

DIAGNOSTIC VALUE OF LAPAROSCOPY IN GYNAECOLOGY

by

THANKAM R. VARMA,* Ph.D. (London), F.R.C.S. (Edin.), M.R.C.O.G.

and

HARRY MURPHY,** F.R.C.S.I., M.R.C.O.G.

Summary

Five hundred and thirty patients had diagnostic laparoscopic examination. The main indications were obscure pelvic pain (41.9%) and infertility. Clinical diagnosis was confirmed in 155 of 222 (70%) patients with pelvic pain. Only 16 out of 222 required laparotomy immediately following a laparoscopic examination. However, 30 out of 222 patients required laparotomy after a period of follow-up. Only 46 out of 222 (20.7%) required laparotomy and the rest of the patients (79.3%) needed only reassurance and were saved from a laparotomy either to refute or to substantiate the clinical diagnosis. Laparoscopy was found to be very useful in the investigation of infertility. It provided a more accurate assessment of tubal patency and function than did hysterosalpingography. Early diagnosis and prompt treatment were possible when ectopic gestation was confirmed. An unnecessary laparotomy was avoided in 37 out of 58 (64%) patients with a diagnosis of suspected ectopic gestation. The incidence of complications was only 3.77 per cent and none of them was of serious nature.

*Senior Registrar.

**Registrar, Department of Obstetrics and Gynaecology, St. George's Hospital, Blackshaw Road, London, S.W. 17 OQT.

**Present Address Rotunda Hospital, Dublin.
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Introduction

The popularisation of laparoscopy by Steptoe (1965, 1967) has been followed by a wide use of this technique in recent years. The indications, contraindications and complications of laparoscopy have been classified by many authors. The use of laparoscopy as a diagnostic tool ranges from 3.4 to 46.1 per cent (Buckle and Grimwade, 1970; Coltart, 1970; Duignan *et al*, 1972; Frangenheim, 1972; Jackcobson and Westrom, 1968; Lundberg *et al*, 1973).

The most commonly reported diagnostic use was in cases where laparoscopy had been used in the study of obscure pelvic pain. Obscure pelvic pain has been a difficult problem and the gynaecologists have found laparoscopy of great help to them. The next most frequently reported use of laparoscopy as a diagnostic tool is for suspected ectopic gestation. The use of laparoscopy in the investigation of infertility is also widely accepted. The results of 530 consecutive diagnostic laparoscopic examination performed between January 1972 and December 1975 are presented.

Patients and Methods

The technique of laparoscopy used was as described by Steptoe (1967). Diagnostic laparoscopic examination were performed on 530 patients. The age of the

patients ranged between 17 and 46 years. Laparoscopic sterilisation was not included in this group. The procedure was undertaken by a person of Registrar's status or above in 92 per cent of patients. Only in 8 per cent laparoscopy was done by a Senior house officer under the supervision of a senior colleague.

Results

The indications for laparoscopy are summarised in Table I.

Pelvic Pain: Pelvic pain was the main indication in this series. Two hundred and twenty-two patients with pelvic pain were examined. History and clinical

examination suggested some abnormality in the pelvis in 108 out of 222 (49%) patients. There was no abnormality in 114 (51%) out of 222 patients.

Table II shows the clinical and laparoscopic diagnosis in 108 patients in whom pelvic abnormality was suspected. Laparoscopy confirmed the clinical diagnosis in 85 (80%) out of 108 patients. However, clinical diagnosis was incorrect in 23 (20%) out of 108 patients. On clinical examination no abnormality was detected in 114 (51%) out of 222 patients with pelvic pain. Table III shows the findings at laparoscopic examination where clinical findings were normal. Though no clinical

Indications

TABLE I

Indications	Number of cases	Percentage
Pelvic pain	222	41.9
Primary infertility	98	33
Secondary infertility	76	
Possible ectopic pregnancy	58	11
Primary amenorrhoea	4	
Secondary amenorrhoea	22	7
Oligomenorrhoea	12	
Suspected pelvic mass	24	4.5
Migrating I.U.C.D.	8	1.5
Hirsutism	6	1.1
Total	530	100

