Section: Pathology

Original Research Article

HISTOPATHOLOGICAL SPECTRUM OF CHOLECYSTECTOMY SPECIMENS IN A REMOTE TEACHING HOSPITAL IN NORTH-EAST INDIA

Phirthangmoi Fimate[1], Zam Lian Mang Hatzaw[2], Seanbawi Vaiphei[3], Angam Gangmei[4]

[1]Associate Professor, Department of Pathology, Jawaharlal Nehru Institute of Medical Sciences, Manipur, India.
[2]Senior Resident, Department of Surgery, Churachandpur Medical College, Manipur, India.
[3]Senior Surgeon, Department of Surgery, Churachandpur District Hospital, Manipur, India
[4]Professor, Department of Forensic Medicine and Toxicology, Jawaharlal Nehru Institute of Medical Sciences, Manipur, India.

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Corresponding Author:
Dr. Phirthangmoi Fimate,
Email: drmoite@gmail.com

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ABSTRACT

Background: Gall bladder lesions range from a wide histopathological spectrum of non-neoplastic inflammatory lesions to neoplastic malignancies. The present study was undertaken to emphasize the need for a routine detailed histopathological analysis of all cholecystectomy cases carried out on the operating table. **Materials and Methods:** A retrospective study was conducted in Department of Pathology, Churachandpur Medical College, Manipur on all cholecystectomy specimens from June 2024 to November 2025. The various patterns of gallbladder pathologies were tabulated across gender and different age groups. **Result:** There was a total of 300 cholecystectomies (open and laparoscopic) performed during this period. Females outnumbered males in the ratio of 3:1. Calculi were found in 299 cases. The most common histopathological finding was chronic cholecystitis observed in 207 (69%) of the cases, followed by chronic active cholecystitis 65(21.7%). Premalignant lesions including intestinal metaplasia was seen in 11 (3.7%) cases. Incidental gall bladder carcinoma was detected in 4 (1.3%) cases. **Conclusion:** All diseases of the gallbladder require prompt surgical intervention. Chronic calculous cholecystitis, an established risk factor for gallbladder carcinoma, is increasingly common. Detailed histopathological examination of all cholecystectomy specimens is mandatory, to confirm the diagnosis and to rule out premalignant and malignant lesions, which may remain undiagnosed by clinical and advanced imaging studies.

INTRODUCTION

The gallbladder lies in a shallow fossa on the visceral surface of the right hepatic lobe and serves as a reservoir of bile. Diseases of the gall bladder are one of the most common gastrointestinal manifestations encountered worldwide.[1-10] They may produce symptoms like biliary pain in the epigastric and right upper quadrant of abdomen, radiating to interscapular area, right scapula and shoulder and is usually associated with nausea, vomiting, jaundice, anorexia, fever and chills, and most often requires prompt surgical intervention.[1,3-6] The gall bladder is one of the most frequently resected organs in the gastrointestinal tract.[9] Gall bladder lesions vary in a wide spectrum, ranging from non-neoplastic diseases like calculi and its complications, to neoplastic lesions of which, inflammatory lesions are the most common.[1-10] Cholecystitis and cholelithiasis appear to be increasing in incidence over the past couple of decades worldwide due to increased intake of high fatty and high calorie diet and alcohol intake along with sedentary lifestyle.[2,4,11-14] It is more prevalent in fat, fertile, flatulent, females of forty years.[7,9-10]

Gall bladder malignancy is relatively rare with poor prognosis but clinically asymptomatic, and is most commonly associated with long-standing cholelithiasis;[2,4,14] this may predispose to cholecystitis, causing metaplastic and dysplastic changes. These changes can transform into malignancy in the future.[12-14] In 15-30% of patients, gall bladder malignancies show no preoperative or intraoperative evidence and are detected only on histopathological examination. They are called as incidental gallbladder cancer (IGBC).[5]

The most common gall bladder malignancy is adenocarcinoma (intestinal or biliary type); rarely adenosquamous carcinoma, squamous cell carcinoma, small cell carcinoma, lymphomas, and sarcomas may also occur.[12-15]

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Timely cholecystectomy to treat chronic inflammatory conditions, followed by meticulous histopathological evaluation therefore remains important, as an underlying, clinically silent malignant or premalignant lesion may be present, that might appear macroscopically unremarkable. [12-15]

The aim of this study is to list out the varied spectrum of histopathological findings that most commonly affect the gall bladder.

