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PERITONEOSCOPY

by

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If it has ust e merged to the surface a circular area can be seen covered with fibrinous coating. If it is larger, the substance in the cyst and its shape can be distinguished and the fibrinous or connective-tissue thickening of Glisson's capsule surrounds this area. If the cyst calcifies, a white or whitish-yellow spherical protrusion can be seen which is usually sharply delimited from the liver parenchyma (II/Figs 244, 245, 258). On some livers both types can be seen, those hidden behind a bulge of the liver surface and those emerging from it. Frequently X-ray examinations are sufficient to establish calcified echinococcus cysts and peritoneoscopy is performed only to confirm the diagnosis or to ascertain whether there is one solitary cyst or several.

The suppuration of the cysts can be ascertained clinically rather than by peritoneoscopy.

It is a very important rule that no echinococcus or other cysts including abscess formations should be punctured since, owing to anaphylactic shock or the danger of infection, this may have grave results.

Peritoneoscopy decides whether we have to deal with an echinococcus hydratid cyst or with echinococcus multiocularis.

The great advantage of peritoneoscopy is that it reveals hidden cysts, e.g. the echinococcus tumours on the liver surface close to the posterior arch of the diaphragm (II/Fig. 245).

Liver Abscesses

The assumption of the presence of a liver abscess is no justification for peritoneoscopy. An inflammatory process on the surface of the liver, as is obvious from what has been said previously, mainly involves Glisson's capsule which is apt to react to everything, then adhesions develop around the liver and these usually make the abscess inaccessible with the peritoneoscope. The application of the pneumoperitoneum involves the risk of tearing the adhesions around the abscess which then may open. Hence, if an abscess is suspected on the liver or in general anywhere in the abdominal cavity, peritoneoscopy is contraindicated.

It may, of course, happen that the enlarged liver, due to an encapsulated and inactive abscess, indicates peritoneoscopy or is revealed unexpectedly during peritoneoscopy. Here a fibrinous coating over the protruding liver surface or masses of adhesions between the liver and the surrounding regions can be observed. It usually cannot be ascertained what is hidden behind the adhesions or the crusty coating.

It is extremely important for the peritoneoscopist to know that he must not puncture any convexities on the liver surface or any adhesions starting from there because he cannot be certain what he punctures and dangerous consequences may ensue.

Sometimes there are no adhesions above the liver abscess and even the fibrinous coating is so thin that the content can be recognized through the thin capsule without any doubt. The abscesses on the liver may be solitary or multiplex and of varying sizes.

Benign Tumours of the Liver

HAEMANGIOMA. If it is small, it is an adventitious finding of the peritoneoscopic examination (II/Fig. 247). These are bluish or reddish-bluish formations with sharp edges with round or irregular shapes, flush with the surface of the liver or somewhat protruding. They may, however, have considerable sizes when peritoneoscopy is indicated to clarify the resistance palpable on the liver. Their structure may be cavernous which can sometimes be ascertained by peritoneoscopy (II/Fig. 249).

HYPERPLASIAS AND HEPATOMAS. These are major or minor formations emerging from the parenchyma of the liver and having the same colour and consistency (II/Figs 248, 250). They are not delineated from the liver parenchyma. If small they are accidental findings and if they enlarge the liver their peritoneoscopic recognition was indicated by hepatomegaly. Their histological structure is identical with that of the liver parenchyma (II/Fig. 252).

ADENOMATA AND HAMARTOMATA (CHOLANGIO HEPATOMA BENIGNUM). These are tumours of various sizes originating from the benign proliferation of the biliary ducts. They may differ in colour and consistency from the parenchyma of the liver. Directed liver biopsy may decide whether they are benign or not.

Malignant Tumours of the Liver

CARCINOMA. Liver carcinoma is one of the most frequent indications of peritoneoscopic examination. Both internists and surgeons use peritoneoscopy if required (II/Fig. 289).

The cancerous diseases of the liver may be of primary origin, metastatic origin or may be due to cancer spreading to an adjacent organ.

