

The Value of Diagnostic Laparoscopy in Gastroenterology (Due to 3000 cases)

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Summary: *Laparoscopy is a safe, accurate diagnostic method that yields both macroscopic diagnosis and under visual guidance, the histopathological nature of the intraabdominal diseases. This study presents the review of 3000 cases to whom laparoscopic diagnosis were made between years 1970-1990 in our clinic. Of these 3000 cases, 1300 (43.5%) had chronic liver disease, 764 (25.4%) solitary hepatomegaly, 178 (5.9%) exudative ascites, 108 (3.6%) cholestasis, 85 (2.8%) non-cirrhotic portal hypertension, and 565 (18.8%) other intraabdominal disease.*

Key Words: Laparoscopy, gastrointestinal system

Laparoscopy is the name given to the direct examination of the abdominal cavity with a laparoscope through a small incision in the abdominal wall. It was first performed by Kelling who utilized a cystoscope and was thus able to examine the peritoneal contents of a dog in 1901 (1). Later, especially with contributions of Jacobeauss and Orndorff, laparoscopy developed as an important diagnostic modality at the turn of this century. With the advent of laparoscopic cholecystectomy, it has found a place as a therapeutic technic in addition to its diagnostic usage. Diagnostic peritoneoscopy which can be performed under local anesthesia is a safe procedure with little morbidity. It allows to visualize about 80 per-

cent of liver surface; provides fairly clear view of peritoneal cavity and lesions as small as 1mm; gives an opportunity to obtain accurate, visually guided biopsy samples especially from areas that appear most abnormal (1-4).

Indications for diagnostic laparoscopy include diagnosis of cirrhosis and the other diffuse liver disease especially if there is coagulation defects that contraindicate to perform a liver biopsy or a possibility of sampling error from blind biopsy; diagnosis of malignant and focal benign liver diseases and differentiation from each other; cancer staging; ascites of unclear etiology; gallbladder disease. We report the documentation of 3000 laparoscopies performed in our department between the years of 1970 and 1990.

MATERIALS and METHODS

Subjects

We studied 3000 patients who were admitted to our gastroenterology department for various reasons between the years of 1970 and 1990. Subjects with diffuse liver diseases who had mild and moderate coagulation defects that contraindicated liver biopsy were generally accepted for peritoneoscopy. Informed consent was obtained from each patient. Patients with severe, uncorrectable coagulation defects, tense ascites, unstable cardiopulmonary status, intestinal obstruction, a history of generalized peritonitis or previous abdominal operations were excluded.

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Preparation

The procedure was performed with the patient in a fasting condition at the laparoscopy room. The patient was placed supine on the operating table which had a footboard with padding for raising the head or the tail of the table. The abdomen was prepared as for laparotomy and complete aseptic techniques were maintained throughout the procedure.

Instrumentation

A pneumoperitoneum needle was introduced under local anesthesia at the point located over the junction of the middle and outer third of a line linking the umbilicus and the left anterior-superior iliac crest (The right if massive splenomegaly or adhesions were present). Air was insufflated across the abdominal wall to the peritoneal space. Subsequently laparoscope (Karl Storz KG, Tutlingen, West Germany) was penetrated within a trocar through the right of left pararectal zones after performing an incision at the selected point under local anesthesia. At the end of examination, the laparoscope and pneumoperitoneum needle was removed, the air was allowed to escape, and the incision was closed.

Examination

The anterior surface of the liver was examined first. The morphology, color, surface and consistency, as well as the edge were noted. The inferior surface and the gallbladder were inspected. The parietal peritoneum, omentum, the round and suspensory ligaments, spleen were thoroughly inspected. The changes in brightness color, vascularization and regularity of the serosal surface were noted and dependent areas of the abdominal cavity were inspected for ascitic fluid.

RESULTS

Of these 3000 cases, 1300 (43.5%) had chronic

liver disease, 764 (25.4%) solitary hepatomegaly, 178 (5.9%) exudative ascites, 108 (3.6%) cholestasis, 85 (2.8%) non-cirrhotic portal hypertension and 565 (18.8%) other abdominal diseases (Table I).

Table I: Results of Laparoscopic Study

	n	%
Chronic liver disease		
Cirrhosis	1166	38.9
Chronic hepatitis	134	4.6
Solitary hepatomegaly	764	25.4
Exudative ascites	178	5.9
Cholestasis	108	3.6
Non-cirrhotic portal hypertension	85	2.8
Others	565	18.8
Total	3000	100

1300 of the patients were found to have chronic liver diseases (1166 liver cirrhosis, 134 chronic hepatitis). Cirrhotic cases were classified as mixed nodular (42%), micronodular (19%), macronodular (24%) and undetermined (15%) (Table II).

Table II: Morphological Appearance of Cirrhosis

	n	%
Mixednodular form	489	42
Macronodular form	281	24
Micronodular form	226	19
Undetermined	170	15
Total	1166	100

The results of the laparoscopic examination in 764 (25.4%) patients with the diagnosis of solitary hepatomegaly are shown in table III. 24 of 65 patients with laparoscopically proven hepatocellular carcinoma (HCC) (37%) were non-cirrhotic.

Laparoscopic examination of 178 patients with exudative ascites were revealed peritoneal tuberculosis in 105 (57.8%), and peritoneal carcinomatosis in 75 (42.2%). The laparoscopic diagnosis were supported by histologic examination of the tissues obtained during laparoscopy.