Aims and Objectives

To analyse the spectrum of histopathological findings detected in cholecystectomy specimens received in the Department of Pathology, Churachandpur Medical College, Manipur.

MATERIALS AND METHODS

Type of Study: Retrospective study

Study Period: One year six months (June 2024 to November 2025)

Sample: 300 gall bladder specimens were received in the Department of Pathology, Churachandpur Medical College, Manipur during the study period.

Methodology: Cholecystectomy samples received were fixed in 10% formalin. Gross examination findings including appearance of mucosa, presence of stones, growth, polyps, wall thickness of gall bladder and other gross abnormalities were noted. A minimum of three sections were taken (from neck, body and fundus). Additional sections were taken as indicated. Tissue sections were processed in automated tissue processor and paraffin blocks were prepared. 4-micron thickness sections were cut by microtome and then stained in Haematoxylin and Eosin stain, mounted and studied under 10x and 40x magnification of light microscopy.

Data Analysis: The relevant clinical data, imaging findings, relevant gross examination findings and detailed histopathology reports were noted. The data were then analysed for descriptive analysis and frequency distribution in Microsoft Excel Professional 2021.

RESULTS

The present study consists of an analysis of 300 gall bladder specimens received in the Histopathology section of the Department of Pathology from June 2024 to November 2025 i.e., of 1.5 years. Of the 300 specimens, majority [290 cases (96.7%)] were removed laparoscopically, while 10 cases (3.3%) were removed by open cholecystectomy. The age of the patients ranged from 13-79 years [Table 1]. The mean and median age of presentation were 45 years and 42 years respectively. There was a female predilection with 231 females (77%) and 69 males (23%), with the female: male ratio being 3:1.

Clinical Presentation: All the patients presented with abdominal pain (epigastric and right hypochondriac region), with fever in 100 cases (33%).

Gross morphology: The wall of the gall bladder was thinned out in majority of specimens, with thickened wall in 10 (3.3%), trabeculated mucosa 60 (20%), congestion 25 (8.3%), polyps 3(1%) and irregular mass 3 (1%). 299 (99.7%) of the specimens revealed presence of gallstones.

Microscopic morphology: The most common histopathological finding was chronic cholecystitis observed in 207 (69%) of the cases, followed by chronic active cholecystitis 65(21.7%), follicular cholecystitis 7 (2.3%), cholesterol polyps 3 (1%), xanthogranulomatous cholecystitis 2 (0.7%), eosinophilic cholecystitis 2 (0.7%) and granulomatous cholecystitis 1(0.3%). Premalignant lesions including intestinal metaplasia was seen in 11(3.7%) cases. Incidental gall bladder carcinoma was detected in 4 (1.3%) cases. [Table 2].

Benign lesions were seen in 294 (98%) cases.

Table 1: Age and gender distribution of patients with cholecystectomy specimens (n=300)

Age (Years)	Female	Male	Total
11 - 20	8	3	11
21 - 30	30	7	37
31 - 40	71	21	92
41 - 50	46	11	57
51 - 60	40	10	50
61 - 70	26	12	38
71 - 80	10	5	15
Grand Total	231	69	300

Table 2: Histopathological findings of gall bladder specimens (n=300)

Histopathological Findings		No of lesions	Percentage
Benign	Chronic cholecystitis (Total)	207	69%
	Chronic cholecystitis	172	57.3%
	Chronic cholecystitis with cholesterosis	35	11.7%
	Chronic active cholecystitis	65	21.7%
	Follicular cholecystitis	7	2.3%
	Xanthogranulomatous cholecystitis	2	0.7%
	Granulomatous cholecystitis	1	0.3%
	Eosinophilic cholecystitis	2	0.7%
	Acute cholecystitis	3	1.0%
	Benign cholesterol polyp	3	0.6%
Premalignant	Chronic cholecystitis with intestinal metaplasia	9	0.6%
	Chronic cholecystitis with mild dysplasia	2	0.6%

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Malignant	Well-differentiated adenocarcinoma	3	1.0%
	Adenosquamous cell carcinoma	1	0.3%