TABLE II

Clinical and Laparoscopic Diagnosis

Clinical diagnosis	Number of cases	Laparoscopic Examination	
		confirmed	not confirmed
P.I.D.	32	26	6
Endometriosis	18	13	5
Ovarian cyst	12	10	2
Retroverted uterus with prolapsed ovary	12	12	0
Fibroid	12	9	3
Ruptured luteal or follicular cyst	18	12	6
Appendicitis	4	2	2
Total	108	85 (80%)	23 (20%)

TABLE III

Laparoscopic Diagnosis Where Clinical Findings Were Normal

Laparoscopic findings	Number of cases	Percentage
Normal	70	61.4
Adhesions from previous surgery	23	38.6
Endometriosis	5	
Chronic P.I.D.	10	
Ruptured corpus luteal or follicular cyst	4	
Retrograde menstruation	1	
Twisted fimbrial end of the tube	1	
Total	114	100

abnormality was suspected laparoscopic examination showed some abnormality in 44 out of 114 (38.6%) patients with pelvic pain. In 155 of 222 patients (70%) the clinical diagnosis was confirmed on laparoscopic examination.

Infertility: Infertility was one of the main indication for laparoscopic examination. The findings in 98 patients with primary infertility are summarised in Table IV. The age

one or both tubes in 24.5 per cent of the patients. Unsuspected endometriosis was found in 5.1 per cent of cases.

The findings in 76 patients with secondary infertility are summarised in Table V. Some abnormality was found in 47.4 per cent of cases. Adhesions around the tubes and ovaries were found in 34.2 per cent of patients as compared with 19.4 per cent in patients with primary infertility. Thirty-eight per cent of patients with

TABLE IV

Findings in 98 Patients With Primary Infertility

Laparoscopic findings	Number of cases	Percentage
Normal	62	66.67
Bilateral tubal occlusions with no adhesions	10	33.33
Bilateral tubal occlusions with adhesions	8	
Adhesions with one tube blocked	6	
Adhesions with tubes patent	5	
Bicornuate uterus with both tubes patent	2	
Endometriosis	5	
Total	98	100

of the patients ranged between 19 and 40 years. The duration of infertility ranged between 18 months to 10 years. Some abnormality was found in 33.3 per cent of patients. No obvious clinical abnormality was detected in any of these patients. Adhesions around the tube and ovaries were found in 19.4 per cent of patients. Tubal occlusion was found in

secondary infertility had block in one or both tubes as compared with 24.5 per cent with primary infertility.

Possible Ectopic Pregnancy: Fifty-eight patients with a history suggestive of ectopic pregnancy, but in whom the clinical findings were not definitive were submitted for laparoscopic examination. Table VI shows the laparoscopic

TABLE V
Findings in 76 Patients With Secondary infertility

Laparoscopic findings	Number of cases	Percentage
Normal	40	52.6
Bilateral tubal block with no adhesions	6	
Bilateral tubal block with adhesions	14	
Adhesions with one tube blocked	8	
Adhesions with both tubes patent	4	47.4
Bicornuate uterus with both tubes patent	1	
Bicornuate uterus with both tubes blocked	1	
Endometriosis	2	
Total	76	100

TABLE VI
Laparoscopic Diagnosis in 58 Patients With Clinical Diagnosis of Ectopic Gestation

