

Five Thousand Cases of Diagnostic Laparoscopy in Gynecologic Disorders

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= Abstract = Five thousand consecutive cases of diagnostic laparoscopy were analysed. Infertility was the most common problem which rendered itself to laparoscopic evaluation. Laparoscopy disclosed pelvic abnormalities in 84.6% of 3,401 infertile patients. Tubal occlusion and pelvic adhesions were the most common abnormalities. This study showed a discrepancy rate of 23.0% between laparoscopic and hysterosalpingographic findings in 1,976 infertile patients with regard to the tubal patency. In 55.8% of 369 patients with suspected ectopic pregnancy, the diagnosis was confirmed by laparoscopic examination. And laparoscopic evaluation can circumvent the unnecessary laparotomy in 32.0% of patients. The error in prelaparoscopic diagnosis of obscure pelvic mass was 29.4% and laparotomy was avoided in 17.1% following laparoscopic examination.

Key words: *Diagnostic laparoscopy, Gynecologic disorders, Hysterosalpingography*

INTRODUCTION

Laparoscopy is now a well-recognized tool in the gynecologic practice. It plays a important role in the diagnosis of gynecologic disorders, especially in suspected or unknown cases. Furthermore, it serves as a therapeutic aid in certain gynecologic disorders.

This paper aims to analyze our cases of diagnostic laparoscopies during the past 13 years and to evaluate its usefulness in the diagnosis of gynecologic disorders.

MATERIALS AND METHODS

During a period of 13 years from June 1974 to May 1987 a total of 5,000 diagnostic laparoscopies were performed at the Department of Obstetrics and Gynecology, Seoul National University Hospital. The medical records of these patients were reviewed. The patient's age ranged from 8 to 63 years and the majority (70.1%) were between 25 and 35 years. Parity of patients ranged from 0 to 6.

A previous abdominal operation was not a contraindication to laparoscopic examination. The

technique of laparoscopy was similar to that described by the previous report (Chang 1974). A Fertility Control Assembly Model V(MTI) was used. All laparoscopies were performed by a single puncture technique under local anesthesia. To evaluate the tubal patency, a solution of dilute methylene blue was instilled into the uterus via cervical cannula.

Infertility evaluation included a detailed history, physical examination, semen analysis, basal body temperature chart, endometrial biopsy, postcoital test. A hormonal analysis was carried out if disturbance in ovulation was present. Of the 3,391 infertile patients, 1,976 underwent both hysterosalpingographic and laparoscopic examination and 790 had laparoscopy and/or Rubin's test. Hysterosalpingography was performed using 5 to 10 ml of water-soluble medium (meglumine ioxitalamate) during the proliferative phase of menstrual cycle but manometric control was not used.

RESULTS

1. Indications for diagnostic laparoscopy

The indications for diagnostic laparoscopy are

Table 1. Indications for diagnostic laparoscopy

Indication	No. of cases	%
Primary infertility	1,874	37.5
Secondary infertility	1,517	30.4
Tubal reanastomosis	509	10.2
Possible ectopic pregnancy	369	7.4
Pelvic mass	238	4.8
Primary amenorrhea	151	3.0
Endometriosis	87	1.7
Pelvic pain	68	1.3
Pelvic inflammatory disease	55	1.1
Ambiguous genitalia	32	0.6
Uterine anomaly	24	0.5
Polycystic ovaries	16	0.3
Foreign body in pelvis	8	0.2
Others	52	1.0
Total	5,000	100.0

summarized in Table 1. Infertility was the most common indication. Other common indications were preoperative evaluation prior to tubal reanastomosis, suspected ectopic pregnancy and suspicious pelvic mass.

2. Laparoscopic findings in infertile patients

Table 2 shows laparoscopic findings in 3,391 in-

fertile patients. Of these patients, 525 (15.4%) had normal pelvic findings. Some abnormality was found in 81.6% of patients with primary infertility and 88.1% of patients with secondary infertility. Tubal occlusion was the most common finding; 56.4% of patients in primary infertility, 43.8% in secondary infertility. Pelvic adhesion without tubal occlusion was seen in 16.3% of patients with secondary infertility as compared to 11.7% of patients with primary infertility.

3. Comparison of tubal patency by hysterosalpingography and laparoscopy.

In 1,976 infertile patients, laparoscopic findings were compared with hysterosalpingographic findings in relation to tubal patency (Table 3). Agreement between laparoscopic and hysterosalpingographic findings was found in only 1,522 cases (77.0%). Two hundred fifty-one patients (12.7%) had a false positive hysterosalpingography while 203 patients (10.2%) a false negative hysterosalpingography. Seventy-nine (6.6%) out of 1,200 patients in whom hysterosalpingography showed bilateral tubal occlusions were shown to have both patent tubes at subsequent laparoscopy.

