

## Do all specimens of resected gall bladders need histopathological evaluation? A single centre retrospective study

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### Abstract:

**Objective:** The purpose of this study is to evaluate whether routine histopathology of gall bladder specimens removed for cholelithiasis, is needed every time or not, keeping in view the incidence of gall bladder cancer being diagnosed incidentally on histopathology for cholecystectomy done for cholelithiasis.

**Study design:** Retrospective descriptive study.

**Setting and duration:** General Surgery Department of Federal Government Polyclinic Hospital, Islamabad. 10 year data of histopathological reports of cholecystectomies was collected in February 2016.

**Material and Methods:** A retrospective descriptive study was performed on all the histopathology reports of cholecystectomies, done over a period of 10 years in a single hospital.

**Results:** Chronic cholecystitis with gall stones was the most common diagnosis with total 1,167 patients out of 1,298 (89.9%). 3 out of 1,298 patients (0.3%) had adenocarcinoma of gall bladder, all pre-operatively and per-operatively had high index of suspicion for malignancy of gall bladder.

**Discussion:** The diagnosis of incidental carcinoma gall bladder is very low in histopathological reports sent for resected gall bladder specimens for cholelithiasis.

**Conclusion:** A selective policy is needed for sending gall bladder for histopathological examination, based on ultrasound and other imaging findings and per operative evaluation of gall bladder.

**Key words:** Cholecystectomy, Histopathology, Cholelithiasis, Gall bladder Carcinoma

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### Introduction:

Cholecystectomy is one of the most common general surgical procedures being performed. The most common indication is cholelithiasis.<sup>1</sup> Laparoscopic cholecystectomy has established as the gold-standard treatment for symptomatic gall stones. The resected sample of gall bladder is routinely sent for histopathological evaluation. The main reason for sending the specimen for examination is to rule out any incidental gall bladder carcinoma.

Gall bladder carcinoma is a rare and aggressive malignancy. It's more common in seventh decade of life. Women are at higher risk than men

(3:1) in developing carcinoma.<sup>2,3</sup> Since the sign and symptoms are non-specific, therefore the presentation of disease is late.<sup>3,4</sup> Due to late presentation and diagnosis, the prognosis is poor with overall mean survival of 6 months and 5 years survival of less than 5%.

85% of cases of carcinoma gall bladder are associated with gallstones<sup>5</sup> but the only recognized pre-malignant condition is a 'porcelain gall bladder'. In the vast majority of patients who are diagnosed with gall bladder carcinoma, the first suspicion of malignancy arises during operation and is confirmed on histological examination of the specimen.

Table-1: Frequencies of Histopathological diagnosis

Histo-pathological Diagnosis	Frequency (g1298)	Percentage
Chronic Cholecystitis with gall stone	1167	89.9
Chronic cholecystitis	89	6.9
Acute Cholecystitis	29	2.2
Xanthogranulomatous Cholecystitis	10	0.8
Moderately differentiated Adenocarcinoma pT2	1	0.1
Poorly differentiated Adenocarcinoma pT4	2	0.2

Despite advances in radiological imaging, accurate pre-operative diagnosis is the exception rather than the rule. At present, all specimens after cholecystectomy for cholelithiasis, regardless of their macroscopic appearance, are being sent for histological examination. It seems questionable whether the result of the histo-pathological examination of each gall bladder would alter management when it provides no advantage to the surgeon, patient or pathologist.

In recent years, a lot of studies have been published questioning the routine gall bladder histo-pathological examination.<sup>6-13</sup> Most of the studies support that only macroscopically abnormal gall bladders resected should be sent for histopathology.<sup>6-11</sup> Only few studies support the notion of sending all gallbladder specimens for histopathology.<sup>12,13</sup>

The aim of the study was to assess the necessity of routine histological examination of the gall bladder following simple cholecystectomy.

#### Material and methods:

Data was collected retrospectively, the histological reports of all gall bladder specimens after cholecystectomy performed in "General surgery department of Federal Government Polyclinic hospital", Islamabad in the last 10 years (1st January 2006 to 1st January 2016) were collected in February 2016. In all cases of confirmed malignancy, we retrieved and reviewed, patient's notes, results of pre-operative investigations such as: liver function tests, ultrasound scans or computed tomography and intra-operative findings from operation notes. We analyzed all the findings to assess their usefulness in establishing pre-operative diagnosis of the gall bladder

malignancy. Data was analyzed on SPSS version 25.0

#### Results:

In our study we collected total 1,298 histopathology reports of gall bladder specimens. Out of 1,298 patients, 237(18.7%) were males and 1,061(81.3%) were females. The mean age was 51.58±8.89 years.

The histo-pathological diagnosis "chronic cholecystitis with gall stones" was commonest, with total 1,167 patients out of 1,298(89.9%). All the other diagnosis found on histopathology have been shown in table-1, along with frequencies.

Only 3 patients out of 1,298(0.3%) had adenocarcinoma of gall bladder on histopathology reports. All these patients were females. Among these, 1(0.1%) patient had pT2 adenocarcinoma gall bladder and 2(0.2%) had poorly differentiated adenocarcinoma gall bladder.

On retrospective review of the patient files of these 3-patients, it was revealed that patient "1" had pre-operative diagnosis of gall bladder mass on fundic area of gall bladder on ultrasound and CT scan abdomen. The procedure was started as a laproscopic, but after confirmation of mass in fundic area of gall bladder on laproscopy, it was converted to open to prevent the possibility of port-site metastasis. Histopathology of excised gall bladder of this patient showed T2 adenocarcinoma (moderately differentiated).

