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Gallbladder Polyps: A Literature Review of Basic Concepts, Diagnosis and Treatment Options

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ABSTRACT

Gallbladder polyps (GP) are projections of the mucosa toward the light, most of them are benign caused by cholesterol deposits, focal adenomatosis, or hyperplastic lesions secondary to a local infection. It has an estimated prevalence of 5% of the world population. Cholesterol polyps are usually formed by an asymptomatic process, rarely obstructive jaundice or cholangitis due to the blockage of distal bile ducts by detached fragments of polyps. A small number of patients may be symptomatic; cholesterolosis and adenomatosis can also cause chronic dyspeptic abdominal pain, nausea, and vomiting. Ultrasound is the main imaging modality to diagnose polyps of the gallbladder, endoscopic ultrasonography can be a useful tool in patients with clinical pictures suggestive of vesicular pathology and non-invasive imaging studies, and inconclusive. In a patient aged less than 50 years with GP, the likelihood of malignancy is minimal and does not require cholecystectomy. However, those with a size greater than or equal to 10 mm should be resected by cholecystectomy for high risk of malignancy, and those with a size less than 10 mm should be submitted to ultrasound monitoring, observing the risk characteristics during follow-up, to provide timely treatment.

KEYWORDS: Gallbladder polyps, cholesterol, adenomatosis, polyps, cholesterolosis, endoscopic ultrasonography, malignancy, cholecystectomy.

ARTICLE DETAILS

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INTRODUCTION

The gallbladder polyps (GP) are projections of the mucosa towards the light of this organ. (1) They may be due to lipid deposits, inflammatory processes, or neoplasms, and are classified as benign and malignant lesions. (1)

Most gallbladder polyps are benign pseudopolyps caused by cholesterol deposits, focal adenomatosis, or hyperplastic

lesions secondary to a local infection that forms bulges inside the gallbladder wall. [2, 3] The presence of cholesterol polyps may indicate pathological gallbladder disease, such as chronic cholecystitis. [3]

GP has an estimated prevalence of 5% in the world population and is a common incidental finding during abdominal ultrasound with an estimated prevalence between 0.3 and 9.5%. [2, 4] Cholesterol polyps are the most common, accounting for 50% to 60% of all vesicular polyps. [4] The pathogenic mechanisms underlying the development of GP are not well understood, however, the general hypothesis is that cholesterol levels in the blood or bile increase, causing concentrated cholesterol to create deposits in the bile. [5] This, combined with dysmotility of the gallbladder, directly influences the formation of cholesterol polyps. [5] On the other hand, gallbladder adenomatosis is more common in women and less common than cholesterol polyps however there is evidence that the presence of adenomatosis is associated with more advanced gallbladder cancer [Table 1]. [6]

Risk factors for GP progression	*Factors associated with malignancy*
• MALE SEX • AGE • DYSLIPIDEMIA, • NON-ALCOHOLIC FATTY LIVER DISEASE.	• SIZE (GREATER THAN 10 MM) • ADVANCED AGE (> 50 YEARS) • GALLSTONES

Table 1. *Comparison of risk factors associated with progression and malignancy of GP*

Adenomatous polyps of the gallbladder are the most common benign tumors of the gallbladder, but they are rare, their incidence is usually less than 0.5%. [6] However, one of the main concerns is the differentiation of malignant masses, as gallbladder carcinoma usually has a late onset and an unfavorable prognosis, therefore, they should be detected early. [7]

GP is more prevalent in patients with cholesterol, morbid obesity, and in adult women between the fifth and sixth decades of life. [4] Also, age is an important factor, as the prevalence of polyps increases with age, reaching its peak in people aged 40-50 and decreasing after 60. [5]

Well-known risk factors for GP development and progression include male sex, age, dyslipidemia, and non-alcoholic fatty liver disease. [5] Some risk factors associated with the malignancy of vesicular polyps include the size (greater than 10 mm), advanced age, and the presence of gallstones. [7]

CLINICAL PRESENTATION

Cholesterol polyps are usually formed by an asymptomatic process and are often discovered incidentally, either in an imaging study or at the time of histological examination after cholecystectomy for unrelated reasons; rarely, the patients with cholesterol polyps develop obstructive jaundice or cholangitis due to the blockage of distal bile ducts by detached polyp fragments. [4, 8] On the other hand, some patients may be symptomatic and have acute cholecystitis due to the polyp obstructing the cystic duct. [8] In addition to biliary pain, adenomatosis can also cause chronic dyspeptic abdominal pain, nausea, and vomiting. [6]

DIAGNOSIS AND TREATMENT

GP requires close monitoring due to the possibility of malignancy. Regular follow-up checks or surgical treatments, such as cholecystectomy, are needed when the GP exceeds a specific size threshold, which generates ongoing medical expenses. [5] In addition, medical concerns persist when a patient with a GP of >10 mm diameter rejects cholecystectomy, given the risk of cancer development before the next ultrasound examination. [5]

Ultrasound is the primary imaging modality for diagnosing polyps of the gallbladder (Image 1-2); however, characterization is often difficult. [2] Cholesterol polyps are often multiple small, echogenic, smooth, shadowless polyps attached to the vesicular wall. [2] Whereas true polyps tend to be single lesions of larger size, may show vascularity, and are less echogenic. [2]