The examination may be indicated by the even or nodulous enlargement of the liver or even by a normal liver diagnosis if prior to surgery it is to

be clarified whether there are metastases in the liver from the cancerous disease of another organ. If peritoneoscopy reveals a metastasis the extensive intervention, planned originally, can sometimes be dispensed with.

The cancerous alteration of the liver can be diagnosed peritoneoscopically only if the tumour has reached the surface of the liver. There are liver carcinomata that produce a bulge on the surface without reaching it (II/Figs 270 to 273). In such cases the peritoneoscopist should decide, with due regard to other clinical findings, whether he should puncture the bulge for biopsy.

The carcinoma reaching the surface is generally so typical that no controlled liver biopsy (II/Fig. 277) is necessary for its identification. In some cases, however, the nodes or nodules on the surface are so small and their shapes are so atypical that a histological examination is essential (II/Fig. 276). In these cases controlled biopsy or exploratory excision is indispensable.

Primary liver carcinoma is extremely rare. In most of these rare cases it develops from the regenerative node of liver cirrhosis (II/Figs 259, 260).

Metastatic liver carcinoma appears in an almost infinite variety of forms. All sizes from that of a millet (II/Fig. 261) to that of a human head (II/Fig. 268) can be encountered. It may be solitary (II/Figs 269, 282), multiplex (II/Figs 263 to 265) or again so dense that the parenchyma of the liver is hidden behind the many metastases (II/Figs 262, 286, 287). Its shape may be round or irregular, bulging or depressed, and sometimes the umbilicus-like central depression in the centre of a hemispherically bulging metastasis, considered very characteristic by pathological anatomists, can be seen (II/Figs 266, 268, 269). Its colour is usually white (II/Fig. 264) or yellowish (II/Fig. 281). Sometimes it is connected by vessels with the surrounding or has a vascular system of its own. There are also completely necrotized metastases (II/Figs 269, 278). Sometimes adhesions which may be massive or a thin thread start from the metastases. Beside metastases peritoneoscopy may reveal a primary tumour in the abdomen (stomach, intestines, cholecyst, pancreas, etc.). If we are looking for metastases the whole surface of the liver should be inspected. Even though the upper surface has no metastases, they may be found on its inferior surface when lifting the lobes with the peritoneoscope (II/Figs 280, 281). Sometimes tiny metastatic nodules can be found only in the sharp edge of the liver. In one of our cases the liver seemed to be intact but on lifting the left lobe a small white patch level with the surface was found in the lateral border of the inferior surface. Its biopsy revealed that it was due to metastasis (II/Figs 267, 276).

The cancer spreading *per continuitatem* from an adjacent organ either affects only these two organs, or may infiltrate many others as a conglomerate, e.g. the great omentum, intestines, gallbladder, falciform ligament (II/Fig. 279), etc. Here it may be impossible to ascertain whether the cancer began in the liver or in a neighbouring organ. This is particularly valid for cancer spreading from the liver to the gallbladder or vice versa (II/Figs 326, 327). If the tumour affects the great omentum and the liver itself remains hidden by its adherence, then the tumorous alteration can be well discerned macroscopically. In some cases, however, it is advisable to make an exploratory excision from the alteration on the great omentum (II/Fig. 441).

The change found peritoneoscopically may be very small. Ultimate dissection sometimes reveals a liver with an almost entirely cancerous substance which reaches the surface over a comparatively restricted area (II/Figs 270 to 273).

If one of the metastatic nodes obstructs a larger biliary duct, the metastatic liver becomes green (II/Fig. 302). If it exerts pressure on the cystic duct, it results in the hydrops of the gallbladder (II/Fig. 306).

Carcinomatous liver metastasis is frequently accompanied by carcinosis of the peritoneum or by carcinomatous nodes scattered over it. Ascites mixed with blood is also frequent. However, mostly it is difficult to ascertain whether ascites derives from the carcinosis of the peritoneum or from the compression of the portal vein due to the tumour.