4. Laparoscopic diagnosis in suspected ectopic pregnancies

Three hundred sixty-nine patients with clinical findings of suggestive of but not definite ectopic pregnancy underwent the laparoscopic evaluation

Table 2. Laparoscopic findings in patients with primary and secondary infertility

Laparoscopic findings	Primary infertility		Secondary infertility	
	No.	%	No.	%
Normal pelvic finding	344	18.4	180	11.9
Abnormal pelvic findings	1,530	81.6	1,337	88.1
Tubal occlusion	1055	56.4	743	49.0
bilateral	(682)	(36.4)	(484)	(31.9)
unilateral	(373)	(20.0)	(259)	(17.1)
Pelvic adhesion	220	11.7	248	16.3
Pelvic endometriosis	67	3.6	46	3.0
Polycystic ovaries	59	3.2	43	2.8
Previous salpingectomy	52	2.7	60	4.0
without tubal occlusion	(40)	(2.1)	(22)	(1.5)
with tubal occlusion	(12)	(0.6)	(38)	(2.5)
Myoma nodule	18	0.9	130	8.6
without tubal occlusion	(6)	(0.3)	(44)	(2.9)
with tubal occlusion	(12)	(0.6)	(86)	(5.7)
Others	59	3.1	66	4.4
Total	1,874	100.0	1,517	100.0

Table 3. Comparison of tubal patency by hysterosalpingography and laparoscopy

Hysterosalpin- gography	No. of patients	Laparoscopy					
		Both patent tubes		Unilateral occlusion		Bilateral occlusion	
		No.	%	No.	%	No.	%
Both patent tubes	446	321	71.9	79	17.8	46	10.3
Unilateral occlusion	330	59	17.9	193	58.5	78	23.6
Bilateral occlusion	1,200	79	6.6	113	9.4	1,008	84.0
Total	1,976	459	23.2	385	19.5	1,132	57.3

Table 4. Laparoscopic diagnosis in patients with suspicious ectopic pregnancy

Laparoscopic diagnosis	No.	%
Ectopic pregnancy	206	55.8
unruptured	(165)	(44.7)
ruptured	(41)	(11.1)
Normal pelvic organ	68	18.4
Ovarian bleeding	27	7.3
Pelvic inflammatory disease	14	3.7
Intrauterine pregnancy	9	2.4
Ovarian cyst torsion	8	2.2
Myoma uteri	6	1.7
Uterine rupture	6	1.6
Endometriosis	4	1.1
Others	21	5.8
Total	369	100.0

(Table 4). Ectopic pregnancy was confirmed in 206 patients (55.8%) and normal pelvic findings in 68 patients (18.4%). In 122 (33.1%) of 369 patients, laparotomy was avoided following laparoscopy.

5. Laparoscopic diagnosis in obscure pelvic mass

Two hundred thirty-eight patients with obscure pelvic mass had undergone laparoscopic examination (Table 5). Ovarian cyst was suspected in 141 patients. Of these patients, ovarian cyst was confirmed in 107 patients (75.8%) and pelvic inflammatory disease with adhesion was found in 13 patients (9.2%). Similarly, myoma uteri was suspected in 74 patients and confirmed in 53 (71.6%). The error in prelaparoscopic diagnosis of obscure pelvic mass was 29.4% and unnecessary surgery was avoided in 17.1%.

6. Laparoscopic findings in primary amenorrhea

Table 6 shows the laparoscopic findings in 151 patients with primary amenorrhea. Forty-nine patients (32.5%) were found to have gonadal dysgenesis, 42 (27.8%) were Mayer-Rokitansky-Küster-Hauser syndrome, 33 (21.8%) had uterine agenesis, and in 7 (4.6%) the pelvis was normal.

7. Laparoscopic findings in suspected endometriosis

Eighty-seven patients with suspected endometriosis were subjected to laparoscopy (Table 7). There was a 44.9% correlation between clinical impression and laparoscopic findings. Excluding endometriosis, pelvic adhesion was the most frequent laparoscopic findings.

8. Laparoscopic findings in ambiguous external genitalia

Thirty-two patients were evaluated for ambiguous external genitalia (Table 8). Testicular feminization, gonadal dysgenesis, and uterine agenesis was diagnosed in 11(34%), 8 (25%), 6 (19%) patients, respectively.

