

## ORIGINAL ARTICLE

# HISTOPATHOLOGICAL FINDINGS OF GALLBLADDER SPECIMENS AT A TERTIARY CARE HOSPITAL IN PESHAWAR; A TWO-YEAR RETROSPECTIVE STUDY

Zubair Ahmad Khan<sup>1</sup>, Muhammad Khizar Hayat<sup>1</sup>, Muhammad Shah Fahad<sup>2</sup>, Omer Nasim<sup>3</sup>, Mohammad Ahmad Arsalan Khan<sup>1</sup>, Maria Malik Abdul Khaliq<sup>1</sup>

<sup>1</sup>Department of General Surgery, Rehman Medical Institute, <sup>2</sup>Rehman Medical Institute, <sup>2</sup>Department of General Surgery, CMH, Peshawar, <sup>3</sup>Shaukat Khanam Memorial Cancer Hospital and Research Center, Peshawar, Pakistan

## ABSTRACT

**Background:** Pathologies related to the gallbladder have been known to increase in incidence throughout the years, ranging from the commonest, cholelithiasis, to other more rare forms like gallbladder cancer (GBC). We aimed to thoroughly scrutinize the resected gallbladder specimens via histopathology to know the exact pathologies.

**Materials & Methods:** This was a descriptive cross-section study carried out at the general surgery and histopathology units of Rehman Medical Institute (RMI) from September 2022 to December 2022 using a universal sampling technique. Data from June 2020 to June 2022 was extracted from RMI archives. All the patients admitted in the general surgery ward of RMI for cholecystectomies, open or laparoscopic, were included in the study regardless of their age, gender or ethnicity. Patients excluded from the study were those with the need for a concurrent surgical intervention. Data was collected using a performa. After the collection of data, it was analysed with SPSS version 22.

**Results:** A total of 878 cholecystectomies were carried out in the study duration. Out of the 878 cholecystectomies, 259 (29.5%) were males while 619 (70.5%) were females. The male to female ratio being 1:2.39. Most of the procedures were Laparoscopic Cholecystectomies (87.7%). The most common diagnosis was accounting for almost half of the diagnosis was Chronic Cholecystitis (49.5%). The least common diagnosis were Autolytic changes, cholesterol polyps and Acute on Chronic Cholecystitis with Cholesterolosis with 0.11% each.

**Conclusion:** Assessment of cholecystectomy specimens albiet pave a path for the exact diagnosis however, it should not be routinely done and only specimens that appear to have a cancerous element to it should be sent for histopathological analysis. The workload on pathology departments will be decreased and the cost can be kept low as well.

**Keywords:** Cholecystectomy; Gallbladder neoplasm; Cholecystitis; Cholelithiasis.

**Cite as:** Khan ZA, Hayat MK, Fahad MS, Nasim O, Khan MAA, Khaliq MMA. Histopathological findings of gallbladder specimens at a tertiary care hospital in Peshawar; a two-year retrospective study. Gomal J Med Sci 2025 Jan-Mar;23(1):12-5. <https://doi.org/1046903/gjms/23.1.1461>

## INTRODUCTION

Pathologies related to the gallbladder have been known to increase in incidence throughout the years, ranging from the commonest, cholelithiasis, to other more rare forms like gallbladder cancer (GBC). Cholelithiasis has a global incidence of 10-15% in

### Corresponding Author:

Prof. Dr. Zubair Ahmad Khan  
Department of General Surgery  
Rehman Medical Institute  
Hayatabad, Peshawar, Pakistan  
E-mail: [zubair.ahmad.khan71@gmail.com](mailto:zubair.ahmad.khan71@gmail.com)

**Date Submitted:** 07-09-2023

**Date Revised:** 03-11-2024

**Date Accepted:** 06-02-2025

adults.<sup>1</sup> The reason behind this high rate of frequency is the rise of most of its risk factors, ranging from obesity to drugs and liver diseases.<sup>2</sup> Other related diseases include cholecystitis (acute or chronic), cholesterolosis, xanthogranulomatous cholecystitis and various forms of dysplasia.

