

ORIGINAL ARTICLE

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Surgical indications and histopathologic results analysis of gallbladder polyps: A single-center experience

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Abstract

Gallbladder polyps (GBP) are solid lesions originating from the gallbladder mucosa and extending into the gallbladder lumen. Preoperative diagnosis of GBP can be easily performed via USG; however, which patients should be followed up and which patients should be operated on is still a matter of discussion. This study aimed to investigate the histopathologic results and indications for surgery in patients diagnosed with GBP in the preoperative period and to present our clinical experience in light of current literature. Patients diagnosed with GBP and who had surgery in our general surgery clinic between July 2019 and July 2023 were retrospectively reviewed. A total of 57 patients were included in the study. The medical records, laboratory results, imaging results, and pathology reports of the patients were examined. The mean age of the patients was 47.1 ± 11.7 years (23-78 years). The male/female ratio was 1.3/1. Polyp diameter was above 10 mm in 61.4% of patients and below 10 mm in 38.6%. The indication for surgery was the presence of coexisting cholelithiasis in 35.1% of the cases, symptomatic polyps in 33.3%, and increased polyp diameter in 21.1%. In histopathologic evaluation, cholesterol polyp was the most frequently encountered polyp (40.4%). The follow-up and treatment of GBP is still controversial. The most important factors to be considered in the surgical treatment of SCP are the polyp being over 10 mm and being symptomatic. In follow-up patients, further detailed clinical examination should be performed if necessary, and other imaging modalities should be preferred along with USG. Furthermore, it is required to establish up-to-date international algorithms for the follow-up and treatment of GBP.

Keywords: Gallbladder polyp, ultrasonography, cholecystectomy, cholelithiasis

Introduction

Gallbladder polyps (GBPs) are solid lesions originating from the gallbladder mucosa and extending into the gallbladder lumen [1]. Nowadays, GBP is diagnosed not only in symptomatic patients but also incidentally due to the increased use of imaging modalities such as conventional ultrasonography (USG) and endoscopic USG. GBP is observed in approximately 2-8% of patients undergoing USG and in approximately 3-10% of cholecystectomy materials [2]. GBP is divided into two groups: pseudopolyps and true polyps [3]. Polyps that are important for clinicians and cause controversy due to different modalities in follow-up and treatment are true polyps where the risk of malignancy is present. GBP is divided into two groups: benign and malignant pathologically. Benign GBPs are subdivided into two groups: neoplastic polyps and non-neoplastic polyps [4,5].

Preoperative diagnosis of GBP can be easily performed via USG; however, which patients should be followed up and which patients should be operated on is still a matter of discussion. This descriptive research aimed to investigate the histopathologic results and analyse the indications for surgery in patients diagnosed with GBP in the preoperative period and to present our clinical experience in light of current literature.

Material and Methods

Patients who were diagnosed with GBP and had surgery in our general surgery clinic between January 2019 and August 2023 were retrospectively reviewed. Patients under 18 years of age were not included in the study. A total of 57 patients included in the study. The medical records, laboratory results, and pathology reports of the patients were examined. The USG reports of the patients were examined, and the data were noted. Demographic

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and clinicopathologic characteristics of the patients were recorded. This study was approved by the local ethics committee with decision no: 2023/207, dated September 27, 2023. This study was conducted in accordance with the World Medical Association Declaration of Helsinki-Ethical Principles for Medical Research Involving Human Subjects.

Statistical Analysis

Statistical analyses were performed utilizing the SPSS version 22.0 package program. The conformity of the variables to the normal distribution was assessed using visual (histograms and probability plots) and analytical methods ("Shapiro-Wilk tests"). Continuous variables distributed normally were expressed as mean±standard deviation, and continuous variables not distributed normally were expressed as median (minimum-maximum value). Laboratory data were summarized as both median and mean±standard deviation. Categorical data were presented as number (percentage).