Table III: Causes of Solitary Hepatomegaly

	n	%
Metastatic liver diseases	350	45.8
Cyst hydatid	72	9.4
Hepatocellular carcinoma	65	8.5
Intrahepatic lesions	60	7.9
Congestive hepatomegaly	34	4.5
Fatty liver	32	4.1
Hemangioma of liver	26	3.4
Infiltrative liver disease	18	2.4
Polycystic liver	13	1.7
Echinococcus multilocularis	4	0.5
Others	90	11.8
Total	764	100

Of 108 patients with cholestasis, 87 were found to have extrahepatic cholestasis. Metastases of the liver or peritoneum, distended gallbladder were taken as a diagnostic criteria for extrahepatic cholestasis. Laparoscopic findings in 565 (18.8%) with other intraabdominal diseases are shown in table IV.

Table IV: Other Findings of Laparoscopic Study

	n	%
Splenomegaly	118	20.9
Normal liver	79	14.0
Hepatosplenomegaly	77	13.6
Intraabdominal tumor	74	13.1
Perihepatitis	72	12.8
Peritoneal adhesions	49	8.7
Normal peritoneal cavity	13	2.3
Gallbladder disease	12	2.1
Acute liver disease	7	1.2
Dubin-Johnson syndrome	5	0.9
Situs inversus totalis	2	0.4
Hemochromatosis	1	0.1
Unclassified	56	9.9
Total	565	100

Complications observed during laparoscopic examination were summarized in table V. In two of 5 cases with bowel perforation, laparotomy was necessitated. Two cases with subcutaneous emphysema (0.06%) and one patient with pneumothorax (0.03%) improved with conservative methods. There were two deaths (0.06%) occurred with 24 hours of laparoscopy, because of intraperitoneal bleeding.

Table V: Laparoscopic Complications

	n	%
Intestinal perforation	5	0.16
Subcutaneous bleeding	2	0.06
Pneumothorax	1	0.03
Death	2	0.06
Total	10	0.31

DISCUSSION

Major indication for laparoscopic examination in our series was chronic liver disease (43.5%). We performed laparoscopy without major morbidity or mortality in cases with coagulation disorders that contraindicated liver biopsy. In addition, laparoscopy provided complementary information to histologic analysis in some cases, especially with macronodular or mixed-nodular cirrhosis. In Turkey, with most cirrhotic cases due to viral hepatitis, so macronodular or mixednodular, the diagnostic yield of percutaneous liver biopsy is 42%; while this figure is 97.2% with laparoscopy (5). Diagnostic laparoscopy is useful as part of the preliminary investigation of a patient with solitary hepatomegaly. In our series, the most important cause was metastatic liver disease (45.8%) followed by cyst hydatid (9.4%) and hepatocellular carcinoma (8.5%). Laparoscopy alone is not sufficient to distinguish between primary and secondary liver tumors with certainty. The purpose of laparoscopy is to identify cancer in the liver and needle biopsy is indispensable to identify the type of cancer. Metastatic nodules are often umbilicated as a result of necrosis at the center of the tumor. Percutaneous liver biopsy yields the true diagnosis no better than 50% in metastatic liver disease (6,7,8). However, laparoscopically guided biopsy gives the advantages of obtaining biopsy samples from metastatic nodules, parietal peritoneum, omentum or the mesentery, areas that are not easily accessible to percutaneous or radiologically guided biopsy.

Hepatoma is likely when tumors develop in a cirrhotic liver, because more than 80 percent

of these tumors are primary carcinomas (4,9). Ökten and colleagues reported that HCC developed in cirrhotic livers in 61% of cases in Turkey (10). Biopsy of unresectable HCC can be hazardous. The tumors often are hypervascular, and cirrhotics may have coagulations defects. Laparoscopy affords the opportunity to obtain biopsy samples from avascular areas and to control any bleeding directly.

Cholestasis is recognised by the mottled green discoloration of the liver surface. The identification of malignant tumors, a markedly enlarged gallbladder "Courvoisier" with normal or slightly hyperemic walls and tense consistency on palpation confirms the diagnosis of extrahepatic cholestasis. In intrahepatic cholestasis and cancer of the hepatic ducts, the gallbladder is usually collapsed. In our series, 80% of cholestatic cases were due to extrahepatic causes consistent with Gustavo and colleagues (2) report indicating 77.5 percent of laparoscopically proven cholestatic cases were extrahepatic in origin.

Peritoneal tuberculosis is recognised by peritoneal granulomas, a number of whitish, uniform, 1-3 mm diameter, dot-like lesions which are scattered throughout the abdomen. Cloudy ascitic fluid and adhesions are also frequently seen. Diffuse neoplastic infiltration

of the peritoneum, non-uniform, firm, nodular changes, the presence of liver metastases are characteristic for peritoneal carcinomatosis. Occasionally, the differentiation can be made only by histologic studies.

Diagnostic laparoscopy performed by skilled and experienced operator is a straightforward and remarkably safe procedure with minimum morbidity and mortality. Data from large surveys indicate a rate of severe complications of 0.46 percent and a mortality of 0.053 percent, consistent with our results 0.31% and 0.06% respectively (4). Two deaths in our series occurred in first five years. No mortality during the last 15 years indicates the importance of the patient selection and operator experience.

In conclusion, laparoscopy is a safe, cost-effective, straightforward diagnostic procedure providing accurate, helpful information with little morbidity and mortality. It affords the opportunity to identify and biopsy from multiple lesions in one procedure and to detect and biopsy small lesions not evident with the other diagnostic modalities; with only alternative for a comparable diagnostic information is doing exploratory laparotomy under general anesthesia at much higher morbidity and cost, in the practice of today's medicine.

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