

Is Routine Histopathology of the Gallbladder After Elective Cholecystectomy Justified: A Single Centre Study

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ABSTRACT

Background: Cholecystectomy specimens are sent for histology, important diagnoses including porcelain gallbladder, carcinoma-in-situ, and early carcinomas may be missed. Because of the potential for such mistakes, it is imperative that histological analysis be performed on each and every cholecystectomy specimen. The goal of the study was to find out if comprehensive histopathological examination of gallbladder samples was feasible.

Methodology: This cohort study was conducted from Aug-Dec 2022 in the Combined Military Hospital's. 470 patients were enrolled having gallstone-related acute or chronic cholecystitis patients hospitalized through the outpatient department.

Results: The mean age was 26.5 ±13.9. Histopathology results for acute appendicitis were positive in 176 patients, 137 of whom were male (77.84%) and 39 were female (22.16%). Reactive lymphoid hyperplasia was seen in 134 patients, 77 (57.54%) were male and 57 (42.54%) were female; 45 patients, 24 (53.33%) were male and 21 (46.67%) were female, had appendicitis that was resolving. Appendices from 43 patients showed fecalith in 13 (30.24%) males and 30 (60.96%) females, while appendices from 20 patients showed fibrosis in 14 (70%) males and 6 (30%) females. The histopathology of the appendixes of 18 patients demonstrated fibrous obliteration; among these patients, 8 were male (44.55%) and 10 were female (55.55%).

Conclusion: Gallbladder cancer is likely to be discovered by chance, so it is highly recommended that all gallbladder specimens be sent for routine histopathology. This recommendation should be doubled for individuals who are more at risk, such as the elderly and those with persistent symptoms.

Keywords: Gallbladder malignancy, Cholelithiasis, Cholecystectomy

Introduction

Gallbladder specimens should not be discarded without first undergoing histological investigation. If only some of these samples are sent to the lab, important diagnoses including porcelain gallbladder, carcinoma-in-situ, and early cancer may be missed.^{1,2} Gallbladder cancer is famously difficult to diagnose in its early stages without histology since it rarely causes symptoms or signs and gives no indications during ultrasonography evaluation. Many early malignant lesions of the gallbladder are missed during cholecystectomy when a provisional diagnosis of benign disorders is made using clinical, ultrasonological, and computed tomographic scanning. Every cholecystectomy specimen should be routinely checked histologically to prevent such errors with dire implications.³

Therefore, the diagnosis of early carcinomas requires the histological examination. Patients who have stage I gallbladder carcinoma found

incidentally have a fair prognosis.⁴ Most tertiary care institutions in Pakistan, including the lead investigator's own institution, routinely dispose of gallbladder specimens under the justification that the "surgeon knows best whose gallbladder is to be submitted to laboratory. Only tissue samples exhibiting obvious disease will be examined histopathologically. This method presupposes those macroscopic abnormalities are always present in cases of gallbladder cancer. This selective strategy is defended on the grounds that it decreases the patient's out-of-pocket expenses and the pathologist's burden. Contrary to standard procedure, gallbladder specimens are not routinely sent for histological investigation to detect early-stage cancer.

The purpose of this research is to determine whether or not histopathology can be performed on each gallbladder specimen. The goal of the study

was to find out if comprehensive histopathological examination of gallbladder samples was feasible. As a result, it would be considerably less of a challenge to diagnose gallbladder cancer early on and treat it before it spreads, drastically lowering mortality rates.

Methodology

Following approval from the hospital's ethics board, this cohort study was conducted from Aug-Dec 2022 in the Combined Military Hospital's Department of Surgery in Rawalpindi, Pakistan. Using a Rao soft calculator with a 95% confidence interval and a 5% margin of error, researchers analyzed data from 470 patients in a study published in 2013.⁵ A convenient sampling method was used.

The STROCSS 2021 standards have been strictly followed throughout our research.⁶ As a helpful addendum, we've included the whole STROCSS 2021 checklist. Our investigation is registered in Research Registry with the identifier researchregistry8268.⁷ All of our studies strictly follow the guidelines of the Helsinki Declaration.