Similarly patient "2" and "3" had pre-operative diagnosis of a "mass in gall bladder" with phlegmon formation and thought to be of infective etiology on pre operative workup. But, there was a high index of suspicion of malignancy at the time of surgery and also that dissection was difficult because of mass involving gall bladder and invading the nearby organs (in patient 2) and with extensive involvement of main portal vein (Patient 3). As mass was irresectable in both patient 2 and 3, so only biopsy was taken which showed adeno-carcinoma gall bladder, poorly differentiated pT4.

**Discussion:**

At present, the only hope of a cure in the case of gall bladder adenocarcinoma is offered by surgery. The extent of curative resection depends on the stage of the disease at the time of diagnosis. It ranges from simple cholecystectomy for Tis to pT2a and radical cholecystectomy including resection of segment 4a and 5 of the liver and regional lymphadenectomy for pT2b.<sup>3,14,15</sup> It is postulated that the incidental finding of gall bladder carcinoma during a laparoscopic cholecystectomy warrants conversion to an open procedure. This is to minimize the chance of port site and peritoneal metastases and to achieve accurate clearance as peritoneal seeding occurs especially when the gall bladder lumen is opened.<sup>14-16</sup> However, Cuccinotta et al<sup>17</sup> showed that the overall outcome of the patients with unsuspected gall bladder adenocarcinoma is not related to the surgical approach and it is the tumor stage that is the most important factor.

Our findings confirm that accurate pre-operative diagnosis of gall bladder carcinoma is very difficult and it is during the operation that suspicion or clinical diagnosis of malignancy is made. However, in each case, a gross macroscopic abnormality of the gall bladder was easily identifiable and prompted the surgeon to send the specimen for histological examination. In our study, all the cases of carcinoma gall bladder diagnosed on histopathology, where there was suspicion of malignancy either pre-operatively due to radiological findings or per-operative findings. In patients with a macroscopically normal gall bladder, there were no cases of gall bladder carcinoma. Therefore, pre-operative and operative findings both play a pivotal role in determining incidental chances of gall bladder malignancy.

Previous reports in the literature clearly indicate that a more selective policy towards histological examination, i.e. only specimens which are macroscopically abnormal, is rational, effective and safe. These series confirm that there was not a single case of invasive adenocarcinoma of the gall bladder that would have been missed if only macroscopically abnormal specimens were examined.<sup>6-11</sup>

In recent years, we have witnessed a significant increase in a consultant histo-pathologist's work load. Although this data is not available in Pakistan, but it's our observation that the work load on histopathological colleagues is increasing day by day, due to unnecessary histo-pathological reporting demand.

The Royal College of Pathologists published a number of guidelines to help to manage this increasing demand.<sup>18</sup> In the Royal College of Pathologists Guidelines August 2002<sup>19</sup> on the subject of whether histopathological and cytological examination is of limited value, one reads: '[Gallbladders and appendices] should be examined as significant pathology may be present with normal gross morphology'. The revised edition of this document published in December 2005<sup>20</sup> again suggested that sampling of the gall bladder should continue. In drafting these recommendations, the authors quoted only one publication by HW Taylor suggesting the opposite. Review of the literature reveals that there are now many papers, including the present one, to refute this.

The cost-effectiveness of such an approach is open to debate. Out of a total of 1,298 specimens, only 3 (0.15%) cases of primary gall bladder carcinoma were found. All looked suspicious to the operating surgeon and to the histopathologist on macroscopic examination. There were no cases of gall bladder adenocarcinoma in unsuspecting looking specimens. Therefore, detailed microscopic examination should be indicated only in cases of abnormal gross appearance. As the incidence of gall bladder malignancy starts to rise after the age of 50 years, the threshold for histological examination may need to be lowered in this age group. On the basis of the macroscopic appearance of the gall bladder specimens received in our laboratory, as well as patient's age, it was estimated that at least half of them should not be processed.

Adopting a more selective approach would reduce the cost and result in an overall saving. The work load of the histopathologist would be reduced by about 3.5–4.0% per year if only se-

lected gall bladder specimens were examined.<sup>15</sup>

Based on the above findings, we suggest that standard histological examination of all gall bladder, irrespective of their macroscopic appearance during operation, is neither justifiable, nor cost-effective and does not contribute to the management of the patient. As we have shown, adopting a more selective policy and examining only the macroscopically abnormal gall bladder proves to be equally sensitive, as no invasive carcinomas were missed. In this study, we have not found any case of early carcinoma within a normal looking gall bladder; however, as mentioned above, the management of such cases consists of a simple cholecystectomy.

#### **Conclusion:**

As, the frequency of incidental carcinoma Gall Bladder is very low, only macroscopically abnormal gall bladder specimens with high index of suspicion of carcinoma gall bladder should be sent for histopathology, thus acquiring a selective policy.

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#### **Role and contribution of authors:**

Dr Syed Shamsuddin, collected the data and did the initial write up.

Dr Erum Najeed, collected the references and helped in introduction writing.

Dr Tassar Hussain Mirza, helped in collecting the references and writing of discussion

Dr Aabid Ali, helped in collecting the data and result writing.

Dr Danish Ali Haider, helped in collecting the data and result and conclusion writing.

Dr Waleed Akbar, critically review the article and made the final changes

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