

# Analysis of Various Histopathological Lesions in Routine Cholecystectomy Specimens

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## ABSTRACT

**Objective:** The purpose of this study is to see the spectrum of diverse changes in cholecystectomy specimens. **Study Design:** Descriptive, Cross sectional study.

**Place and Duration of Study:** This study was conducted at the Department of Pathology, tertiary care hospital, Lahore from January 2018 to January 2020 (after Institutional Review Board approval).

**Material and Methods;** Total 183 gall bladder specimens of all ages and both sexes were taken. After receiving specimens in formalin grossing was done according to standard protocols. Sections from neck, body and fundus were taken in grossly unremarkable specimens and subjected for routine histopathological processing. The morphological changes in the gallbladders were examined. Data was entered and analyzed statistically.

**Results:** Total of 183 patients were studied after cholecystectomy procedure. Majority of the cases were female i.e 136 (74.31%) and 47 (25.68%) were males. 102 number of patients were more than 40 years (55.73 %) and 81 were less than 40 years (44.26%).

**Conclusion:** The study provides an insight into the variety of morphological features on microscopy ranging from non-neoplastic to neoplastic lesions. Detection of malignancy in clinically benign gallbladder is much lower but early diagnosis in initial stage tumor is the rationale to examine all cholecystectomy specimens.

**Key Words:** Cholecystectomy, Cholecystitis, Cholelithiasis, Gall bladder.

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## INTRODUCTION

Histopathological examination is the gold standard for the absolute diagnosis in majority of the surgically removed specimens. This helps not only in making diagnosis but also take part in taking important decisions regarding patient's management<sup>1</sup>. Gall bladder is one of the most frequent surgically resected organ of the body but in order to decrease the burden on pathologist its routine histopathological examination especially of clinically and grossly benign gall bladders is still controversial.

Discarding of specimens without satisfactory histopathological assessment would be a disrespect in this era of evidence-based medicine. Despite of this, in majority of patient's routine gall bladder histopathology is less likely contributing in clinical management<sup>2</sup>.

Diseases of gall bladder is one of the common health problems that causes morbidity and mortality worldwide<sup>3</sup>. Gall stones also called cholelithiasis are of two types, namely pigment stone and cholesterol stone. They are formed when secretions of gall bladder get solid due to metabolic or hormonal changes and they can accumulate in any part of biliary tree. Cholecystitis with cholelithiasis is the common medical emergency that requires surgical intervention. Simple cholecystectomy is the common procedure for majority of gall bladder diseases. Numerous risk factors are responsible for developing gall bladder diseases, precisely; race, age, sex, pregnancy, oral contraceptives, obesity, dietary habits, disturbance in cholesterol and glucose metabolism and hemolytic anemias. Multiple complications are associated with gall stone disease like cholangitis, pancreatitis and rarely squamous cell carcinoma<sup>4</sup>. In Pakistan the incidence of gall bladder disease followed by cholecystectomy is rising mainly in females due to hormonal irregularities<sup>5</sup>. Diseases of gall bladder with or without gall stone is associated with various morphological features ranging from benign conditions

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which include acute & chronic cholecystitis, cholestrolisis, pyloric metaplasia, hyperplasia, xanthogranulomatous inflammation to advanced stage malignant tumors<sup>6</sup>. Although the frequency of carcinoma in gall bladder is much lower but overall prognosis is very poor<sup>7</sup>. In early gall bladder cancer, patient remains asymptomatic and no sign of malignancy is evident during or before surgery. Most of the cases are diagnosed at advanced stage that are detected incidentally on microscopy<sup>8</sup>. Malignancy in clinically benign gallbladder is much lower but early diagnosis in initial stage tumor is the rationale to examine all cholecystectomy specimens<sup>9</sup>. The rationale behind conducting this research is to observe the spectrum of histopathological findings in routinely performed cholecystectomy specimens to quantify various abnormalities in gallbladder specimens.

## MATERIALS AND METHODS

This was a retrospective study over a period of 2 years from January 2018 to January 2020. The present study includes all surgically removed gall bladder specimens received in Rahbar medical and dental college (RMDC) from Punjab Rangers Teaching Hospital (PRTH). Informed consent was taken from all patients. Clinical and demographic data were noted from case files. All gall bladder specimens removed surgically (open & laparoscopic cholecystectomy) from both genders of all age groups were included in this study.

**Inclusion Criteria:** All gall bladder specimens removed surgically (open & laparoscopic cholecystectomy) Males and females of all age groups were included.

**Exclusion Criteria:** 1. Specimen with incomplete bio data and clinical history

2. Specimen sent without formalin/ improper preservation.

3. All the gall bladder specimens received from other laboratory were excluded from this study.

Gall bladder specimens received in 10% formalin as adequate fixation is necessary for proper diagnosis of lesions especially epithelial changes of gall bladder. Specimens received with attached patients bio-data, laboratory number and brief clinical history. Pathological examination was performed in pathology department of Rahbar medical and dental college. Grossing of the specimens were done with macroscopic details according to standard protocol. Sections from neck, body and fundus were taken in grossly unremarkable specimens. Lymph nodes that are grossly present in and around neck of gall bladder were also passed for processing. Additional sections were taken in grossly suspicious gall bladders. The sections were then subjected for routine histopathological processing. After processing next step of embedding was done in liquid paraffin. Thin sections through microtome were taken and routine hematoxylin and eosin staining was

done. The sections then examined microscopically by classified histopathologist.