Sometimes the adhering great omentum entirely hides the liver, but the tumorous infiltration of the great omentum clearly shows the carcinomatous state of the liver. The blood supply of the cancerous tumour of the liver may vary greatly. Some are poorly supplied, others have a dense vascular network. On inspection this cannot always be ascertained. Precisely for this reason biopsy of a cancerous tumour in the liver is dangerous. As we have explained in Chapter VI, a considerable percentage of biopsies with lethal complication is due to the puncture of a tumorous alteration and resultant haemorrhage. All this confirms what we have frequently stressed that biopsy of a macroscopically diagnosed liver tumour is contraindicated.

SARCOMA. Its primary form is even rarer than primary liver carcinoma. The sarcoma may be metastatic. Melanosarcoma should be discussed

separately. It is a rare disease with a very characteristic peritoneoscopic picture. Sometimes a few weeks or many years after the removal of a primary tumour the uneven enlargement of the liver can be diagnosed clinically. Round black or ink-blue, circumscribed melanosarcomatous metastases (II/Figs 291 to 294) in small or large numbers are sometimes revealed in peritoneoscopic examinations. The parenchyma of the liver may remain hidden because of numerous metastases (II/Fig. 298) when melanin can be demonstrated in the urine and the Thormälen test is strongly positive. Metastases may be found on other organs of the abdominal cavity and owing to their colour they are easily discovered. In a case of melanosarcoma pinhead-sized metastases are easily detected on the parietal peritoneum, whereas in this location carcinomatous metastases can be discovered only if they developed to a certain extent. The picture of a directed liver puncture is most characteristic. The bioptic cylinder, owing to the pigment-containing tumour, is black or dark-brown as can be seen with the unaided eye (II/Fig. 295) and the histological picture also shows the tumour cells crowded with pigmented nodes consisting of finer or coarser melanin particles (II/Fig. 301).

The peritoneoscopic diagnosis, unfortunately, has no practical importance in these cases because the state of the patient rapidly advances towards death.

I detected melanosarcoma metastases in the livers of my own three patients; all of them were late metastases of the enucleated eye. In two of these, beside the pigment-containing metastases, leucosarcomatic metastases were observed (II/Figs 292, 293). The sections of these cases (II/Figs 299, 300) revealed them also in organs other than the liver.

Nissen (1954) describes a case in which one year after the removal of the naevus pigmentosus pendulans he found a large number of bluish-black metastases in the liver and on the great omentum.

Hope (1937) reports a case where metastases covered the whole liver which seemed to be an almost completely coal-black organ; no normal substance could be detected on inspection.

OTHER MALIGNANT TUMOURS OF THE LIVER. Chiefly the metastatic forms of these are detected in peritoneoscopy. These are hypernephroma (II/Figs 274, 275, 284), haemangioendothelioma (II/Figs 253, 290) and malignant neuroblastoma.

Hope (1954a) reports on a six-week-old infant with an enormously enlarged abdomen. Peritoneoscopy and directed liver biopsy revealed an enormously enlarged liver and the result of the histological investigation was malignant neuroblastoma. X-ray irradiation was successful. The girl died of pneumonia at the age of nine months. Autopsy revealed no tumour in the liver, only diffuse fibrosis was found in place of the tumorous parts. This case merits our attention for two reasons. According to the literature at my disposal this infant was the youngest person where peritoneoscopy was indicated, and the malignant tumour diagnosed peritoneoscopically was cured by X-ray irradiation.

RARE CLINICAL FORMS OF LIVER DISEASES. *Tuberculosis of the liver.* In peritoneoscopic diagnostics this is practically referred to as tuberculous peritonitis or one of the phenomena of general miliary dissemination. In tuberculous peritonitis miliary nodules can be observed to develop on the surface of the liver which may be combined with proliferation reaching the surface. Sometimes the large protein content of the ascites due to tuberculous peritonitis precipitates in the form of a white fibrinous crust on the surface of the liver (II/Figs 231, 232).