9. Complications

There were 9 minor complications and 5 major complications associated with diagnostic laparoscopy. The minor complications consisted of 5 cases of mild wound infection and 4 failures of pelvic visualization. The major complications were two cases of uterine perforation and 3 cases of intestinal perforation by trocar, due to severe pelvic adhesions. These perforations were repaired following laparotomy and the postoperative course was uneventful.

DISCUSSION

Laparoscopy has been a valuable diagnostic

Table 5. Laparoscopic diagnosis in patients with obscure pelvic mass

Clinical impression	No.	Laparoscopic diagnosis	No.	Accuracy
Ovarian cyst	141	Ovarian cyst	107	75.8%
		PID with adhesion	13	
		Hydrosalpinx	6	
		Pelvic hematoma	5	
		Ectopic pregnancy	4	
		Ovarian cyst with pregnancy	4	
		Myoma uteri with cystic degeneration	1	
		Cornual pregnancy	1	
Myoma uteri	71	Myoma uteri	53	71.6%
		Ovarian cyst	6	
		Cornual pregnancy	4	
		Bicornuate uterus with pregnancy	3	
		PID with adhesion	3	
		Normal pelvic organ	5	
Ovarian malignancy	10	Ovarian malignancy	3	30.0%
		PID with adhesion	3	
		Ovarian cyst with adhesion	2	
		Rectal cancer	2	
Endometriosis	8	Ovarian endometriosis	3	37.5%
		Ovarian cyst	3	
		Myoma uteri with adhesion	2	
Others	5	Pelvic tuberculosis	3	—
		Severe pelvic adhesion	2	
Total	238			70.6%

Table 6. Laparoscopic findings in patients with primary amenorrhea

Laparoscopic findings	No.	%
Gonadal dysgenesis	49	32.5
MRKH syndrome	42	27.8
Uterine agenesis	33	21.8
Polycystic ovaries	9	6.0
Normal pelvic organ	7	4.6
Others	11	7.3
Total	151	100.0

MRKH syndrome: Mayer-Rokitansky-Küster-Hauser syndrome

Table 7. Laparoscopic findings in patients with suspected endometriosis

Laparoscopic findings	No.	%
Endometriosis	39	44.9
Pelvic adhesion	22	25.3
Normal pelvic organ	13	14.9
Pelvic congestion syndrome	8	9.2
Myoma uteri	3	3.4
Ovarian cyst	2	2.3
Total	87	100.0

method in various gynecologic disorders. Infertility is one of the prime problems that subject themselves to laparoscopic investigations. In this study infertility was the most common indication for di-

agnostic laparoscopy, like most of previous reports (Liston *et al.* 1972; Loffer and Pent 1975).

Laparoscopic examination disclosed pelvic abnormalities in 84.6% of 3,401 infertile patients. There were slightly higher abnormal laparoscopic findings in secondary infertility (88.1%) than in

Table 8. Laparoscopic findings in patients with ambiguous external genitalia

Laparoscopic findings	No.	%
Testicular feminization syndrome	11	34.4
Uterine agenesis	8	25.0
Gonadal dysgenesis	6	18.8
Polycystic ovaries	3	9.4
Normal pelvic organ	2	6.2
Failed	2	6.2
Total	32	100.0

primary infertility (81.6%). This is similar to the result of Duignan *et al.* (1972), but in contradistinction with the report of Musich and Behrman (1982), who found 48% of patients with primary infertility had laparoscopic abnormalities whereas 35% of those with secondary infertility had positive findings. Tubal occlusion was the most common pelvic abnormality.

The inaccuracy in tubal evaluation by hysterosalpingography is well appreciated in the literature. Discrepancy rate between hysterosalpingography and laparoscopy has been reported in the range of 10 to 54% (Coltart 1970; Maathius *et al.* 1972; Lapido 1976; Kim *et al.* 1981; Philipsen and Hansen 1981; Donnez *et al.* 1982). This study showed a disagreement of 23.0% between laparoscopic and hysterosalpingographic findings in infertile patients with regard to the tubal patency.

Evaluation of those cases showing tubal blockage by hysterosalpingography revealed interesting findings. Of 1,200 cases showing bilateral tubal blockage by hysterosalpingography, 192 (16%) cases were proved to have at least one patent tubes at laparoscopy. Furthermore, 79 cases were proved to have both patent tubes. False positive hysterosalpingographic findings have been reported in the range of 5-24% (Peterson and Behrman 1970; Keirse and Vandervellin 1973; Moghissi and Sin 1975; Servy and Tzingounis, 1978; Snowden *et al.* 1984). These false positive findings can be explained by tubal spasm, a difference in the viscosity of contrast medium, erroneous interpretation of the results and an improper technique in hysterosalpingography, for example, injection of insufficient contrast medium (Coltart 1970; Maathius *et al.* 1972; Swolin and Rosencrantz 1972; Boyd and Holt 1973; Elminawi *et al.* 1978; Philipsen and Hansen 1981).