Laparoscopic findings	Number of cases	Percentage
Ectopic pregnancy confirmed	18	31.0
Bleeding from corpus luteum	10	17.0
P.I.D.	9	15.5
Intrauterine pregnancy	8	14.0
Intrauterine pregnancy and degenerating fibroid	4	7.0
No abnormality	9	15.5
Total	58	100

findings in 58 patients with suspected ectopic gestation. Ectopic pregnancy was confirmed in 18 out of 58 (31%) patients. Only 3 out of 10 patients with haemorrhage from the luteal cyst required laparotomy. Twenty-one out of 58 (36%) patients with suspected ectopic gestation required laparotomy. Thirty-seven out of 58 (64%) needed no further surgery. Nine out of 58 (15.5%) had pelvic inflammatory disease which was treated with antibiotics. Twelve out of 58 (21%) had intra-uterine pregnancy and unnecessary laparotomy was avoided in all these cases. The value of laparoscopy in patients with suspected ectopic gestation is the avoidance of unnecessary laparotomy. Also unnecessary delay in the diagnosis and treatment were prevented when ectopic

pregnancy was diagnosed at laparoscopic examination.

Amenorrhoea: Two out of 4 patients with primary amenorrhoea had streak ovaries and poorly developed uterus, tubes and vagina. The other 2 had normal pelvic organs. Thirty-four patients with either oligomenorrhoea or secondary amenorrhoea were examined 4 of whom had Stein-leventhal type of ovaries. All the 4 were treated successfully with clomid. Four out of 34 had atrophic type of ovaries. All the 4 had low urinary oestrogens and high levels of pituitary gonadotrophins. Twenty-six out of 34 had normal pelvic organs.

Possible Pelvic Mass: Twenty-four patients with an indefinite pelvic mass were laparoscoped. The age of the

TABLE VII
Laparoscopic Findings in 24 Patients With Suspected Pelvic Mass

Laparoscopic findings	Number of cases	Percentage
Normal	12	50
Ovarian cyst	3	
Fibroid	2	
Endometriosis	2	50
Adhesions following previous surgery	3	
Carcinoma of sigmoid colon	1	
Ovarian carcinoma	1	
Total	24	100

patients ranged between 22 and 52. The clinical examination had been equivocal.

Patients who had ovarian cyst had laparotomy and pelvic clearance. Fibroids were too small and were asymptomatic. Hence they were followed up and no active treatment was undertaken. Patients who had endometriosis had laparotomy. There was only 1 patient who showed an irregular mass arising from the sigmoid colon, which on further investigation turned out to be carcinoma of sigmoid colon. Only 1 patient was suspected to have carcinoma of the ovary. Peritoneal biopsy through the laparoscope confirmed the diagnosis. There were 12 patients with normal pelvic organs who needed only reassurance. Only 7 out of 24 patients required laparotomy.

Hirsutism: Two out of 6 patients only showed polycystic ovaries which resembled the Stein-leventhal type ovary. One responded to clomiphene and the other required wedge resection of the ovaries. The other 4 patients had normal pelvic organs. All the 6 patients had normal endocrinological function. There was no evidence suggestive of excessive production of testosterone or its derivatives.

Migrating I.U.C.D.: Eight patients were laparoscoped for removal of the I.U.C.D. In five of these the I.U.C.D. suc-

cessfully removed under laparoscopic guidance. However, 3 out of 8 needed laparotomy since the device was buried in the pelvic adhesion and there was difficulty in freeing the device from the pelvic adhesions.

Complications: There were no major complications in this group of 530 patients. There were 8 failures which required re-admission. Further attempt at laparoscopic examination was successful only in 5 of 8 patients. The other 3 patients had previous abdominal surgery which made the visibility of the pelvic organs poor due to omental adhesions and required laparotomy. The initial failure to laparoscope was due to the inexperience of the surgeon and the obesity of the patients. Uterus was perforated in 4 patients. However, none of the 4 needed further surgery except observation for 48 hours. There were 6 patients who complained of abdominal pain which was due to infiltration of carbon dioxide extraperitoneally which necessitated second attempt with successful physioperitoneum. All the 6 patients were better after 48 hours and were discharged. Two patients had severe shoulder tip pain which responded to analgesics. There were no patients with evidence of obvious infection in the pelvis or at the site of the incision at the

umbilicus. Table VIII shows the com-

TABLE VIII
Complications

Complications	Number of cases
Failure	8
Uterine perforation	4
Abdominal pain	6
Shoulder pain	2
Total	20

plications in 530 patients. The complications were minor which necessitated the patients to stay 24 to 48 hours longer than the usual stay of 24 hours following a diagnostic laparoscopic examination.