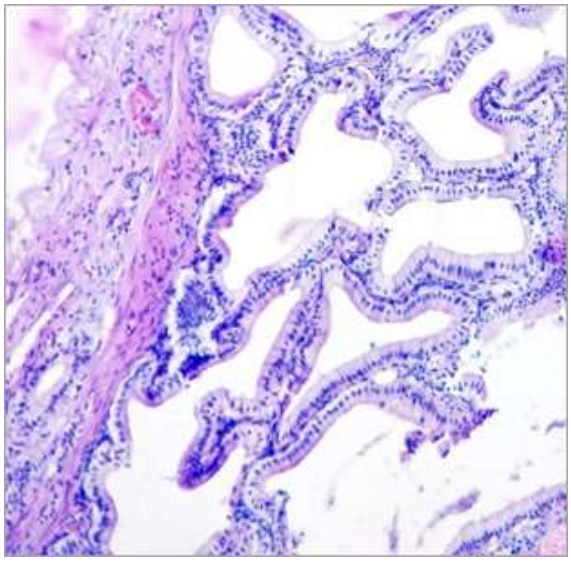

Figure 1: Chronic cholecystitis (H&E, 400X)

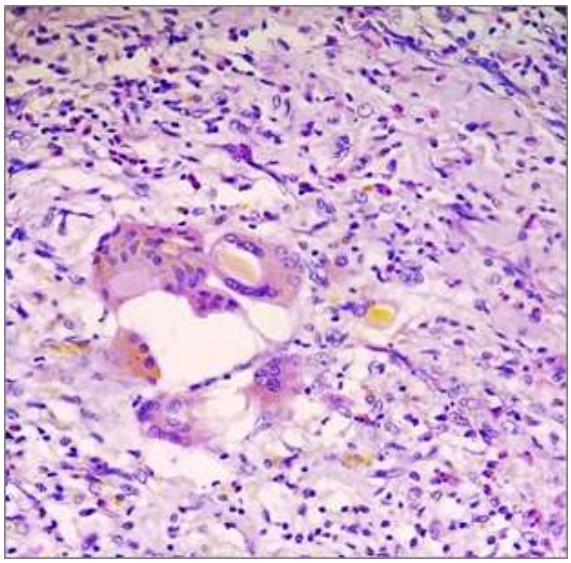

Figure 2: Granulomatous cholecystitis (H&E, 400X)

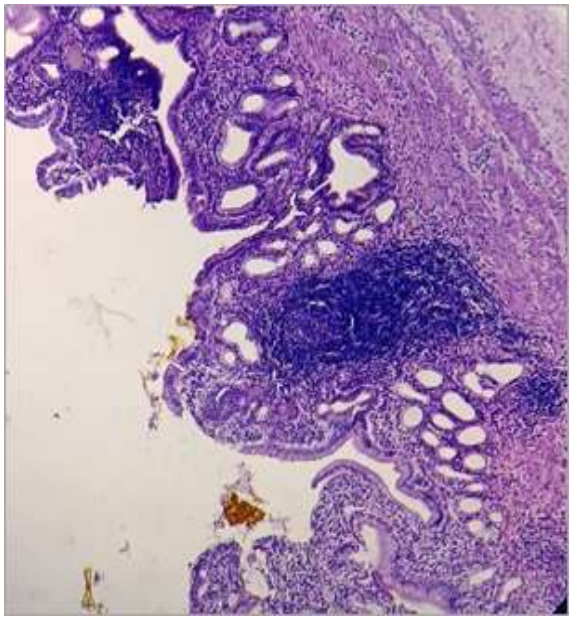

Figure 3: Follicular cholecystitis with mucosal lymphoid follicles (H&E,100X)

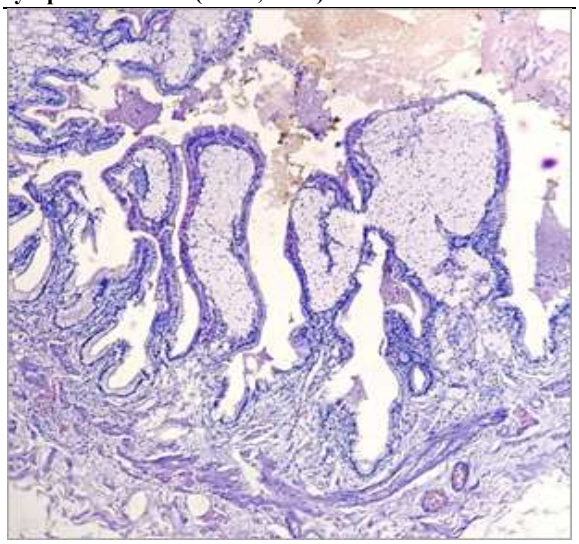

Figure 4: Chronic cholecystitis with cholesterosis, foamy macrophages in lamina propria (H&E, 400X)

