomas are usually larger than 1 cm.

Adenomayoma: In the localized type, adenomyomatosis can give the appearance of a polyp projecting from the fundus into the lumen.

Advanced imaging methods include:

Contrast-enhanced ultrasound.
Endoscopic ultrasound (EUS)
Computed tomography scan (CT)

We do not routinely obtain advanced imaging for patients with suspected benign gallbladder polyps because the use of such imaging is limited by availability, diagnostic accuracy, and/or its invasiveness (eg, endoscopic ultrasound (EUS) [10-11]. However, we obtain advanced imaging when malignancy is suspected (eg, polyps >20 mm in size, focal gallbladder wall thickening). Additional imaging evaluates the depth of invasion into the gallbladder wall and invasion into the liver. Advanced imaging may be helpful in differentiating benign from malignant lesions and differentiating tumefactive sludge from neoplastic lesions.

Figure 1: Ultrasound of a 41-year-old man with chest pain shows two 4-mm GB polyps

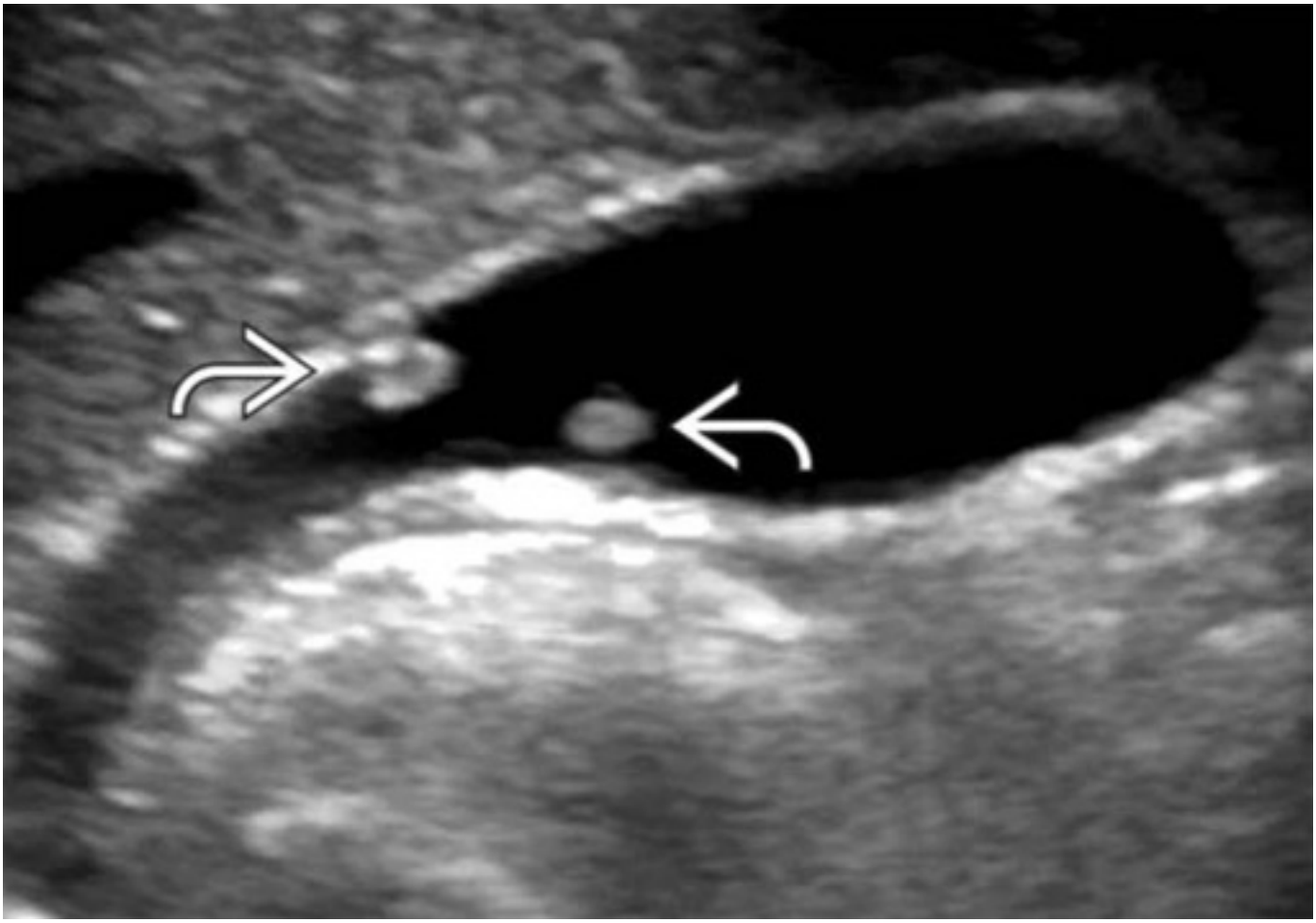
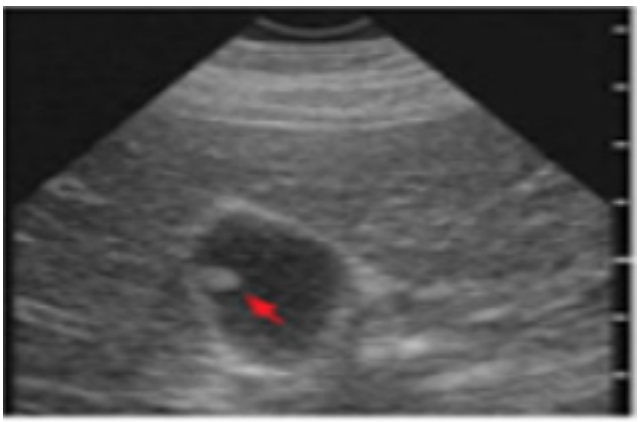


