

Laparoscopy in General Surgery in Malta

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GENERAL SURGERY

SUMMARY

A first series of fifty non-acute laparoscopies in general surgical practice in Malta are presented with particular reference to the indications for the procedure and its diagnostic yield.

ABSTRACT

The series includes the first case of Curtiss-Fitz-Hugh syndrome to be diagnosed laparoscopically in Malta and the use of laparoscopy for splenic smear preparation under direct vision in visceral leishmaniasis (Kala-azar), a method not described previously. The series had a 100% diagnostic yield in cases of hepatomegaly and abdominal mass but only a 60% yield in cases of splenomegaly. There were one major and one minor complications both occurring in the same patient.

INTRODUCTION

The endoscopic assessment of the peritoneal cavity and its contents following the creation of a pneumoperitoneum is generally referred to as laparoscopy, a term coined in 1910 by Jacobeus, who was the first to perform the procedure on a human being. The technique was however pioneered by Kelling in Dresden, who in 1901 reported an endoscopic method of visualizing the peritoneal cavity in dogs using a cystoscope. Other terms in common usage are peritoneoscopy and celioscopy. The terminology is however dependent more on geographical boundaries and personal preferences, than on significant variations in technique.

Laparoscopy has been in common usage for many years now and is widely accepted by gynaecologists. It has also been shown that it is a reliable diagnostic procedure in hepatic malignant neoplasms¹⁻⁴ and other benign liver diseases⁵⁻⁶. Many reports attest to its usefulness in the assessment of jaundice^{4-6,7,8,9} staging of Hodgkin's disease¹⁰⁻¹¹ evaluation of abdominal trauma¹², acute^{13,17} and chronic abdominal pain¹⁸⁻¹⁷ and in the confirmation and staging of intra-abdominal malignancy²⁰⁻²⁸. Since its first description in 1976²⁹, several series³⁰⁻³⁸ have advocated the use

of laparoscopy for the impalpable testis.

Nevertheless, despite an acceptable morbidity, the wide availability of the necessary equipment and an initial interest in the potential value of laparoscopy to surgical patients, the procedure has apparently found little favour among general surgeons. This phenomenon appears to stem from the fact that unlike gynaecologists very few general surgeons are specifically trained in laparoscopic techniques except in certain specialist centres dealing with hepatobiliary diseases.

The greatest attributes of laparoscopy are the avoidance of a laparotomy with its attendant long hospital stay and the possibility of performing the procedure under local anaesthesia with or without sedation in selected patients.

Unlike ultrasonography and computerised tomography, laparoscopy provides direct access for tissue biopsy under direct vision of hepatic, omental, peritoneal, pelvic visceral and intra-abdominal mass lesions.

Laparoscopy is also used as an investigative procedure beyond simple diagnostic peritoneoscopy. Laparoscopic transhepatic cholangiography was first described by Royer and associates³⁶ in 1950 and is now an established procedure in the management of jaundice⁷⁻²¹. Laparoscopic trans-cystic cholangiography was developed in 1953 by Banche and Muratori³⁷ and is used when the intrahepatic duct dilatation is not sufficient to permit direct trans-hepatic penetration.

Therapeutic laparoscopy depends on the availability of an operating laparoscope with its set of operating instruments although procedures such as division of tight bands or post-operative adhesions can be performed by carefully calculated improvisation using the Verres needle or the coagulating probe.

PATIENTS AND METHODS

All patients underwent general surgical laparoscopy under the care of the senior author during the period between 1st January, 1986 and 30th June, 1988. In the majority of cases ultrasonography and computerised axial tomography had already been performed and found to be equivocal or non-diagnostic.

All procedures were performed under general anaesthesia, with the patient intubated and relaxed. Early attempts at performing laparoscopy under sedation and local anaesthesia were poorly tolerated by Maltese patients and the method was abandoned.

The standard Storz laparoscope and the operating laparoscope were used but a palpation probe and a coagulating forceps were the only available accessories. The rest of the operating instrument set was not available. The procedure was performed on a standard operating table capable of various tilts and positions to improve the view of the liver and spleen. Females were not placed in the lithotomy position unless there was a strong suspicion of pelvic pathology in which case an intra-uterine probe was used as in gynaecological practice. All patients were asked to empty their bladder prior to anaesthesia. The Verres needle was inserted via a 3mm skin stab through the linea semilunaris in the left iliac fossa and a pneumoperitoneum created with between 2 and 3 litres of N₂O. Visceral penetration was excluded by percussion in the epigastrium confirming air distribution all over the peritoneal cavity. Once the pneumoperitoneum was completed a 7mm trocar was inserted through a 1.5cm subumbilical incision. The laparoscope was now inserted and the gas inflow tube was shifted from the Verres needle to the laparoscope sheath gas inlet. The Verres needle was not removed but left in situ to be used as a palpating probe and on some occasions operating instrument.