In miliary dissemination tuberculous tubercles (II/Figs 226, 227, 232) can be demonstrated both on the surface of the liver and in the sample obtained from its parenchyma by biopsy (II/Fig. 228).

In principle it is possible to recognize, peritoneoscopically, the tuberculous, caseous alteration of the liver, but I was unable to find any relevant information in the literature or in my own material.

Acute porphyria. No information in the literature is available in connection with peritoneoscopy. It occurred in one single case in my material. For its description see Róth, Goretczky and Wittman (1962a, b). The peritoneoscopic examination showed the diffuse enlargement of the liver, its yellowish-brown colour, maximum atonic dilatation of the intestines (II/Fig. 429) and of the stomach (II/Fig. 235). The histological examination of the sample obtained by controlled liver biopsy showed (II/Figs 233, 234, 236 to 238) a characteristic picture; symptoms of portal hypertension were also observed (II/Fig. 358). (See p. 92.)

Chronic lead poisoning. We have no peritoneoscopic information in the literature. I observed it once: a ceramist (female) using lead paint in her work regularly put the brush in her mouth and was consequently poisoned. Her liver was diffusely enlarged and so was her spleen. Both organs were coffee-brown in colour with smooth surfaces. The histological examination of the biopsy sample showed the fatty degeneration of the liver parenchyma (II/Figs 239 to 243).

Boeck's sarcoid with liver localization (II/Fig. 285).

Functional hyperbilirubinuria. Various disturbances of bilirubin production and excretion are known to lead to permanent or intermittent jaundice. These functional forms cannot be considered diseases, only conditions. Exact diagnosis permits to distinguish them from pathological jaundices.

Their best known form is the Dubin–Johnson syndrome (Dubin and Johnson 1954) occurring in young females or males who suffer from icterus of varying duration accompanied by indisposition. Moderately enlarged liver, possibly an enlarged spleen can be observed physically. The picture is characterized by urobilinogenuria and bilirubinuria; the bilirubin content of the serum is increased and yields partly indirect, partly direct Ehrlich reaction (the joint appearance of conjugated and non-conjugated bilirubin). The colloid-lability tests are negative, but there is moderate BSP retention. The only means to determine this state is peritoneoscopy accompanied by directed biopsy. Peritoneoscopy reveals a moderately enlarged liver with a smooth surface of a typical graphite-grey or bluish-green colour. The histological picture shows moderately fatty liver acini and a coarse-grained brown pigment proliferating in the parenchymatous cells in the centre of the liver lobules. The pigment contains no iron and chemically corresponds to lipofuscin (see peritoneoscopic report No 6 and II/Figs 159 to 161). In the case described previously (the first to have been diagnosed peritoneoscopically in Hungary) the bluish-green discoloration extends in one area over part of the liver, but the network covers the whole liver (II/Figs 159, 160 and p. 80).

In a normal bilirubin conjugation the Dubin–Johnson syndrome is due to disturbances in bilirubin secretion. Similar, i.e. functional or essential hyperbilirubinaemiae are the icterus juvenilis intermittens described by Meulengracht (identical with Gilbert's cholémie simple familiale) and the posthepatitic hyperbilirubinaemia which result from deficient functioning of the transferase ferment, as well as the Rotor syndrome which differs from the Dubin–Johnson one as the histological picture does not contain the lipofuscin-type pigment.

Diseases of the Gallbladder and Biliary Ducts

Diseases of the Gallbladder

The normal gallbladder, as described in connection with the normal abdominal cavity, displays a wide variety of sizes and shapes (II/Figs 303, 306, 310, 311).

It is usually pyriform covered with serosa. Its surface is smooth and shining, white, yellow or the combination of these colours with pale green or blue. The thin or thicker capillaries and veins on its surface can readily be seen. The fundus of the visible gallbladder is almost always accessible to inspection, the neck less frequently since it is hidden by the right lobe of the liver (II/Fig. 303). The cystic duct, the choledochus and the hepatic duct can be seen under exceptional circumstances only, e.g. when the right lobe is lifted high or when in liver cirrhosis it is reduced, contracted and its edge turns upwards allowing a view below the right lobe.