Figure 2: Gallbladder adenomatous polyp



Diagnosis

The diagnosis of a gallbladder polyp can be made with reasonable confidence based on ultrasound findings, but imaging cannot unequivocally distinguish malignant from benign polyps. Histologic evaluation also excludes malignancy.

Differential diagnosis

Gallstones
Gallbladder polyps can be differentiated from gallstones by abdominal ultrasound as the polyps are fixed and do not cast a shadow whereas gallstones move when the patient is rolled from one side to another and do not (Figure 3).

Gallbladder sludge ball mimics a gallbladder polyp but tends to be in the dependent part of the gallbladder and moves with changing the patient's position.

Gallbladder adenocarcinoma appears as a polypoid structure.

Management

European guidelines (2022)
In 2022, the joint guidelines between the European Society of Gastrointestinal and Abdominal Radiology (ESGAR), European Association for Endoscopic Surgery and other Interventional Techniques (EAES), International Society of Digestive Surgery - European Federation (EFISDS) and European Society of Gastrointestinal Endoscopy (ESGE) were updated (12):

1-polyp ≥10 mm: cholecystectomy recommended
2-Polyp <10 mm:
a. Symptoms attributable to the gallbladder: cholecystectomy is recommended.
b. No symptoms attributable to the gallbladder:
- Polyp 6-9 mm with one or more risk factors* for gallbladder malignancy: cholecystectomy is recommended, polyp measures ≤5 mm follow-up ultrasound at 6 months, 1 year and 2 years
no risk factors for gallbladder malignancy:
polyp 6-9 mm follow-up ultrasound at 6 months, 1 year and 2 years
polyp ≤5 mm follow-up not required

***Risk factors:**
Patient age>60 years
Primary sclerosing cholangitis,
Asian ethnicity,
Sessile polyp (including focal wall thickening >4 mm).
If a polyp grows ≥2 mm within 2 years, its size should be considered along with risk factors.
Statistically, gallbladder polyps are common and gallbladder cancer is rare, so very few polyps progress to gallbladder cancer. There is also controversy regarding the development of gallbladder cancer and some suggest that polyps may not progress to cancer (10).

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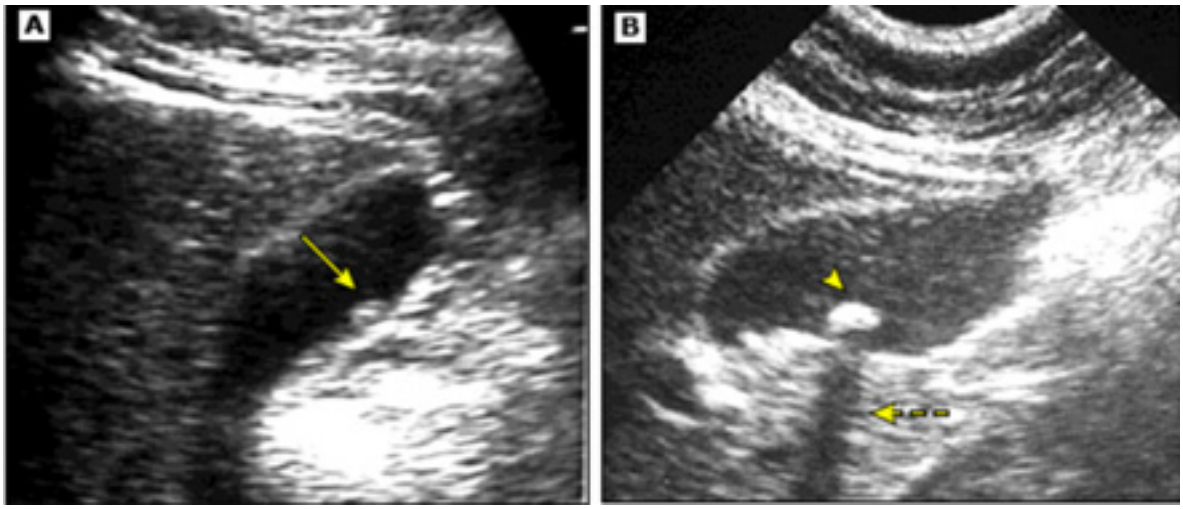
Figure 3



Ultrasound images of a gallbladder adenomatous polyp (arrow) compared with a gallstone (arrowhead). Note the shadow cast by the stone (dashed arrow) compared with the absence of a shadow behind the polyp.