Time has portrayed that some of these diseases remain undiagnosed and therefore, mismanaged. One of the reasons behind this is that only some diagnostic tests can pick up certain pathologies and institutions usually lack the resources, whether financial or in the form of time, needed to carry them out. For example, the most accurate test to detect GBC is histopathological examination. GBC is known for its aggressive nature.<sup>3</sup> Its 5-year survival rate is below 10%.<sup>4</sup> If properly picked up and classified, it

can lead to changes in post-op management and therefore, lead to a better prognosis. Granted that the chances of incidentally finding malignancy in gallbladder specimens are around 0.1–3.3%,<sup>5,6</sup> it still is a significant value. Moreover, it is noted that the presence of gallstones leads to various reactions in the gallbladder tissue, from simple inflammation to hyperplasia and dysplasia. The degree to which this occurs and its correlation with the amount and types of gallstones as well as the risk factors present can be investigated by in-depth histological examination.

What we aimed to do was thoroughly scrutinize gallbladder specimens resected in RMI via Histopathology. This will give us a concise data about the types of gallbladder pathologies as well as their incidence. General Surgeons can then be more informed about the changes that take place in these disorders on a microscopic and more detailed level.

### MATERIALS & METHODS

This was a descriptive cross-section study carried out at the general surgery and histopathology units of Rehman Medical Institute (RMI) from September 2022 to December 2022 using a universal sampling technique. All cholecystectomies, open or laparoscopic, were included in the study regardless of their age, gender or ethnicity. An ultrasound and in some cases a CT were performed for an accurate diagnosis before surgical intervention. Most of the patients underwent Laparoscopic Cholecystectomy for the retrieval of specimen however in some cases open cholecystectomy was also performed. Patients excluded from the study were those who underwent a concurrent surgical intervention. A proforma was made for data collection and data from June 2020 to June 2022 was extracted on it from the histopathology archives.

All samples had been sent to the histopathology lab from the general surgery ward postoperatively in a labelled container containing formalin and the

specimen. Patients name and patient record numbers were written on the containers. These were then cross-checked with the entry on the hospital software and evaluated in the histopathology unit using gross and microscopic examination for reaching a final diagnosis. The final report was then entered in the hospital software. After the collection of data, the proforma was then entered in SPSS version 22.

### RESULTS

A total of 878 cholecystectomies were carried out in the study duration. Out of the 878 cholecystectomies, 259 (29.5%) were males while 619 (70.5%) were females. The male to female ratio being 1 : 2.39. The mean age for cholecystectomies was  $46.61 \pm 14.95$  years in both genders. For males, the mean age was  $48.97 \pm 15.04$  years while the average age for females is  $45.62 \pm 14.81$  years, slightly lower than that of males. Most of the procedures were Laparoscopic Cholecystectomies (87.7%). Table 1 shows the study population characteristics.

**Table 1: Characteristics of the study population**

Characteristics	n (%)
Total Gallbladders specimens	878
Age, mean [range] (years)	$46.66 \pm 15.00$ [12-95]
Adults >18 years	871 (99.2)
Female Gender	619 (70.5)
Male Gender	259 (29.5)
Open Cholecystectomy	108 (12.3)
Laparoscopic Cholecystectomy	770 (87.7)

Table 2 shows the gender-wise distribution of the histopathological findings of the cholecystectomies performed. The most common diagnosis is accounting for almost half of the diagnosis was Chronic Cholecystitis (49.5%). Females (317) accounted

**Table 2: Gender wise distribution of histopathological findings**

Diagnosis	Male, n (%)	Female, n (%)	Total, n (%)
Acute Cholecystitis	1 (50.0)	1 (50.0)	2 (0.23)
Acute on Chronic Cholecystitis	54 (58.1)	39 (41.9)	93 (10.6)
Acute on chronic Cholecystitis with Cholelithiasis	17 (42.5)	23 (57.5)	40 (4.56)
Acute on Chronic Cholecystitis with Cholesterolosis	1 (100)	-	1 (0.11)
Acute on chronic hemorrhagic cholecystitis	1 (50.0)	1 (50.0)	2 (0.23)
Adenocarcinoma	1 (14.3)	6 (85.7)	7 (0.80)
Autolytic changes	-	1 (100)	1 (0.11)
Cholesterol polyp	-	1 (100)	1 (0.11)
Chronic Cholecystitis	118 (27.1)	317 (72.9)	435 (49.5)
Chronic Cholecystitis with Cholelithiasis	50 (25.4)	147 (74.6)	197 (22.4)
Chronic Cholecystitis with cholelithiasis and Cholesterolosis	5 (17.9)	23 (82.1)	28 (3.19)
Chronic Cholecystitis with Cholesterolosis	11 (15.5)	60 (84.5)	71 (8.09)