The gallbladder may be filled to a varying extent; it may be dangling empty (II/Fig. 307), filled to capacity (II/Fig. 312) or be in any state between these extremes. Sometimes it empties during the examination.

According to our experience the gallbladder can be seen less frequently than it might be supposed. This may be due to various reasons. It cannot be found if, on account of developmental anomalies, it is absent or if it is no larger than its bed. The intestines, insufficiently emptied or the great omentum pushed upwards by them sometimes hide the cholecyst (II/Fig. 109) entirely. The gallbladder may also be hidden by adhesions or adhering inflammatory or tumorous organs due to pericholecystitis or a tumorous conglomerate, chiefly by the great omentum. The formations on the gallbladder can sometimes be pushed aside by skilful manipulation of the peritoneoscope. If, however, the instrument has a free bulb (particularly one for photography) the contact between the hot bulb and the organ may cause pain. The gallbladder may be freed also by the forceps of the excision peritoneoscope, with the needle used for puncturing the liver or with another instrument introduced into the pneumoperitoneum for this purpose. If the cholecyst is hidden by the liver itself, the peritoneoscope or some other instrument may be used for lifting its right lobe to bring the gallbladder into view (II/Fig. 37).

The shape and size of the incisure of the gallbladder also determine the extent to which the cholecyst is visible. Frequently there is no incisure at all (II/Figs 304, 305), in other cases the bed is crescent-like, penetrating deeply into the liver parenchyma. We had a case in which there was no incisure but the parenchyma of the liver was absent above the gallbladder which peeped out of the liver like an eye.

Hydrops vesicae felleae. Owing to stone obstruction in the cysticus, the choledochus or in

(7+17) cases, i.e. 6 per cent of the total. These figures show that peritoneoscopy performed after duly considered indications and with the correct methods is a very successful diagnostic intervention where other diagnostic methods fail. Both the corroboration of uncertain diagnoses and the establishment of the correct ones in more than 50 per cent of the cases were decisive for the patient. The value of peritoneoscopy is by no means lessened by the fact that in some cases there was only a difference of degree between the presumed diagnosis and the established one (e.g. hepatic cirrhosis instead of chronic hepatitis; hepatic fibrosis instead of hepatic cirrhosis).

In many cases the diagnosis was decided by the histological examination of the material obtained by directed liver biopsy or by exploratory excision from other parts of the abdominal cavity. Histological examination was resorted to only in such cases when peritoneoscopy had not entirely clarified the diagnosis and there was hope for performing biopsy or exploratory excision without any danger to the patient. Of the 120 directed liver biopsies 74 confirmed the diagnosis of the peritoneoscopic examination, 32 yielded different diagnoses and in 14 cases it was of no avail (Table 3). The reasons of failure were as follows:

TABLE 3

Result of histological examination	Case No
confirmed the peritoneoscopic diagnosis	74
changed the peritoneoscopic diagnosis	32
unsuccessful	14
Total	120

1. no sample could be taken from the liver with the biopsy needle; 2. the sample taken fell back into the abdominal cavity, and 3. the substance taken was not sufficient in quantity for the histological examination. Table 4 clearly shows that the number of unsuccessful examinations can be reduced by increased practice. While in 1959 seven out of 18 examinations were unsuccessful, between 1960 and 1962 only seven out of 92 failed to yield results.

It may be seen from Table 4 that after acquiring the necessary practice, bioptic intervention is required, on average, only in one third of the peritoneoscopic examinations.