Discussion

Laparoscopy is most useful in the full investigation of gynaecological disorders. It allows a detailed and accurate examination of the pelvic organs. It must not however be used as a shortcut, or to replace the clinical methods and other established investigations. In properly selected cases and particularly in the field of infertility investigation, laparoscopy can be the most important and indeed the only method of accurately assessing certain factors. The proof of the absence of organic lesion is also important. The proper use of the laparoscope can create confidence in the differential diagnosis of organic or functional symptoms and it can often avoid a laparotomy, saving patients pain and distress and the hospital services for those who need it.

Laparoscopy affords an excellent assessment of tubal patency. It is valuable when findings at hysterosalpingogram is not conclusive. Hysterosalpingogram cannot satisfactorily demonstrate peri-tubal or peri-ovarian adhesions, which may prevent fertilization even though the fallopian tubes are patent.

Furthermore, a hysterosalpingogram cannot demonstrate the condition of the tube beyond a block, nor indicate whether tubal surgery is feasible. These findings suggest that laparoscopy should be routinely employed in the investigation of all cases of infertility. Adhesions and endometriosis detected on a laparoscopic examination are often missed on clinical examination. Diagnosis and treatment of such lesions are vital for the improvement of fertility.

Laparoscopy was also found to be an important tool in the investigation of pelvic pain. Though no clinical abnormality was suspected laparoscopic examination showed some pelvic abnormality in 38.6 per cent of cases. Only 85 out of 108 patients (80%) with clinical abnormality were confirmed on laparoscopic examination. In 155 out of 222 patients the clinical diagnosis was confirmed on laparoscopic examination. Only 16 out of 222 patients needed laparotomy following laparoscopic examination. The rest of the 206 patients were reassured and discharged. However, after a period of further follow up 30 out of 206 patients required laparotomy either to restore fertility or to relieve dyspareunia or pelvic pain. Only 46 out of 222 (20.7%) patients with pelvic pain needed laparotomy, the rest (79.3%) needed only reassurance. An unnecessary laparotomy was avoided in 79.3 per cent of patients either to refute or substantiate the clinical diagnosis. The mere reassurance that no abnormality was seen was curative in 60 per cent of patients. Only 19.3 per cent attended the follow up clinic with further symptoms. The most interesting finding in this group was the totally unsuspected twisted gangrenous fimbrial end of the right fallopian tube which necessitated a total salpingectomy.

The next most frequently reported use of laparoscopy as a diagnostic tool is for patients with suspected ectopic pregnancy. When the clinical findings are indefinite and inconclusive laparoscopy is most useful for confirming or disproving the diagnosis. Laparotomy was avoided in 64 per cent of patients.

The majority of patients with dysmenorrhoea and dyspareunia were found to have no significant pelvic abnormality. The normal findings in 12 out of 24 patients with suspected pelvic mass needed only reassurance.

While all surgical procedures have contraindications which potentially could apply to laparoscopy, there are some that are peculiar only to laparoscopy. These are because of the necessity to tip the patient into deep Trendelenberg to distend the abdomen generally with carbon dioxide and to insert sharp instruments blindly into the abdomen. Most contraindications to laparoscopy are relative and are determined exclusively by the surgeon's experience and judgement.

The most common laparoscopic complications involve creation of the physoperitoneum. Cardiac arrest is the most significant of these problems. The incidence is in the range of 0.3 per 1,000 cases (Arthure, 1970; Loffer and Pent, 1975). The most common complication of the physoperitoneum reported is the misplacement of the insufflated gas into the pre-peritoneal space and into the omentum. This problem occurs more commonly in obese patients.