Results

The mean age of the patients was 47.1±11.7 years (23-78 years). The male/female ratio was 1.3/1. The ASA score was ASA I in 40.4% of the patients, ASA II in 56.1%, and ASA III in 3.5%. Mean BMI was 26.7±3.5 kg/m² (19.9-35.2 kg/m²). 31.6% of the cases had comorbid diseases. The most common comorbid diseases were hypertension (17.5%), diabetes mellitus (14.0%), and coronary artery disease (8.8%). The percentage of smoking and alcohol consumption among the patients was 56.1% and 28.1%, respectively. Approximately 20% of the patients had a history of acute cholecystitis (Table 1).

Table 1. Descriptive characteristics of participants

Characteristic	Number	Percentage
Age*	47.1±11.7	
Gender		
Female	32	26.1
Male	25	43.9
ASA		
I	23	40.4
II	32	56.1
III	2	3.5
BMI*	26.7±3.5	
Presence of comorbidities	18	31.6
Hypertension	10	17.5
Diabetes mellitus	8	14.0
Coronary artery disease	5	8.8
Smoking	32	56.1
Alcohol Consumption	16	28.1
History of acute cholecystitis	11	19.3

*Mean±SD, †ASA; American Society of Anesthesiologists Score

Among the preoperative laboratory results, C-reactive protein (CRP), leukocyte, neutrophil, lymphocyte, platelet count,

albumin, hemoglobin, hematocrit, urea, and creatinine levels were reviewed. The preoperative laboratory results are given in Table 2.

Table 2. Laboratory results of the patients

Characteristic	Mean±SD	Median (min-max)
CRP (mg/dl)	6.6±6.2	4.8 (0.1-32.4)
Leukocyte (10 ³ /µl)	7.9±2.5	7.6 (4.1-15.6)
Neutrophil (10 ³ /µl)	6.0±2.2	5.5 (2.9-12.7)
Lymphocyte (10 ³ /µl)	1.3±0.6	1.2 (0.5-2.8)
Platelet (10 ⁶ /µl)	297±65	298 (143-503)
Albumin (g/dl)	4.1±0.5	4.2 (2.8-5.1)
Hemoglobin (g/dl)	12.9±1.3	13.1 (8.7-15.9)
Hematocrit (%)	37.8±3.2	37.7 (27.2-46.1)
Urea (mg/dl)	30.6±7.0	33.0 (9.0-42.0)
Creatinine (mg/dl)	0.8±0.1	0.7 (0.5-1.4)

†CRP: C-reactive protein

The majority of cases were only imaged with USG. Only 9 patients were imaged with both USG and computed tomography (CT). Polyp diameter was above 10 mm in 61.4% of patients and below 10 mm in 38.6%. The indication for surgery was the presence of coexisting cholelithiasis in 35.1% of the cases, symptomatic polyps in 33.3%, and increased polyp diameter in 21.1%. 10.5% of the patients underwent surgery upon their own demand. The median postoperative hospitalization was 2 days (Table 3).

Table 3. Clinical characteristics of patients

Characteristic	Number	Percentage
Imaging		
USG	48	84.2
USG+CT	9	15.8
Polyp diameter		
>10 mm	35	61.4
<10 mm	22	38.6
Indication for surgery		
Coexistence of cholelithiasis	20	35.1
Symptomaticity	19	33.3
Increase in polyp diameter	12	21.1
Patient's demand	6	10.5
Duration of operation (min)*	60	40-120
Duration of hospitalization (days)*	2	1-5

*Median/min-max, †USG: ultrasonography, CT: computed tomography

In histopathologic evaluation, cholesterol polyp was the most frequently encountered polyp (40.4%). Other common histopathologic findings were chronic cholecystitis (26.3%), cholesterosis (14.0%), and adenomatous polyp (8.8%). Additionally, normal histopathology was observed in 10.5% of the cases (Figure 1).