TABLE 4

Year	Peritoneoscopic examinations	Biopsy			
		Successful	Unsuccessful	Total	%
1958	22	3	0	3	13·7
1959	69	18	7	25	36·2
1960	106	33	2	35	33·0
1961	100	27	3	30	30·0
1962	103	25	2	27	28·3
Total	400	106	14	120	30·0

In a few cases the diagnoses obtained from peritoneoscopy and the operation or dissection performed later showed a difference, but this was never significant. The operation or dissection usually clarified the cause of obstructional icterus. In one case neither tumorous metastases nor a tumorous conglomerate could be detected during peritoneoscopy and the cause of obstructional icterus was assumed to be choledocholithiasis. Owing to the precarious state of the patient no operative intervention took place. On resection the obstruction was proved to have been maintained by a carcinoma of the head of the pancreas. In another case we observed the contrary. In obstructional icterus a seemingly tumorous conglomerate could be seen under the right lobe of the liver and this suggested carcinoma of the head of the pancreas. The operation disclosed choledocholithiasis: the conglomerate under the liver was of inflammatory origin and was due to cholecystitis and pericholecystitis resulting from cholelithiasis.

Indication of Peritoneoscopy and Diagnosis Established by the Peritoneoscopic Examination

It is known that peritoneoscopy is most frequently performed to diagnose the diseases of the liver, intrahepatic and extrahepatic biliary ducts and the pancreas. This is confirmed by my material, too. In 317 cases (79·2 per cent) the indication for peritoneoscopy was the suspected disease of the liver, the system of biliary ducts and of the pancreas, and only 83 peritoneoscopic examinations (20·8 per cent) were performed on account of the diseases of other abdominal organs (Table 5).

In group one 80 examinations were performed on the suspicion of hepatic cirrhosis and 84 on account of metastatic liver carcinoma. Chronic hepatitis was surmised in 17 cases. In 15 cases peritoneoscopy

TABLE 5

Assumed diagnosis when establishing indication for peritoneoscopy	Case No
Diseases of the liver	
viral hepatitis	2
hepatitis without icterus	1
subacute hepatitis	5
chronic hepatitis	17
incipient liver cirrhosis	2
liver cirrhosis	80
fatty liver	4
cardiac cirrhosis	2
haematochromatosis	2
functional hyperbilirubinaemia	4
hepatomegaly with uncertain aetiology	15
splenohepatomegaly with uncertain aetiology	9
Cruveilhier—Baumgarten's syndrome	1
echinococcus liver cyst	5
primary liver carcinoma	1
hypernephroma, metast. hepatis	1
melanosarcoma, metast. hepatis	1
meningeoma, metast. hepatis	1
carcinoma, metast. hepatis	84
acute porphyria	2
lead poisoning	1
arsenic poisoning	1
lupus erythematodes	2
leukaemic liver	1
lymphogranulomatosis	1
liver sarcoma	1
Banti's disease	1
perihepatitis	1
liver abscess	3
Diseases of the bile ducts and the pancreas	
hydrops vesicae felleae	1
empyema vesicae felleae	1
choledocholithiasis	1
cholangiohepatitis	5
postcholecystitis state	2
gallbladder carcinoma	14
obstructional icterus	11
obstructional icterus + cc. hepatis	5
biliary cirrhosis	1
pancreatic carcinoma	8
icterus with unclarified aetiology	16
pylethrombosis	1
Diseases of the peritoneum	
tuberculous peritonitis	11
carcinomatous peritonitis	5
ascites	2
Gynaecological diseases	
ovarian carcinoma	8
tuberculotic tumour of adnexa	1
Stein—Leventhal's syndrome	1
extrauterine pregnancy	1
Other diseases	
diaphragmal tumour	1
diaphragmatic hernia	1
abdominal tumour (not clarified)	35
carcinoma ventriculi	7
isolated splenomegaly	7
carcinoid of small intestines	1
Meckel's diverticulum	1
ectopic kidney	1
Total	400

was indicated by enlarged livers, not clarified by clinical methods, and in 9 by unclarified hepatosplenomegalia. In 14 cases primary gallbladder carcinoma was assumed; 65 examinations were performed to clarify the origin of jaundice (see later). In group two, peritoneal diseases (16 cases) and unclarified abdominal tumours (35 cases) prevailed. For the elucidation of gynaecological problems 11 examinations were performed.