Biopsies were always taken under direct vision using a Tru-cut needle inserted through a separate stab in the anterior abdominal wall. Blood for splenic smears was aspirated with a fine needle with the

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patient in apnoea to avoid splenic tears or rupture. Pelvic fluid was aspirated using the Verres needle connected to a syringe. The palpation probe and the coagulating forceps were used in conjunction with the operating laparoscope or in the double puncture method when the therapeutic measure was not anticipated.

RESULTS

Fifty laparoscopies were performed for the indications listed in (Table 1). All laparoscopies in this series were diagnostic although in three, therapeutic measures were also undertaken. Out of the twenty-five cases laparoscoped (Table II) for abdominal pain eight cases had adhesions. In three of these adhesiolysis was performed by laparoscopic means avoiding laparotomy. In six cases signs of subacute or chronic appendicitis were observed and appendicectomy was performed under the same anaesthetic through a low Lanz incision. Out of three cases of ovarian pathology:- two were small cysts and were left undisturbed and the other was an ovarian teratoma which was removed. One of the cases of abdominal pain was diagnosed laparoscopically as the second of the first two cases of the Curtis-Fitz-Hugh syndrome to be recorded in Malta. This subject will be reviewed in a future publication. In a further two cases of chronic abdominal pain laparoscopic examination was non contributory.

Table I Clinical Presentation n = 50

Abdominal pain	= 25
Hepatomegaly	= 15
Splenomegaly + Hepatomegaly	= 5
Abdominal mass	= 5
Staging for lymphoma	= 1

TABLE II Abdominal Pain n = 25

Appendicitis	= 6
Adhesions	= 8
Ovarian pathology	= 3
Gall Bladder pathology	= 3
Liver pathology	= 2
Curtis-Fitz-Hugh Syndrome	= 1
No diagnosis	= 2

In fourteen cases, laparoscopy was indicated for clinical hepatomegaly (Table III). Metastatic liver disease and cirrhosis were the most common findings, followed by alcoholic fatty liver disease. In one case of suspected Reidl's lobe the patient was found to have a fatty liver in addition to the congenital variation. One case of suspected massive irregular hepatomegaly was found to have a giant neurilemmoma filling the whole peritoneal cavity, pushing the liver forwards and completely obscuring the other abdominal viscera. The lesion was subsequently successfully removed at laparotomy and found to have

originated from the posterior wall of the stomach.

TABLE III Hepatomegaly = 14

Metastatic liver disease	= 4
Cirrhosis	= 4
Alcoholic fatty liver	= 2
Reidl's lobe	= 1
Venous Congestion (Budd Chiari)	= 1
Giant intraperitoneal neurilemmoma and normal liver	= 1
Fatty liver and Reidl's lobe	= 1

From the five cases presenting with splenomegaly (Table IV), four had concurrent hepatomegaly. Tru-cut biopsy of the liver was taken in addition in these cases. In the two cases with suspected visceral leishmaniasis (kala-azar), splenic smears were also obtained under direct laparoscopic vision. In one case the splenic smear was diagnostic while in the other case no diagnosis was reached from the sample obtained. Leishmaniasis was subsequently diagnosed using radio-immunoassay (ELISA). One case with isolated splenomegaly turned out to have splenic vein thrombosis at subsequent laparotomy.

TABLE IV

A) Splenomegaly + Hepatomegaly	n = 4
Alcoholic hepatitis	= 2
Kalazar	= 2
B) Splenomegaly alone	n = 1
Splenic vein thrombosis	n = 1

Five cases presenting with an abdominal mass in whom CAT scanning had been inconclusive or equivocal underwent laparoscopic examination. This was diagnostic as shown in table V.

TABLE V Abdominal Mass n = 5

Colonic adenocarcinoma
Massive uterine leiomyoma
Rectus sheath haematoma
Peritoneum studded with mesothelioma
Diaphragmatic incarceration and perforation of Nissen's fundoplication performed 10 years previously with intraperitoneal abscess formation reported as hepatic metastasis on CT scan.

One laparoscopy was performed instead of laparotomy for staging of lymphoma.

In this series there was one major complication and one minor complication both occurring in the same patient (Table VI).