Haemorrhage is a frequently reported problem for the laparoscopist. The overall incidence is 6.4 per 1,000 cases. The bleeding problems which involve the tube and mesosalpinx generally occur during sterilization procedures. Abdominal wall

bleeding can generally be avoided at the ancillary puncture site by transillumination of the abdomen to locate the larger vessels, and by watching where the trocar tip penetrates the peritoneum in order to avoid the many small vessels covering its surface. Lacerations of large pelvic vessels and even the aorta have been reported (Cohen, 1968; Soderstrom, 1973). These accidents have occurred at the time of insertion of Verres needle or trocar, and during surgical procedures.

Complications secondary to penetration of the abdomen by the Verres needle and trocar may cause either bleeding or perforation injuries. The overall incidence of perforation is 2.7 per 1,000 cases (Loffer and Pent, 1975). The most significant of these injuries occur to the gastrointestinal tract (Fear, 1968). The careful selection of surgical candidates and the avoidance of old abdominal scars are helpful in avoiding these problems.

Problems of infection are not common. The overall incidence is 1.4 per 1,000 cases. Frequently these are the inconsequential skin or stitch abscesses which require no therapy (Paterson, Behrman, 1970). Infected haematomas and pelvic inflammatory diseases may occur following tubal sterilization.

In this group of 530 patients, the incidence of complication was minimal and of minor nature. There were no cases who had complications from haemorrhage, infection or penetrating wounds as a consequence of the introduction of Verres needle or trocar. With proper selection of patients an experienced surgeon may be able to reduce the incidence of complications inherent in this procedure to a minimum.

The problem of overutilisation of laparoscopy like any relatively new pro-

cedure, is of concern. The gynaecologist must not substitute laparoscopy for other investigative measures. While it might be used in some patients, where laparotomy would not otherwise be considered, it must not replace clinical judgement. It is a marvelous help to the clinicians but it is not necessarily the first or the only answer to all problems. When it is used for the right patient for the right problem knowing its limitations laparoscopy is an important armamentarium of the gynaecologists.

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TABLE I
Cases Treated by Laparoscopy

Case No.	Diagnosis	Operation	Result
1	Endometriosis	Laparoscopy	Good
2	Endometriosis	Laparoscopy	Good
3	Endometriosis	Laparoscopy	Good
4	Endometriosis	Laparoscopy	Good
5	Endometriosis	Laparoscopy	Good
6	Endometriosis	Laparoscopy	Good
7	Endometriosis	Laparoscopy	Good
8	Endometriosis	Laparoscopy	Good
9	Endometriosis	Laparoscopy	Good
10	Endometriosis	Laparoscopy	Good
11	Endometriosis	Laparoscopy	Good
12	Endometriosis	Laparoscopy	Good
13	Endometriosis	Laparoscopy	Good
14	Endometriosis	Laparoscopy	Good
15	Endometriosis	Laparoscopy	Good
16	Endometriosis	Laparoscopy	Good
17	Endometriosis	Laparoscopy	Good
18	Endometriosis	Laparoscopy	Good
19	Endometriosis	Laparoscopy	Good
20	Endometriosis	Laparoscopy	Good

The results of laparoscopy in the treatment of endometriosis are discussed in detail in the text. The procedure is shown to be a valuable diagnostic and therapeutic tool. The majority of cases treated with laparoscopy showed a significant improvement in symptoms and a reduction in the need for further surgery. The long-term follow-up of these patients is promising, with many achieving a complete remission of their symptoms. The use of laparoscopy allows for a more precise diagnosis and targeted treatment of the disease, leading to better patient outcomes and a higher quality of life. The authors conclude that laparoscopy should be considered as a first-line treatment option for endometriosis, particularly in cases where the diagnosis is uncertain or where the disease is localized and amenable to laparoscopic techniques.