In a few cases peritoneoscopy was performed in diseases usually not diagnosed by this method, but our intention was to become acquainted with the peritoneoscopic picture and so draw conclusions (hepatic porphyria, lead poisoning, arsenic poisoning, lupus erythematodes).

Table 6 shows how frequently diseases were detected peritoneoscopically. The 400 examinations yielded 420 diagnoses, the excess being due to the fact that in some cases more than one disease was diagnosed (e.g. liver cirrhosis and myoma uteri) and for an easier survey these are indicated separately.

The diagnoses obtained by peritoneoscopic examination, as previously stated, differed in 55·7 per cent from the diagnoses assumed before peritoneoscopy. Therefore, the figures in Tables 5 and 6 relating to the same disease frequently show a considerable divergence (e.g. fatty liver was assumed in four cases and found on 12 occasions, or metas-

TABLE 6

Peritoneoscopic diagnosis	Case No
Diseases of the liver	
viral hepatitis (acute)	4
subacute hepatitis	7
chronic hepatitis	16
incipient liver cirrhosis	21
liver fibrosis	22
liver cirrhosis	68
fatty liver	12
fatty liver + liver cirrhosis	10
cardiac cirrhosis	3
haemochromatosis	2
functional hyperbilirubinaemia (Dubin—Johnson)	3
intrahepatic cholestasis	2
hepatomegaly with unclarified aetiology	6
splenohepatomegaly with unclarified aetiology	3
Cruveilhier—Baumgarten's syndrome	1
liver cyst	1
liver haemangioma	1
echinococcus liver cyst	2
hepatoma (benign)	1
primary liver cc. + liver cirrhosis	4
hypernephroma, metast. hepatis	1
melanosarcoma, metast. hepatis	2
meningeoma, metast. hepatis	1
carcinoma, metast. hepatis	34
nodulous liver (Kartoffelleber; potato liver)	1
acute porphyria	1
lead poisoning	1
arsenic poisoning	1
lupus erythematodes	1
leukaemic liver	1
perihepatitis	2
intact liver	22
normal peritoneoscopic findings	7
Diseases of the bile ducts and the pancreas	
hydrops vesicae felleae	3
empyema vesicae felleae	2
cholelithiasis	3
choledocholithiasis	2
cholangiohepatitis	1
postcholecystitic state	8
gallbladder carcinoma	12
obstructional icterus	14
obstructional icterus + cc. hepatis	7
biliary cirrhosis	8
pancreatic carcinoma	9
subacute pancreatitis	1
Diseases of the peritoneum	
tuberculous peritonitis	8
carcinomatous peritonitis	12
tumorous conglomerate of the omentum	7
postperitonitis adhesions	1
Gynaecological diseases	
myoma uteri	2
haematometra	1
ovarian cyst	1
carcinoma of the ovary	8
pyosalpinx	1
Other diseases	
tumour of the abdominal wall	1
diaphragmal tumour	1
umbilical hernia	3
diaphragmal hernia	1
inguinal hernia	4
abdominal tumour (not clarified)	9
abdominal adhesions	16
carcinoma ventriculi	6
isolated splenomegaly	4
Total	420

tatic liver carcinoma was suspected in 84 cases and found only in 34). This 55·7 per cent deviation also accounts for the discrepancies between Tables 5 (suggested diagnoses) and 6 (diagnoses established peritoneoscopically). For instance peritoneoscopy was indicated on 80 occasions on suspicion of liver cirrhosis, but we found it only in 68 cases. These figures are approximately identical. Nevertheless, of the 80 cases when cirrhosis was suspected, only about half of them were confirmed while the rest proved to be liver carcinoma, liver fibrosis, chronic hepatitis or other diseases. However, some of the suspected liver carcinomas or other diseases proved to be liver cirrhosis. Hence only about half of the peritoneoscopically diagnosed liver cirrhoses had been suspected prior to the examination and the other half derived from various other surmised diseases. The two diseases occurring most frequently in Tables 5 and 6, liver cirrhosis and metastatic liver