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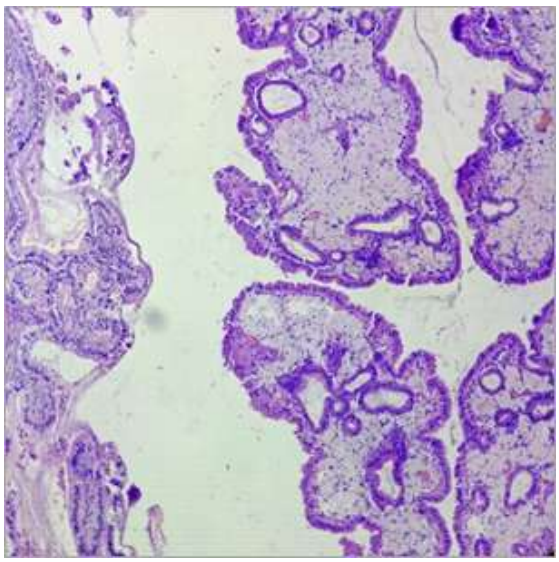

Figure 5: Cholesterol polyp (H&E, 400X)

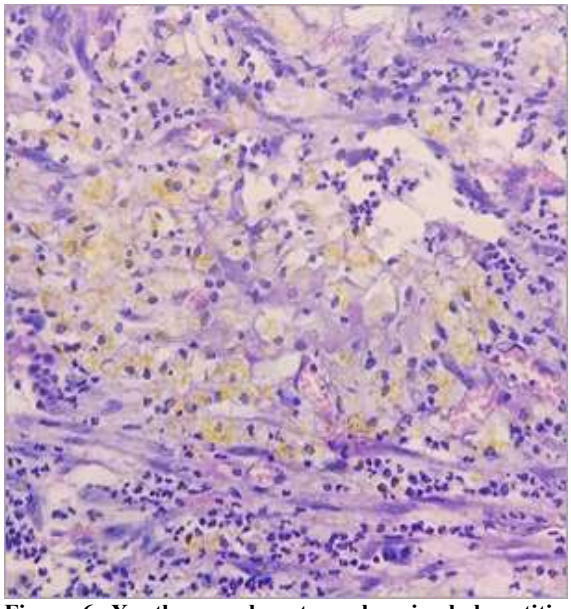

Figure 6: Xanthogranulomatous chronic cholecystitis, intramural sheets of foamy macrophages (H&E, 400X)

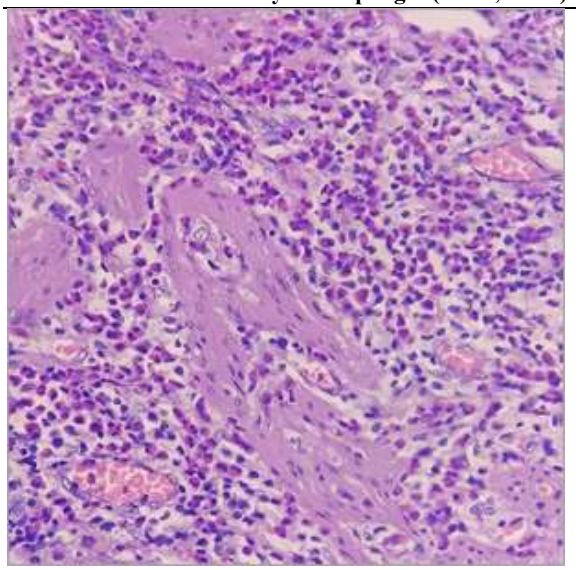

Figure 7: Eosinophilic cholecystitis, >90% eosinophilic infiltrates (H&E, 400X)

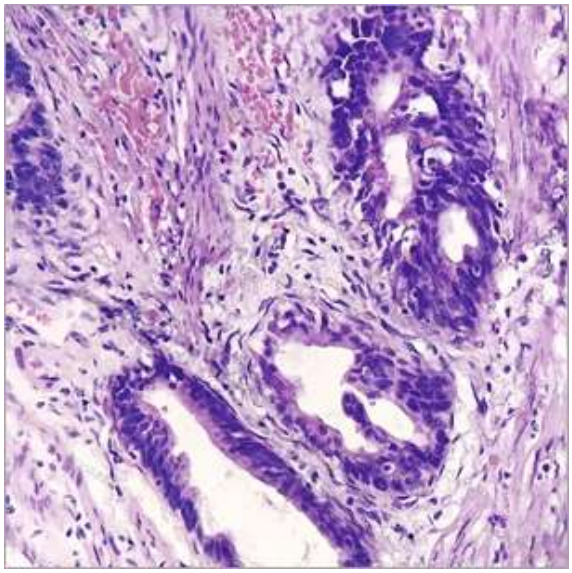

Figure 8: Adenocarcinoma-well differentiated, GB (H&E, 400X)