All participants and/or their legal guardians provided written informed permission. Gallstone-related acute or chronic cholecystitis patients hospitalized through the outpatient Department were considered. Patients who had gallbladder cancer, as determined by clinical symptoms and imaging tests (ultrasound and/or CT scan), were not included. Additionally, gallbladders that showed obvious anomalies during surgery that were consistent with localized or infiltrative cancer were not included.

Prior to surgery, a patient's right hypochondrium was carefully examined and their medical history recorded with meticulous care. Looking for comorbidities was another goal of the systemic review. All patients underwent initial and follow-up examinations, including abdominal sonography.

The histology of all gallbladder samples was performed, including those with no visible gross abnormalities. The collected data were entered into a premade proforma. SPSS 26.0 was used for the statistical analysis.

Ethics approval obtained from Combined Military Hospital, dated 8th Sep 2022. Informed consent"

was obtained from all the participants as well as the guardians (for participants below 16 years of age).

Results

A total of 470 patients participated in the study. The mean age was 26.5 ± 13.9 . Biopsy was done in all 470 patients, out of which 284 patients were males and 186 patients were females. Histopathology results for acute appendicitis were positive in 176 patients, 137 of whom were male (77.84%) and 39 of whom were female (22.16%). Reactive lymphoid hyperplasia was seen in 134 patients, 77 (57.54%) of whom were male and 57 (42.54%) were female; 45 patients, 24 (53.33%) of whom were male and 21 (46.67%) of whom were female, had appendicitis that was resolving. Appendices from 43 patients showed fecalith in 13 (30.24%) males and 30 (60.96%) females, while appendices from 20 patients showed fibrosis in 14 (70%) males and 6 (30%) females. The histopathology of the appendixes of 18 patients demonstrated fibrous obliteration; among these patients, 8 were male (44.55%) and 10 were female (55.55%), while the appendixes of 17 patients demonstrated worm infestations; among these patients, 10 were male (58.82%) and 7 were female (41.18%),

Patients' age group was divided into 2 groups. Out of the 470 participants, 209 (44.46%) were grouped into ages 18-35 and 261 (55.54%) were grouped into ages 36-55. Of the patients aged 18-35, 82 had acute appendicitis observed in their histopathology compared to the 94 patients in the 36-55 age group. 58 people showed reactive lymphoid hyperplasia compared to the 76 patients in the 36-55 age group respectively.

Discussion

Every gallbladder specimen should undergo routine histological investigation for the detection of incidental benign lesions such as carcinoma-in-situ, porcelain gallbladder, and early carcinomas with a propensity to spread.⁵ Over two hundred participants, ranging in age from 19 to 80, took part in this study. The majority of patients were under 60 years old, as 61 were between the ages of 31 and 40 and 59 were in their forties and fifties. Similarly,

Yadav P et.al prospective observational study indicated that patients younger than 60 were more likely to have their laparoscopic cholecystectomy converted to an open procedure in order to reduce the risk of problems.⁷

In patients older than 60 years of age, however, fibrotic adhesions and chronic gallbladder disease are more common.⁸ This is due to both the increased frequency of bouts of cholecystitis and the phenomena of metabolic decompensation associated with chronic complex gallbladder disease. While we found a lower prevalence of gallbladder diseases in people over 60 than those under 60, Awan and colleagues found the opposite (10.3% vs. 4.7%). The gender of the individual is a significant risk factor.⁹ There are a number of reasons why females are biologically more prone to gallbladder problems than guys. Cholelithiasis and its consequences are more common in women due to biologically higher estrogen levels, multiparity, and the widespread use of oral contraceptive estrogenic drugs.¹⁰

Females were shown to have a 1:7 higher risk of developing gallbladder illnesses (193=87.7%) compared to males (27=12.27%). Consequently, our results corroborate the aforementioned claim. The greatest male-to-female ratio was reported to be 1:7.42 in the study of tertiary care facilities in Hyderabad, which also demonstrated a higher incidence of gallbladder illnesses in females.¹¹ A two-fold increased frequency in females was also discovered by Völzke et al.¹² Furthermore, Jones et al. found that the risk of cholelithiasis increases annually at an exponential rate with increasing age. In addition, about 25% of women over the age of 60 are at risk for cholelithiasis.¹³