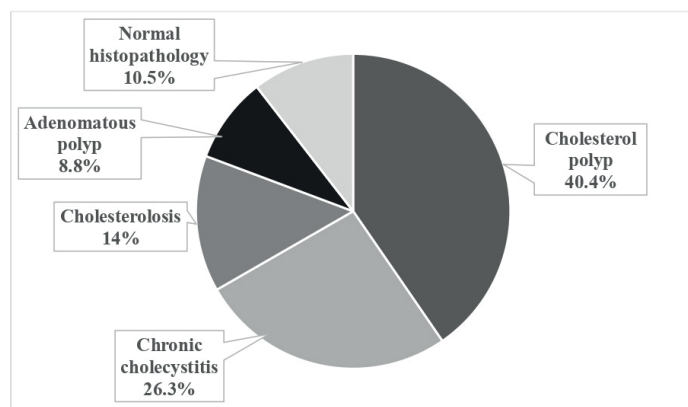


Figure 1. Histopathological analysis of polyps

Discussion

Nowadays, the prevalence of GBP diagnosis has increased as a result of wider access to imaging modalities and more frequent utilization of these modalities. Among the imaging techniques, transabdominal USG is the most commonly used imaging modality in gallbladder pathologies due to its non-invasiveness, easy access and application advantages, and the absence of the need for contrast medium during imaging [6]. A review of studies on this subject revealed that the sensitivity of USG for diagnosis of GBP was reported to be between 42% and 85% [7].

The etiology of GBP is still unclear; however, according to recent studies advanced age, female gender, obesity, ethnicity, and cholelithiasis increase the risk of GBP [8]. The findings of research by Choi et al. demonstrated that metabolic syndrome and chronic hepatitis B carriage increased the occurrence of GBP [9]. Although there is controversy regarding the predominant gender and the mean age of the patients, the female gender ratio was 56.1%, and the mean age of the patients was 47.1 years in our study, similar to previous studies.

Another controversial issue regarding GBP is how to monitor polyps. The results of other studies and our attitude in our clinic are that the GBP should be below or above 10 mm [10-12]. Furthermore, the indications for laparoscopic cholecystectomy are patient age over 50 years, a polyp size increase of more than 50% throughout the follow-up period, deformity, the presence of a symptomatic polyp, and coexistence with gallstones [13]. Polyps that fall outside these criteria are advised to be monitored with USG at 6-month intervals [14].

The inability to exclude the risk of malignancy in GBP confuses the surgeon and the patient. Pathology materials reveal that non-neoplastic lesions are most frequently reported in patients diagnosed with GBP, and cholesterol polyps are among the most common [15,16]. The findings of our study demonstrate that cholesterol polyps (40.1%) were the most frequently reported lesion. In addition, histopathologic examination of the pathology specimens revealed regular histopathology in 10.5% of the polyps in the operated patients.

Laparoscopic cholecystectomy is the gold standard method of

surgical treatment of GBP. A review of the literature revealed a complication rate of 2% and a mortality rate of 0.04% following laparoscopic cholecystectomy [17,18]. Considering these risks, patient choice is of great importance in surgical treatment. If necessary, additional imaging techniques in addition to USG should be preferred during patient follow-up.

A review of studies investigating the indications for surgical treatment of GBP suggested that the most common indications were coexistence with gallstones and the patient being symptomatic [19,20]. In our research, 35.1% of the patients referred for surgical treatment showed coexistence with gallbladder stones, and 33.3% were symptomatic. Similar results were observed with the studies available in the literature.

One of the limitations of our study was that it was a retrospective study. A further limitation was that USG examinations and histopathologic examinations were not performed by a single operator.

Conclusion

In conclusion, the follow-up and treatment of GBP is still controversial. The most important factors to be considered in the surgical treatment of SCP are the polyp being over 10 mm and being symptomatic. In follow-up patients, further detailed clinical examination should be performed if necessary, and other imaging modalities should be preferred along with USG. Moreover, there is a need to establish up-to-date international algorithms for the follow-up and treatment of GBP.

Conflict of Interests

The authors declare that there is no conflict of interest in the study.

Financial Disclosure

The authors declare that they have received no financial support for the study.

Ethical Approval

This study was approved by the University of Health Sciences Gülhane Training and Research Hospital Clinical Researches Ethics Committee with decision no: 2023/207, dated September 27, 2023.

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