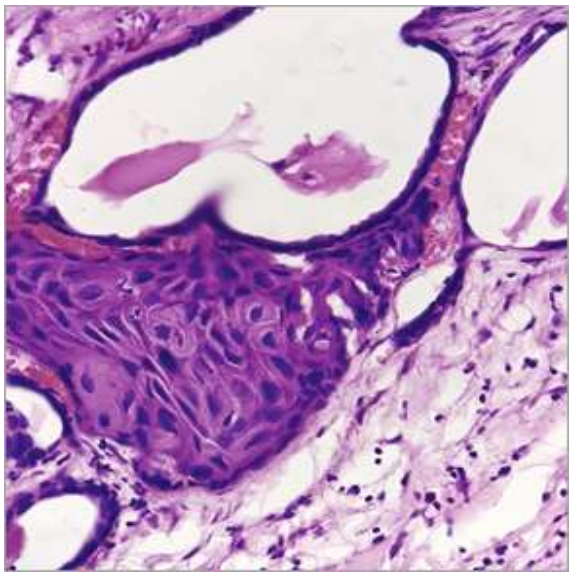

Figure 9: Adenosquamous carcinoma, GB (H&E, 400X)

DISCUSSION

Gall bladder lesions affect majority of demographics across the globe, stretching across diverse clinical and histopathological landscape.[1-10] Cholecystectomy specimens are one of the most common surgical specimens received in the histopathological laboratory.[3-6,9]

This study was undertaken to evaluate the wide range of histopathological findings from cholecystectomy specimens and to study the gender and age-wise distributions.

In the present study, age of patients ranged from 13 years to 79 years with a mean age of 45 years, similar to Shah M et al, Stinton et al and Shah H et al.[1-3] Majority of cases were seen in 4th decade (89 cases, 30%) and 5th decade (55 cases, 19%), which were similar to various studies.[6-8,11]

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Most of the cases 231 (77%) included in the present study were female patients with the female: male ratio being 3:1, which is comparable to literature and various studies.[1,3-7,11] A possible explanation would be sedentary life-style and female sex hormones.[3]

In the present study, all patients presented with pain in right hypochondriac region, comparable to most studies.[1]

In the present study of 300 cholecystectomies, chronic cholecystitis 207(69%) was the most common pattern, similar to the studies done by various authors.[1-10] This entity has various histomorphological spectrum like chronic active cholecystitis, follicular cholecystitis, xanthogranulomatous cholecystitis, cholesterosis and porcelain gall bladder.[1,3,9]

The second most common pattern noted was chronic active cholecystitis 65(21.7%), which is comparable with the findings of various authors.[1-10]

Two cases of xanthogranulomatous chronic cholecystitis (XGC) were observed in this study (0.7%) which is similar various studies.[4] XGC is variant of chronic cholecystitis causing gall bladder wall thickening and mimics gall bladder carcinoma in the clinical, imaging and gross features. It shows intramural accumulation of foamy macrophages and inflammatory cells with fibrosis in later stages. Histopathological analysis is required for a definitive diagnosis.[3,9]

Intestinal metaplasia was seen in 11 cases (3.7%), comparable to various studies.[4,9]

Eosinophilic cholecystitis was seen in 2 (0.7%) cases, comparable to studies by Shah B et al.[15]

Mild dysplasia was noted in 2(0.6%) cases which is lower than in studies by Gupta et al and Shah I et al where dysplasia was seen in 3.68% and 1.3% respectively.[7,11] Accurate identification of gallbladder dysplasia has clinical implications as the field effect in the biliary tract potentially increases risk of developing carcinoma at other sites in the biliary tract.[11] Gallstone disease, porcelain gallbladder, and sclerosing cholangitis are the best-known risk factors for gallbladder carcinoma.[5,7]

Gallbladder carcinoma is the 20th most common carcinoma worldwide. Majority of patients are diagnosed at an advanced, surgically unresectable stage. Incidentally discovered gallbladder cancer (IGBC) is defined as gallbladder cancer (GBC) diagnosed during or after the cholecystectomy done for unsuspected benign gallbladder disease. It is found in 0.2 (2.9%) of all cholecystectomies done for gallstone disease.[8,9] In the present study of 300 cases, all 4 cases (1.3%) of malignancy were of IGBC, with 3 cases (75%) of well differentiated adenocarcinoma and 1 (25%) case of adenosquamous carcinoma. Our findings were comparable to most studies.[1,3,5,7,10,12]

Despite advancements in various imaging techniques, early gall bladder carcinomas are often missed out and incidental diagnosis is made on histopathologic examination. This emphasises the need of routine histopathologic examination of all cholecystectomy specimens.