False negative hysterosalpingographic findings

have been reported in the range of 8-57% (Gabos 1976; Hutchins 1977; Elmimawi *et al.* 1978; Servy and Tzingounis 1978). In this study hysterosalpingography had a false-negative rate of 10.2% for tubal patency. These discrepancies can be considered to be due to the lapse of time between the two procedures and mechanical problems associated with chromopertubation at laparoscopy (Israel and March 1976). In addition to affording accurate assessment of tubal patency, laparoscopy also reveals pelvic adhesion and endometriosis, which cannot be readily diagnosed by pelvic examination or hysterosalpingography. In this series, pelvic adhesion and endometriosis were found following laparoscopy in 13.8% and 3.3% of infertile patients respectively.

Since 1980 when the microsurgical tubal sterilization reversal center was established in our hospital, the preoperative evaluation to determine the feasibility of reversing previous tubal sterilization procedures has been gradually increased. In this study it was the third most common indication for diagnostic laparoscopy.

Laparoscopy is valuable for establishing a definite diagnosis in clinically suspected ectopic pregnancy and preventing the unnecessary surgery which carries an increased morbidity (Neurwith 1970; Esposito 1972; Anteby *et al.* 1973). In this series unnecessary laparotomy was avoided in 32.0% of 369 patients and in 44.7% of patients early diagnosis and treatment of unruptured ectopic pregnancy prevented the catastrophic bleeding seen after rupture.

Pelvic mass can pose difficult diagnostic problems. The inadequacy of pelvic examination to clearly identify pelvic mass has been demonstrated (Smith and Dillon 1970; Neurwith 1970; El-Minawi *et al.* 1984). El-Minawi *et al.* (1984) reported that the diagnostic accuracy rate of laparoscopy was 97.8% while that of pelvic examination was 72.8%. In the present study the error in prelaparoscopic diagnosis of obscure pelvic mass was 29.4% and in 17.1% of patients unnecessary surgery was avoided. Laparoscopy is also of great diagnostic value in patients with amenorrhea, pelvic pain, suspected endometriosis, and ambiguous external genitalia.

The complication rate in this series (0.28%) compares favorably with other reports (Soderstrom and Butter 1973; Frankel *et al.* 1981). There were 5 major complications and 9 minor complications but no mortality occurred. The most common problem complicating the procedure was severe pelvic

adhesion.

Conclusively laparoscopy is a safe, reliable and confirmative diagnostic procedure in gynecologic disorders, and can circumvent unnecessary laparotomy in some cases by providing a definite diagnosis.

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= 국문초록 =

진단적 복강경술의 부인과적 이용 —5,000예의 분석—

서울대학교 의과대학 산부인과학교실

장윤석 · 이진용 · 강순범 · 문신용 · 김정구 · 최영민

1974년 6월부터 1987년 5월까지 서울대학교병원 산부인과에서 시행된 5,000예의 진단적 복강경술을 대상으로 통계적분석을 하였던 바 다음과 같은 결론을 얻었다.

1. 적응증은 원발성 및 속발성 불임증환자가 3,391예 (67.9%)로 가장 많았고, 난관복원술 전에 시행했던 경우가 509예 (10.2%), 자궁외임신이 의심되는 환자가 369예 (7.4%), 불확실한 종괴가 238예 (4.8%), 원발성 무월경이 151예 (3.0%) 등의 순이었다.
2. 불임증환자의 경우 86.4%에서 골반내 이상소견을 보였는데, 양측난관 폐쇄가 34.4%, 편측난관폐쇄가 18.6%, 골반내유착이 13.8%, 자궁내막증이 3.3%, 다낭성난소가 3.0%로 나타났다.
3. 자궁난관조영술과 진단적 복강경술의 일치율은 77.0%이었다.
4. 자궁외임신이 의심되었던 369예에서 복강경술을 시행한 결과 206예 (55.8%)에서 자궁외임신으로 확진되었으며 이중 165예 (44.7%)는 비과열성 자궁외임신으로서 복강경술에 의하여 조기에 진단할 수 있었다.
5. 골반내종양이 의심되었던 238예에 있어서, 임상적진단의 오류는 29.4% 이었으며, 17.1%에서 불필요한 개복수술을 피할 수 있었다.