All data was recorded using Microsoft Excel 2010 and analyzed in SPSS 20 version software.

## RESULTS

It was a retrospective analysis of the histomorphology of 183 cases of cholecystectomy procedure. The age of the patients ranged from 22 years to 54 years. Most of the patients were in fourth decade and sex ratio of male to female is 3:1 (Table 1).

Table 2 describes the histopathological findings seen microscopically on gall bladder specimens.

**Table No.1: Gender distribution of patients according to age (n=183).**

Age/ Gender	Female (%age)	Male (%age)	Total (%age)
Less than 40 years	75	25	100 (54.64)
More than 40 years	61	22	83 (45.35)
Total	136 (74.31)	47 (25.68)	183 (99.99)

**Table No.2: The histopathological findings examined in gall bladder specimens**

Sr. No.	Diagnosis	Frequency (%age)
1	Chronic cholecystitis with cholelithiasis	123 (67.21)
2	Chronic acalculous cholecystitis	41 (22.40)
3	Acute on chronic cholecystitis	11 (6.01)
4	Chronic cholecystitis with cholestrolisis	3 (1.63)
5	Acute gangrenous cholecystitis	2 (1.09)
6	Xanthogranulomatous cholecystitis	1 (0.54)
7	Chronic cholecystitis with polypoidal gastric metaplasia	1 (0.54)
8	Poorly differentiated adenocarcinoma	1 (0.54)

In our study total 183 patients were taken after cholecystectomy procedure. Majority 74.31 % of patients were females 74.31 % (136/183) and 25.68% (47/183) were males. Patients less than 40 years of age affected more, shown in table 1.

In our study majority of patient's histopathological report were consistent with chronic cholecystitis with cholelithiasis 123/183 (67.21%) and chronic cholecystitis without cholelithiasis 41/183 (22.40%) as shown in table 2. Carcinoma of gall bladder was found in one patient only 1/183 (0.54%).

## DISCUSSION

The most common histopathological finding in our study was Histopathological evaluation of specimens is the gold standard way of diagnosing most of the diseases. Gall stone disease is the most common cause that require surgical intervention worldwide<sup>10</sup>. In Pakistan, gall bladder diseases in which most common is the cholelithiasis is reported 10.2%<sup>11</sup>. Similar to the study done in India, our study shows females (71.31%) affected more than males (25.68%) and truly reflects the factual pneumonic used for risk factors i.e., “four fs” female, forty, fertile and fatty<sup>12</sup>. The age range in our study was found to be in 21 to 73 years with mean age was 57 years. Most of the patients were more than 40 years of age consistent with the age group study done in Iran<sup>13</sup>. Out of 183 cases, 182 were non neoplastic and chronic cholecystitis with cholelithiasis 67.21% similar to study done by Vikash et al (78.42%) (14). The second most common finding seen in our study was chronic acalculous cholecystitis (22.40%) followed by acute on chronic cholecystitis seen in 11 cases (6.01%), chronic cholecystitis with cholestrololosis seen in 3 cases (1.63%), acute gangrenous cholecystitis in 2 cases (1.09%), xanthogranulomatouscholecystitis in 1 case (0.54%), chronic cholecystitis with polypoidal gastric metaplasia in 1 case (0.54%) and poorly differentiated carcinoma in 1 patient (0.54%). The incidence of gall bladder carcinoma was found to be very low in our study (0.54%) similar to study done in India (0.5%)(15) But dissimilar to the incidence seen in the study done by YongchelAhn et al in Korea (1.6%) (16). Factors responsible for different morphological features could vary according to geographical, ethnic and dietary habits of population. Aging and obesity is one of the major factor of gallstone disease in western population in which the cholesterol stones are present in more than 70% people while mixed stones are more common in Asian population<sup>17,18</sup>. Although incidence of gall bladder cancer is found to be very low in our study and according to Royal College of pathologists (RCPATH) guidelines macroscopically normal gall bladder needs not to be examined microscopically in routine. The selective approach for histopathological examination can reduce the burden on medical profession and ultimately on pathologist without compromising patient health but the final conclusion on examining the routine gall bladder specimens is still debatable<sup>19,20</sup>. The data collected is an experience from a single tertiary care hospital located in Lahore. The statistics might not be an exact representation of the entire region.

## CONCLUSION

Cholecystectomy is a routine procedure done in every hospital. Cholelithiasis is the main reason for this routine procedure. The microscopy shows variety of

morphological features ranging benign to malignant lesions. The major histopathological feature found in this study was chronic cholecystitis with cholelithiasis. Detection of malignancy in clinically benign gallbladder is much lower but early diagnosis in initial stage tumor is the rationale to examine all cholecystectomy specimens.

The histopathological spectrum of gallbladder is extremely variable. Incidental diagnosis of carcinoma gall bladder is not rare; if the protocol of routine histopathology of all gallbladder specimens is not followed, subclinical malignancies would fail to be identified with disastrous results. We strongly recommend routine histopathology of all cholecystectomy specimens.

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### Author's Contribution:

Concept & Design of Study:	Abeer
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**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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