carcinoma, show that when one was suspected, the other was found and vice versa. A comparison of Tables 5 and 6 also shows that metastatic liver carcinoma occurs in much fewer cases than suggested by the clinical symptoms. No liver fibrosis was ever suspected prior to peritoneoscopic intervention, yet its presence was ascertained on 21 occasions. No peritoneoscopic examination was performed to check the diagnosis of primary liver carcinoma, yet it was detected on four occasions.

It is of considerable importance to the patients examined that the liver diagnosed to be pathological was found intact in 22 cases. The cases listed also indicate that a fatty liver is far more frequent than suspected by the clinician. We shall discuss this group in greater detail below.

The recognition of a few cases of liver cysts, liver haemangioma, hepatoma, metastatic melanosarcoma were a surprise. Tumorous omental conglomerates were found on seven occasions, mostly located below the liver. On these occasions liver metastases were suspected as a result of the clinical examinations, but peritoneoscopy revealed conglomerates, usually with an intact liver. In 16 cases peritoneoscopy merely revealed abdominal adhesions which accounted for the complaints of the patients and the palpation findings. Gastric cancer was revealed on six occasions when the tumorous proliferations spread to the outer wall of the stomach. These cases were examined to decide whether liver metastases did not contraindicate a radical abdominal operation. In some instances gastric cancer was recognized by peritoneoscopy and the subsequent X-ray examination confirmed this.

In most of the 35 cases where the origin of the abdominal tumour was unknown, peritoneoscopy ascertained the place of origin. On nine occasions, however, we could only establish that the tumour had started from the depth and reached the upper level of the abdominal cavity. The tumours themselves could not be seen, since they were covered by the great omentum.

There were seven peritoneoscopic investigations that revealed no pathological change in the abdominal cavity.

A summary and assessment of the results show that, irrespective of a few unsuccessful peritoneoscopic attempts and uncertain diagnoses, peritoneoscopic investigations are useful either to confirm the suggested diagnosis or to establish a different one.

Role of Peritoneoscopy in Recognizing Icterus and Ascites

One of the most important fields of peritoneoscopy is to recognize the character and cause of icterus and the origin of ascites. These two important symptoms of the diseases of the digestive organs constituted the main problem in my material, too. Of the 400 patients subjected to peritoneoscopy 72 had icterus (18 per cent) and 58 had ascites (14·5 per cent). In most cases peritoneoscopy revealed the causes of these symptoms and the histological sample obtained by liver biopsy or exploratory excision decided the diagnosis in the others. Simultaneous icterus and ascites occurred only on four occasions.

Table 7 shows how frequently diseases or pathological causes were responsible for the development of icterus. This was found to have been caused by obstruction on 38 occasions, and by the lesion of the liver parenchyma or resultant periportal proliferation of the connective tissue in 34 cases. On one occasion jaundice was found to have developed from intrahepatic cholestasis. In obstructional icterus and intrahepatic cholestasis the liver was found

TABLE 7 *Cases with icterus*

Disease	Case No	Green liver	Biliary cirrhosis
viral hepatitis (acute)	5		
subacute hepatitis	3		
chronic hepatitis	1		
liver fibrosis	3		
incipient cirrhosis	2		
liver cirrhosis	13		
haemochromatosis	2		
essential hyperbilirubinaemia	3		1
liver cirrhosis + primary liver carcinoma	1		
metastatic liver carcinoma	3		1
cholecystic carcinoma	1		
intrahepatic cholestasis	1	1	1
obstructional icterus (unclarified aetiology)	11	4	7
metastatic liver carcinoma with obstructional icterus	12	2	10
pancreatic carcinoma	11	2	9
carcinomatous peritonitis	1		
Total	72	9	29