



## HISTOPATHOLOGICAL SPECTRUM OF GALLBLADDER DISEASES: AN ANALYSIS OF CHOLECYSTECTOMY SPECIMENS

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### ABSTRACT

**Background:** Gallbladder diseases constitute a major proportion of surgical pathology workload. Although most cholecystectomy specimens reveal benign inflammatory pathology, clinically unsuspected and incidental lesions, including malignancies, may be detected only on histopathological examination. **Aim:** To study the histopathological spectrum of gallbladder diseases in cholecystectomy specimens and to evaluate the importance of routine histopathological examination. **Materials and Methods:** This descriptive observational study included 500 cholecystectomy specimens received at a tertiary care center. Clinical details, radiological findings, and gross features were recorded. Tissues were processed routinely and stained with hematoxylin and eosin. Data were analyzed using descriptive statistics and appropriate tests of significance. **Results:** The mean age was  $40.30 \pm 13.30$  years, with female predominance (68.8%). Chronic calculous cholecystitis was the most common diagnosis (72.8%). Gallstones were present in 75% of cases. Incidental gallbladder carcinoma was identified in 1.4% of specimens, all of which were clinically unsuspected. **Conclusion:** Routine histopathological examination of all cholecystectomy specimens is essential for accurate diagnosis and early detection of incidental malignancies and premalignant lesions.

**KEYWORDS :** Gallbladder, Cholecystectomy, Histopathology, Incidental carcinoma, Chronic cholecystitis

### INTRODUCTION

Gallbladder diseases represent a significant global health burden and account for a large number of abdominal surgical procedures. Cholecystectomy, most commonly performed for gallstone disease, is one of the most frequently undertaken abdominal surgeries. While the majority of gallbladder specimens reveal benign inflammatory conditions, several studies have demonstrated that unexpected and clinically significant lesions may be detected only on routine histopathological examination.

Gallbladder carcinoma is an aggressive malignancy often diagnosed at an advanced stage due to nonspecific clinical presentation. A proportion of cases are detected incidentally on histopathology following cholecystectomy performed for presumed benign disease.

The present study was undertaken to analyze the histopathological spectrum of gallbladder diseases in a tertiary care center and to assess the relevance of routine microscopic evaluation of all cholecystectomy specimens.

### AIMS AND OBJECTIVES

#### Aim

To study the histopathological diversity of gallbladder diseases in cholecystectomy specimens.

#### Objectives

1. To determine the spectrum and frequency of gallbladder lesions.
2. To study histopathological features of inflammatory, non-neoplastic, and neoplastic lesions.
3. To assess the incidence of incidental gallbladder carcinoma.
4. To correlate histopathological findings with age, sex, clinical presentation, and gallstone status.
5. To evaluate the importance of routine histopathological examination.

### MATERIALS AND METHODS

This descriptive observational study was conducted in the Department of Pathology of a tertiary care hospital. A total of 500 cholecystectomy specimens received during the study period were included.

Clinical details such as age, sex, presenting symptoms, and radiological findings were recorded. Specimens were fixed in 10% neutral buffered formalin and subjected to detailed gross examination. Representative sections were taken from the fundus, body, neck, and any grossly abnormal areas.

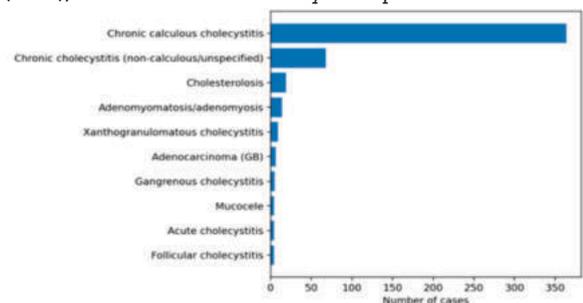
Tissues were processed routinely, and 3–5  $\mu\text{m}$  thick sections were stained with hematoxylin and eosin. Histopathological evaluation was performed using standard diagnostic criteria. Data were analyzed using descriptive statistics, with results expressed as frequency and percentage.

### RESULTS

The study included 500 cases with a mean age of  $40.30 \pm 13.30$  years. Females constituted 68.8% of cases. The most common presenting symptom was right upper quadrant pain (64%).

Gallstones were present in 75% of specimens. Histopathological examination revealed inflammatory lesions in 88% of cases, non-neoplastic lesions in 10.4%, and malignant lesions in 1.4%.

Chronic calculous cholecystitis was the most common diagnosis (72.8%), followed by chronic cholecystitis without stones (13.6%). Rare lesions such as xanthogranulomatous cholecystitis, follicular cholecystitis, adenomyomatosis, and intracholecystic papillary neoplasm were also identified. Incidental gallbladder carcinoma was detected in 7 cases (1.4%), all of which were clinically unsuspected.

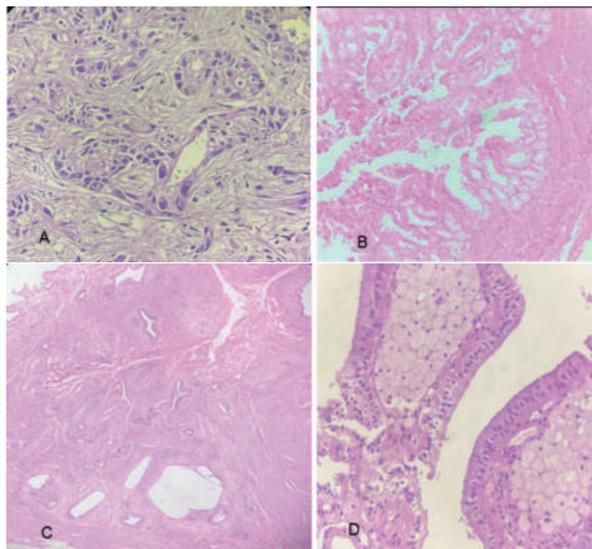


Graph 1- Histopathological Spectrum

**Table 1- Gallstones V/S Lesion Category**

Gallstones	Inflammatory	Non-neoplastic	Malignant	Benign	Total
Present	351	23	1	0	375
Absent / not documented	89	29	6	1	125

Chi-square p-value: < 0.001 ( $p = 2.62 \times 10^{-11}$ ) — highly significant



**Figure 1- Slides Interpretation-** A)adenocarcinoma of gall bladder B)chronic cholecystitis with pyloric metaplasia. C) chronic cholecystitis with adenomatous hyperplasia. D)cholelithiasis

## DISCUSSION

The present study demonstrates that gallbladder diseases predominantly affect young to middle-aged adults with a marked female predominance, consistent with published literature. Chronic calculous cholecystitis was the most frequent histopathological diagnosis, reflecting the strong association between gallstones and chronic inflammation. Importantly, a proportion of specimens revealed non-neoplastic and malignant lesions that were not suspected clinically or radiologically. The incidence of incidental gallbladder carcinoma in this study (1.4%) is comparable to that reported in other institutional series and meta-analyses.

These findings highlight the limitations of clinical and radiological assessment in reliably excluding malignancy. Selective histopathological examination based on gross or radiological criteria alone may result in missed diagnoses with significant clinical implications.

## CONCLUSION

Routine histopathological examination of all cholecystectomy specimens is essential for accurate diagnosis and early detection of incidental gallbladder carcinoma and other clinically significant lesions. Despite advances in imaging, histopathology remains the gold standard for definitive diagnosis and should not be omitted in routine practice.

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