DISCUSSION

This first series of laparoscopies in general

TABLE VI Complications n = 2

Major	Perforation of small bowel = 1
Minor	Leakage of ascitic fluid = 1

Note: Both complications occurred in the same patient.

surgical practice from Malta compares well in several aspects with other series reported elsewhere.

The majority of cases in this series had already been extensively investigated by ultrasonography and computerised axial tomography with equivocal, inconclusive or outright misleading results. In almost all cases laparoscopic examination was performed instead of an exploratory laparotomy. In some cases of hepatomegaly the procedure was preferred to blind percutaneous biopsy which has been shown to have a lower diagnostic yield as compared to target biopsy under direct laparoscopic control¹. In fact in the case of hepatomegaly the diagnostic accuracy of our series was 100%. This shows that what Caroli said in 1961³⁹, i.e. 'laparoscopy is the most valuable investigation in isolated hepatomegaly' is still true despite great improvement in imaging technology. This level of diagnostic accuracy was also achieved in the case of abdominal masses. These figures compare favourably with those of Udwardia who had a 12% failure rate for hepatomegaly and a 37% failure rate for abdominal mass in his series reported recently from India³⁶. The pick up rate of 92% for cases of chronic or subacute abdominal pain is very high in this series as was the percentage of cases in whom the procedure was undertaken for abdominal pain that had been exhaustively investigated previously short only of an exploratory laparotomy. The lowest diagnostic yield was in cases of splenomegaly with a 40% failure rate. The two undiagnosed cases were a case of splenic vein thrombosis diagnosed only subsequently at laparotomy and a case of visceral leishmaniasis in which splenic smear failed to identify Leishman-Donovan bodies. The use of laparoscopic splenic smear preparations in suspected visceral leishmaniasis does not appear to have been reported previously. This series includes a patient with fever and hepatosplenomegaly in whom a definite diagnosis of leishmaniasis was reached from the splenic smear obtained under direct laparoscopic control.

Although laparoscopy had a much wider scope prior to the advent of ultrasonography and computerised axial tomography, the inability of these non-invasive techniques to distinguish between pathological and non pathological changes in tissue density and their inability to provide access for tissue diagnosis leave many cases in whom laparoscopy can provide a final definitive visual or tissue diagnosis¹⁰.

Comparing our indications for laparoscopy with those of Udwardia's Indian series (table VII), the similarities are obvious although the percentage of patients with abdominal pain reaches 50% in our series. Our high diagnostic yield from patients with abdominal pain is also in marked contrast to that in several other studies⁴⁰⁻⁴² although most authors agree that laparoscopy is often useful in elucidating the cause of chronic abdominal pain undiagnosed by other means¹³⁻⁴³⁻⁴⁴.

Table VII Comparison of indications with another series³⁶

Indication	Our series	Udwardia series
Hepatomegaly	26%	27.2%
Splenomegaly	8%	5.2%
Abdominal mass	10%	12.0%
Abdominal pain	50%	10.0%

Although in most series³⁶⁻⁴⁵⁻⁴⁶ laparoscopies were performed under local anaesthesia with or without sedation, in our study they were all done under general anaesthesia. As already intimated in the methods section of this article, Maltese patients tolerated the procedure poorly under local anaesthesia and sedation and the method was abandoned.

There was one major complication in this series. This was a small bowel perforation which occurred in an elderly diabetic jaundiced patient who at laparoscopy was found to have cryptogenic hepatic cirrhosis and ascites. The laparoscope was inadvertently introduced subumbilically through a previous lower abdominal scar and she sustained a small bowel injury. This was the only perforation in the senior author's personal series. Comparing this with other series, Udwardia³⁶ had one perforation and one respiratory arrest without mortality out of 2500 cases. Lewis and Archer⁴⁰ had two colonic perforations out of 81 patients, Barry et al⁴⁷ had one colonic perforation followed by subsequent death of the patient, while Coupland⁴⁸ had three cases of perforated bowel without mortality out of 236 laparoscopies. Some authors⁴⁰⁻⁴⁵ claim a complication free series.

At this point it must be stressed that the mortality for a comparable series of patients undergoing laparotomy instead of laparoscopy is of the order of 15% and the morbidity of 43%⁵⁰.

Although laparoscopy is well established in gynaecological practice⁵¹ particularly in the curriculum of junior gynaecologists in training, such is not the case in general surgical practice despite the irrefutable evidence worldwide of the low morbidity and high diagnostic yield of the procedure. It is essential that junior surgeons in training receive adequate instructions in the identification of cases likely to benefit

from the procedure and in the techniques for its safe performance.

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