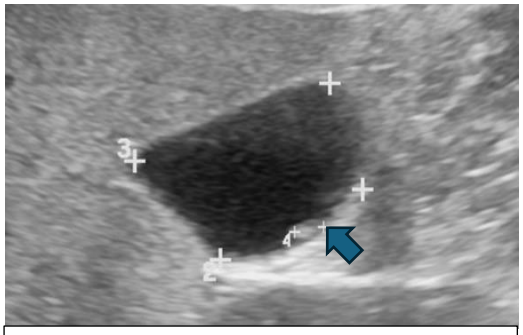

Image 1. Distended, thin-walled gallbladder with no stones inside. A vesicular polyp with a broad base (arrow) is observed, measuring 4.6 mm.

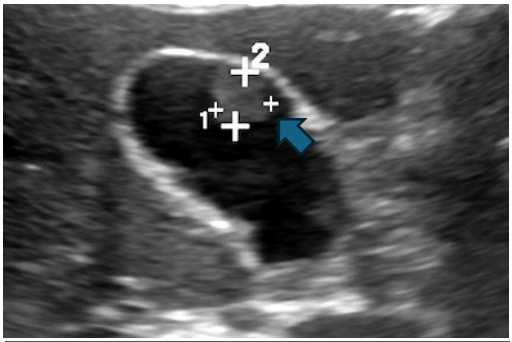

Image 2. Distended gallbladder and thin wall, with a vesicular polyp (arrow), measuring 9.1 mm.

The positive predictive value of ultrasound in the diagnosis of vesicular polyposis has been reported up to 74.21%. [9] The presence of polyps in these studies may be inconsistent with the final pathological result since most vesicular polyps are benign. [10] Regarding the size of polyps, some authors have found that polyps >10 mm have a higher risk of malignancy, but they have also found reports of malignancy in polyps <10 mm, therefore have established the cut with an appropriate sensitivity and specificity for polyps >6 mm in diameter. [10]

Although abdominal ultrasound is the first-line study for the detection of this type of lesion (due to its low cost, easy availability, and high diagnostic sensitivity) new advances in modern endoscopy have allowed endoscopic ultrasonography (EU) to optimize the diagnosis and characterization of neoplastic polyps, to provide a better therapeutic approach. [11] The EU can be a useful tool in patients with clinical pictures suggestive of vesicular pathology and non-invasive, and inconclusive imaging studies. [12] These benefits make it a more precise way of differentiating between cholesterol and neoplastic polyps. [6]

Pseudopolyps have no malignant potential and do not require follow-up or intervention, whereas "true" vesicular polyps, which include adenocarcinomas or adenomas, require surgical removal. [8] There is insufficient evidence to show that tumor markers help in the decision-making process for GP. [8] Primary sclerosing cholangitis (PSC) is a recognized risk factor for the malignancy of a polyp in the gallbladder, and cholecystectomy is currently recommended in these patients who have a polyp in the gallbladder, regardless of the size of the polyp. [8] Similarly, cholecystectomy is recommended in patients with GP and cholelithiasis, regardless of the size of the polyp or associated symptomatology. [6]

When there is a vesicular polyp less than 10 mm in a patient aged less than 50 years, the likelihood of malignancy is minimal and does not require cholecystectomy. [13] Other authors consider that the gallbladder polyps should be resected if they cause symptomatology or if a patient has risk factors for malignancy, with a vesicular polyp of more than 6 mm. [13]

On the other hand, vesicular polyps with a size greater than or equal to 10 mm should be resected by cholecystectomy for presenting a high risk of malignancy, and those with a size smaller than 10 mm should be submitted to an ultrasound follow-up, observing risk characteristics during follow-up, to provide timely treatment. [11]

Surgical indication of laparoscopic cholecystectomy is recommended if ultrasound reports a solitary, wide-basted, vascularized polyp greater than 10 mm in patients over 50 years of age or associated with cholelithiasis [Table 2]. [13]

Laparoscopic cholecystectomy is also indicated in lesions >20 mm, which are usually malignant. [6] Lesions of 6-9 mm may represent cholesterol, adenomas, or carcinomas, some authors recommend follow-up with ultrasonography every 6 months for 1 year, and thereafter every year if maintained with a stable measure; surgery would be indicated when there is evidence of an increase in size. [6] Lesions 5 mm or less frequently represent cholesterolosis. [6] A new control ultrasound is considered appropriate 12 months after diagnosis; if the size remains stable, no treatment or follow-up is warranted. [6]

Laparoscopic cholecystectomy
• GP SYMPTOMATIC • FACTORS ASSOCIATED WITH MALIGNANCY • SIZE > 10 MM • AGED 50 YEARS WITH A SOLITARY VESICULAR WIDE BASE POLYP VASCULARIZED AND > 10 MM • ASSOCIATED CHOLELITHIASIS • GP OF 6-9 MM WITH AN INCREASED SIZE DURING ULTRASOUND MONITORING.

Table 2. GP laparoscopic indications

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CONFLICT OF INTERESTS

The authors declare no conflict of interest.

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