for almost three times more Chronic Cholecystitis diagnosis than males. Chronic Cholecystitis with Cholelithiasis (22.4%) was the second most common diseases followed by Acute on Chronic Cholecystitis (10.6%) and Chronic Cholecystitis with Cholesterolosis (8.09%). The least common diagnosis were Autolytic changes, cholesterol polyps and Acute on Chronic Cholecystitis with Cholesterolosis with 0.11% each.

## DISCUSSION

To the best of our knowledge, this study is the first of its kind that highlights the histopathological findings using gallbladder specimens. This study revealed the gender-wise distribution of the histopathological findings of gallbladder specimens. The study also tells us the mean ages of male and female for which cholecystectomy procedure performed in the duration of 3 years.

Siddiqui FG, et al<sup>7</sup> showed that there were 27 (12.7%) male and 193 (87.7%) female patients with a male to female ratio of 1:7. In our study 259 (29.5%) were males while 619 (70.5%) were females with a male to female ratio being 1: 2.39. The age distribution in patients from Siddiqui FG, et al study ranged from 19 to 80 years. Overall mean age was 32.3 years and the standard deviation was 5.3. The age distribution of our patients were ranged from 12 to 95 years and the mean age for cholecystectomies was  $46.61 \pm 14.95$  years in both genders. The most common histopathological finding from the study<sup>7</sup> were sampled from chronic cholecystitis accounting for 92.3%. In ours only 49.5% contributed to these findings after cholecystectomy using gallbladder specimens.

Sajjad M, et al<sup>8</sup> conducted a study on the microscopic assessment of gallbladder specimens showed that the chronic cholecystitis was the most common finding in 84.7% of cases (n=276), followed by acute cholecystitis in 14.7% (n=48). In the same study, only two of the gall bladders showed adenocarcinoma (0.6%). In our study the chronic cholecystitis was also the common occurrence in 435 of cases (n=49.5%), followed by chronic cholecystitis with cholelithiasis in 197 of cases (n=22.4%) and only one gallbladder showed adenocarcinoma (0.11%).

In our study the chronic cholecystitis and its varieties were combined as 83.18% of the cases, followed by acute cholecystitis and its varieties with about 15.73% of cases. Almuslamani AJ, et al<sup>9</sup> study showed that chronic cholecystitis and its varieties were the most common findings with about 78% of cases, followed by acute cholecystitis with about 15% of cases

Others study also showed that of 97.8%<sup>10</sup>, 92.3%<sup>11</sup> and 66.75%<sup>12</sup> of histological findings and most common were chronic cholecystitis which align with our histopathological detection. A study conducted on histopathological findings of the gallbladder showed that the most common

histopathological diagnosis was chronic cholecystitis seen in 112 cases (86.3%), followed by acute cholecystitis 12 cases (9.2%).<sup>(13)</sup> While in our study the most common histopathological diagnosis was also chronic cholecystitis seen in 435 cases (49.5%) while acute cholecystitis was only 02 cases (0.23%).

Another study conducted by Van Vliet JLP, et al<sup>14</sup> showed that 1067 (77.7%) had chronic cholecystitis findings in the histological specimens. In our study, it was 435 (49.5%) cases which showed chronic cholecystitis in gallbladder specimens after cholecystectomies.

## CONCLUSION

Assessment of cholecystectomy specimens albiet pave a path for the exact diagnosis however, it should not be routinely done and only specimens that appear to have a cancerous element to it should be sent for histopathological analysis. The workload on pathology departments will be decreased and the cost can be kept low as well.