Pain in the upper right abdomen, intolerance to fatty foods, nausea and vomiting, and a mass in the upper right hypochondrium are the most prominent symptoms of gallbladder disease.^{14,16} However, most people report discomfort in the right hypochondrium.¹⁷ Based on our data, abdominal discomfort was the most commonly reported symptom by a wide margin (91.4%). Other common complaints included intolerance to fatty foods (61%), nausea and vomiting (20%), and a mass in the upper right hypochondrium (2.3%). In line with this, research by Siddiqui et al. demonstrated that

91% of patients experienced upper abdominal pain. Despite our findings, Laghari and coworkers found that all patients experienced upper abdominal pain.¹⁸

Multiple investigations show that chronic cholecystitis is the most often observed pathological finding.^{5,19,20} That's in line with our findings, which show that 92.3% of people have chronic cholecystitis. Another study also found a high prevalence of chronic cholecystitis (64.8% in this case) in Sukkur.⁵ Contrary to our findings, Khomusi et al. observed a lower incidence of acute cholecystitis with mucocele (0.41%) in their study.²¹ Siddique et al. have reported the same findings (3.2%). Improved prognosis and avoidance of sequelae like empyema are required by law for those who undergo screening for gallbladder disease at an early stage.²² One point three percent of the samples had gallbladder empyema. While the average is somewhere between 4.6% and 6.9%, our findings are significantly lower.⁵ Furthermore, Benkhadoura and coworkers found a somewhat higher incidence (1.4% out of 3423 samples).²³

Also, our results showed a female preponderance and a polyp prevalence of 0.5% based on histopathological reports. Multiple reports have also noted a bias toward men.²⁴ Gallbladder cancer was found incidentally in this investigation in 2.7% of samples, or 6 samples. Despite this, during surgery no major abnormalities were discovered. The incidence rates of gallbladder cancer, a disease with an unknown prognosis, vary greatly between and even between racial and ethnic groupings within the same region.²³ Thus, it is common practice to send post-operative tissues for histological examination in an effort to rule out the presence of incidental gallbladder carcinoma.²³ It's estimated that the number of cases in Pakistan ranges from 6 percent to 28 percent.²⁵ Our findings, showing a lower incidence rate, may be attributable to the fact that all cases of confirmed pre-surgical malignancy were excluded from the study. Consistent with previous research, this study also found that females had a higher incidence of gallbladder cancer (4 of 6 cases) than males (2 of 6 cases).²⁶

Due to its aggressive nature and the expertise required for early diagnosis, gallbladder cancer is often discovered too late to improve prognosis. According to US epidemiological data,

lymph node metastases were present in 43% of gallbladder cancer cases at diagnosis. However, in 42% of reported cases, doctors didn't discover the cancer until it had spread to other organs or lymph nodes.^{19,26} Surgical treatment options for gallbladder cancer are also controversial because they vary depending on the patient's stage of disease at the time of diagnosis. The management of T1b tumors remains unknown, but T1a tumors can be controlled by a simple cholecystectomy. T2 and T3 necessitate regional management with lymphadenectomy in addition to excision of the surrounding hepatic segments IVb and V in the fossa for gallbladder. Finally, R0 resection has proven to be the most effective treatment option for achieving complete remission.²⁰ Despite the difficulties, early screening and diagnosis are necessary to reduce cancer-related mortality. Therefore, it is imperative to routinely undertake the histological investigation after cholecystectomy to rule out any incidental carcinomas.¹⁹

Conclusion

Histopathological samples obtained after cholecystectomy show a noticeable degree of variation. Acquired gallbladder cancer is likely to be discovered by chance. This may explain why our research found evidence of cancer in histopathological tissues in 6 cases (2.7%). No obvious signs of cancer were present at first, and no preoperative tests turned up anything suspicious. Without the routine histological examination of gallbladder specimens, the incidental diagnosis might have had dire repercussions. Therefore, it is highly suggested that all gallbladder specimens be sent for routine histopathology, with this recommendation being doubled for individuals who are more at risk, such as the elderly and those with persistent symptoms.

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