CONCLUSION

The present study reveals a few important socio-demographic, clinical and histopathological patterns of gall bladder lesions. Benign lesions far outnumber malignant ones; females, most commonly in the reproductive age group, are more affected. There is a higher chance of finding malignancy in cholecystectomies of elderly patients. Hardening and thickening of the gall bladder wall in chronic and xanthogranulomatous cholecystitis can sometimes mimic malignancy.

With greater availability of ultrasonography, all patients with gallstones must be advised laparoscopic cholecystectomy and the specimen should be thoroughly examined grossly and microscopically to detect or exclude premalignant lesions or incidental carcinomas at a potentially curable stage.

REFERENCES

1. Shah M, Panchal K. Histopathological spectrum of diseases in gall bladder. International Journal of Clinical and Diagnostic Pathology 2021;4:70-74
2. Stinton LM, Shaffer EA. Epidemiology of gallbladder disease: Cholelithiasis and cancer. Gut Liver 2012;6:17287.
3. Shah H, Khan MA, Shah W. Histopathological pattern of 400 cholecystectomy specimens. J Postgrad Med Inst 2016;30(3):250-3.
4. Pramod Kumar Rai, Snehanshu Shukla. Histopathological study of gall-bladder in north Indian population. Asian Pac. J. Health Sci., 2019; 6(1):70-75
5. Tiwari A, Rai R, Jain SK. Importance of routine histopathological examination of gallbladder specimen in detecting incidental malignancies. Journal of Lumbini Medical College. 2016;4(1):15-9. doi: 10.22502/jlmc.v4i1.76
6. Damor NT, Chauhan DH, Jadav DH. Histological study of human gallbladder. International Journal of Biomedical and Advance Research 2013;4(9):597-601.
7. Gupta K, Faiz A, Thakral RK, Mohan A, Sharma VK: The spectrum of histopathological lesions in gallbladder in cholecystectomy specimens. Int J Clin Diagnostic Pathol. 2019, 2:146-151. 10.33545/pathol.2019.v2.i1c.22
8. Singh A, Singh G, Kaur K, Goyal G, Saini G, Sharma D. Histopathological Changes in Gallbladder Mucosa Associated with Cholelithiasis: A Prospective Study. Niger J Surg. 2019 Jan-Jun;25(1):21-25. doi: 10.4103/njs.NJS_15_18. PMID: 31007507; PMCID: PMC6452760.
9. Thukral S, Roychoudhury AK, Bansal N, Rani E: Histopathological spectrum of gall bladder lesions in a tertiary care hospital in the Malwa belt: a hospital based study. Ann Pathol Lab Med. 2018, 5:878-881. 10.21276/apalm.2192
10. Sharma H, Sharma MK, Gupta G. Evaluation of histological changes in chronic cholecystitis and cholelithiasis of human gallbladder. Int J Anat Res 2014;2(4):752-756.
11. Sharma I, Choudhury D. Histopathological patterns of gall bladder diseases with special reference to incidental cases-a hospital-based study. Int J Res Med Sci 2015;3:3553-7.
12. Talreja V, Ali A, Khawaja R, Rani K, Samnani SS, Farid FN. Surgically Resected Gall Bladder: Is Histopathology Needed for All? Surg Res Pract. 2016;2016:9319147. doi: 10.1155/2016/9319147. Epub 2016 Mar 30. PMID: 27123469; PMCID: PMC4829732.
13. Shah B, Degloorkar S. A retrospective audit of gall bladder histopathology following cholecystectomy [Internet]. IP J Diagn Pathol Oncol. 2018 [cited 2026 Feb 08];3(2):123-126.
14. Mondal B, Maulik D, Biswas BK, Sarkar GN, Ghosh D. Histopathological spectrum of gallstone disease from cholecystectomy specimen in rural areas of West Bengal, India- an approach of association between gallstone disease and gallbladder carcinoma. Int J Community Med Public Health [Internet]. 2016 Dec. 22 [cited 2026 Feb. 8];3(11):3229-35.

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