## REFERENCES

1. Shaffer EA. Epidemiology and risk factors for gallstone disease: has the paradigm changed in the 21st century? *Curr Gastroenterol Rep.* 2005;7:132-40. <https://doi.org/10.1007/s11894-005-0051-8>
2. Stinton LM, Shaffer EA. Epidemiology of gallbladder disease: cholelithiasis and cancer. *Gut Liver.* 2012;6(2):172-87. <https://doi.org/10.5009/gnl.2012.6.2.172>
3. Paimela H, Karppinen A, Höckerstedt K, Perhoniemi V, Vaittinen E, Kivilaakso E. Poor prognosis of gallbladder cancer persists regardless of improved diagnostic methods: incidence and results of surgery during 20 years in Helsinki. *Ann Chir Gynaecol.* 1997;86:13-7.
4. Randi G, Franceschi S, La Vecchia C. Gallbladder cancer worldwide: geographical distribution and risk factors. *Int J Cancer.* 2006;118:1591-602. <https://doi.org/10.1002/ijc.21683>
5. Shrestha R, Tiwari M, Ranabhat SK, Aryal G, Rauniyar SK, Shrestha HG. Incidental gallbladder carcinoma: value of routine histological examination of cholecystectomy specimens. *Nepal Med Coll J.* 2010;12:90-4.
6. Bazoua G, Hamza N, Lazim T. Do we need histology for a normal-looking gallbladder? *J Hepatobiliary Pancreat Surg.* 2007;14:564-8. <https://doi.org/10.1007/s00534-007-1225-6>
7. Siddiqui FG, Memon AA, Abro AH, Sasoli NA, Ahmad L. Routine histopathology of gallbladder after elective cholecystectomy for gallstones: waste of resources or a justified act? *BMC Surg [Internet].* 2013;13(1):1. Available from: <https://doi.org/10.1186/1471-2482-13-26>
8. Sajjad M, Khan RA, Iltaf S. Microscopic assessment of macroscopically normal gallbladder specimens: is it worth the trouble? *Rawal Med J.* 2012;37(2):172-5.

9. Almuslamani AJ, Alsoude M, Alomari M, Mnazel T, Khasawana G. Histopathological examination on suspicious gallbladder specimens at Royal Medical Services Hospitals. Rawal Med J. 2011;36(2). Available from: <https://www.ejmanager.com/mnstemps/27/27-1305143504.pdf>
10. Holanda AKG, Lima Júnior ZB. Gallbladder histological alterations in patients undergoing cholecystectomy for cholelithiasis. Rev Col Bras Cir. 2019;46(6):1-8. <https://doi.org/10.1590/0100-6991e-20192279>
11. Dincel O, Goksu M, Hatipoglu H. Importance of routine histopathological examination of a gallbladder surgical specimen: unexpected gallbladder cancer. J Cancer Res Ther. 2018;14(6):1325-9. <https://doi.org/10.4103/0973-1482.187301>
12. Kumar H, Kini H, Tiwari A. Histological evaluation of 400 cholecystectomy specimens. J Pathol Nepal. 2015;5(10):834-40. <https://doi.org/10.3126/jpn.v5i10.15640>
13. Dara Jokhi C, Kanetkar SR, Vohra NV. Study of histopathological findings in gallbladder diseases. Indian J Pathol Oncol. 2019;6(4):627-35. <https://doi.org/10.18231/j.ijpo.2019.121>
14. Van Vliet JLP, Van Gulik TM, Verbeek PCM. Is it necessary to send gallbladder specimens for routine histopathological examination after cholecystectomy? The use of macroscopic examination. Dig Surg. 2014;30(4-6):472-5. <https://doi.org/10.1159/000357259>

**CONFLICT OF INTEREST**

Authors declare no conflict of interest.

**GRANT SUPPORT AND FINANCIAL DISCLOSURE**

None declared.

**AUTHORS' CONTRIBUTION**

The following authors have made substantial contributions to the manuscript as under:

Conception or Design: ZAK, MKH  
Acquisition, Analysis or Interpretation of Data: ZAK, MKH, MSF, ON, MAAK  
Manuscript Writing & Approval: ZAK, MKH, MSF, ON, MMAK

All the authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.



Copyright © 2025. Zubair Ahmad Khan, et al. This is an Open Access article distributed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License, which permits unrestricted use, distribution & reproduction in any medium provided that original work is cited properly.