Introduction

The widespread acceptance of laparoscopic cholecystectomy (LC) for benign gallbladder diseases has resulted in increasing numbers of cholecystectomy being performed.\(^1\) The benefits of LC are obvious in relation to reduced postoperative pain, more rapid convalescence, and better cosmetic results.\(^2\) However, despite many reports describing the complications associated with LC procedures,\(^1,3\) the risk of missed diagnoses during LC has not been emphasized. Specifically, a rare but undesirable complication of LC is missed intra-abdominal malignancies. According to the few reports on this subject,\(^4-11\) the colorectum is the most frequent site of malignancies missed during LC. Furthermore, there is a recognized association between colorectal cancer and gallstones,\(^12-14\) for which the majority of LCs are performed. However, the frequency and cause of missed colorectal cancer during LC are not yet well known. Therefore, we retrospectively investigated the cases of three patients with colorectal cancer detected following LC and discuss the potential risk of missing colorectal cancers during LC, with a review of the literature.

Patients and Methods

Patients

Between January 1991 and December 1999, a total of 473 patients with benign gallbladder diseases underwent LC without conversion to open surgery. The diagnoses included gallstone(s) in 384 patients, polyp(s) of the gallbladder in 43, adenomyomatosis in 15, gallstone(s) + polyp(s) of the gallbladder in 11, and xanthogranuloma in 1. Eleven patients underwent laparoscopic lithotripsy for concomitant choledocholithiasis combined with LC. The ages of these patients ranged from 15 to 91 years with an average age of 51.6
Estimating Diameter of Colorectal Cancers at LC

The diameter of the colorectal cancers at LC was calculated in patients undergoing colorectal cancer resection following LC, based on the diameter of the resected tumors, the interval between colorectal resection and LC, and the tumor doubling time (TDT). As the TDT was not obtained from these patients, it was regarded as 92–1032 days according to a report by other researchers.15

Concomitant Diagnosis of Benign Gallbladder Diseases in Colorectal Cancer Patients

We also investigated the medical records of 476 patients who underwent elective open surgery for colorectal cancer between January 1991 and December 1999, to determine the incidence of the concomitant diagnosis of benign gallbladder diseases.

Results

Colorectal Cancers Detected Following LC

One patient died of primary lung cancer and colorectal cancer was detected in three patients. There were no intra-abdominal malignancies other than the colorectal cancers found at the time of investigation (Table 1).

Case 1

A 59-year-old woman with a 3-month history of episodic epigastric pain underwent uncomplicated LC for cholelithiasis. Laboratory examinations revealed a low hemoglobin level (10.0 g/dl), but defecation was reported to be normal. The patient was referred to our department 10 months following LC complaining of general fatigue and bloody stools. Colonoscopy showed a circumferential ulcerated tumor in the ascending colon. Abdominal computed tomography showed a solitary liver metastasis and a plain chest X-ray showed a coin lesion in the left upper lobe. Right hemicolectomy with lymph node dissection and partial hepatectomy were performed. The patient received chemotherapy comprised of doxifluridine plus cisplatinum postoperatively, but died of disseminated pulmonary and hepatic disease 16 months after the colectomy. Histology of the resected specimen revealed a well-differentiated adenocarcinoma with serosal invasion. Metastases in the liver and lymph nodes were also confirmed histologically.

Case 2

A 50-year-old man with an 8-month history of pain in the right upper abdomen was diagnosed as having a gallstone by abdominal ultrasonography. The patient underwent uncomplicated LC. Defecation was reported to have been normal and the laboratory examinations also revealed normal results. He was referred to another hospital for investigation of constipation 6 months following LC. Colonoscopy and barium enema showed a circumferential ulcerative tumor in the rectosigmoid colon. The patient underwent anterior resection with lymph node dissection, and histology revealed a moderately differentiated adenocarcinoma with subserosal invasion. The resected lymph nodes were positive for metastasis. Multiple liver metastases were detected by computed tomography 7 months later, and the patient died of hepatic disease without responding to intraarterial chemoembolization therapy 11 months following the anterior resection.

Case 3

A 58-year-old man with a 4-month history of pain in the right upper abdomen was diagnosed as having gallstones by abdominal ultrasonography. The patient underwent uncomplicated LC. Defecation was reported to

<table>
<thead>
<tr>
<th>Case</th>
<th>Age (years)</th>
<th>Sex</th>
<th>Interval (months)</th>
<th>Site of tumor</th>
<th>Dukes stage</th>
<th>Prognosis following colorectal resection</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>59</td>
<td>F</td>
<td>10</td>
<td>Ascending colon</td>
<td>D</td>
<td>Dead, 16 months</td>
</tr>
<tr>
<td>2</td>
<td>50</td>
<td>M</td>
<td>6</td>
<td>Sigmoid colon</td>
<td>C</td>
<td>Dead, 11 months</td>
</tr>
<tr>
<td>3</td>
<td>58</td>
<td>M</td>
<td>29</td>
<td>Lower rectum</td>
<td>A</td>
<td>Alive and disease-free, 16 months</td>
</tr>
</tbody>
</table>

*Interval between laparoscopic cholecystectomy and diagnosis of colorectal cancer