

Diagnostic Gynaecological Laparoscopy

Dr. Neil Sharma,
Dept of Obstetrics and Gynaecology,
CWM Hospital, Suva.

INTRODUCTION

Laparoscopy or peritoneoscopy is endoscopic visualization of the peritoneal cavity through the anterior abdominal wall after establishment of a pneumoperitoneum. Gynaecological laparoscopy refers to the application of this technique for the diagnosis of obscure pelvic diseases.

The purpose of this commentary is to review the author's experience with diagnostic laparoscopy in establishing a definitive diagnosis in patients with pelvic pain. This remains one of the perplexing problems in gynaecological practice. Relevant comments will be made on the various features of the procedure with a review of the literature.

HISTORY

Laparoscopy as a procedure was documented as early as 1901. Ott of Petrograd was the first to introduce optical inspection of the abdominal cavity. By means of culdotomy, vaginal retractors and a head mirror with incandescent light, he was able to visualise the pelvic and abdominal organs. The patient was placed in a steep Trendelenburg position under deep general anaesthesia during the procedure.

Kelling of Dresden in 1901 performed abdominal laparoscopy on a dog and this first-recorded method of endoscopy is quite similar to techniques now employed.

Jacobaeus of Stockholm in 1910 was the first to describe laparoscopy in humans, although he did not use a preliminary pneumoperitoneum as he used the procedure mainly in patients with ascites. In 1946, Palmer perfected the technique and reported 250 cases in which the method was used without serious accidents.

He stressed the use of an intrauterine cannula in order to manipulate the pelvic organs and improve visualisation.

Since 1957, Frangenheim has published many treatises on laparoscopy and stressed general anaesthesia, extreme caution in inducing pneumoperitoneum, and the avoidance of puncture through previous laparotomy scars. The laparoscope of Frangenheim remains one of the standard optical instruments available today although more refined with additional facilities for biopsy, suctioning, probing, cutting and electrocoagulation.

The Laparoscope

This is a rigid instrument varying in diameter from 4mm to 10mm. It incorporates an optical system plus a means of illumination. The optical system employs glass optics and

focussing of the laparoscope is not necessary. The objective of the scope is directed forward 180° or fore oblique at 135°. Modern illumination systems are provided with the fibre optics incorporated in the laparoscope. A lens system focuses the light at the proximal tip of the fibre optic bundle. The light transmitted as it enters the laparoscope remains 'cold'.

The Verre's Needle

This is a needle with an automatic spring action that combines an outer sharp point and an inner dull stylet. This needle is utilised to create the pneumoperitoneum.

The Trochar and Valved Cannula

The trochar is of the same diameter as the laparoscope. It fits into the valved cannula when the valve is depressed and it extends 1 to 1.5cm beyond the end of the cannula so that it may be easily thrust into the peritoneal cavity after creation of the pneumoperitoneum.

The tip of the trochar may be conical or pyramidal and the one used at the National Women's Hospital is of the pyramidal type.

The diameter of the valved cannula is usually 1mm greater than the diameter of the trochar or the laparoscope. The cannula remains a hollow tube incorporating a valve which is necessary to prevent the escape of intraperitoneal gas when the laparoscope is exchanged for the trochar. Distal to the valve is a stopcock to which tubing from the carbon dioxide source may be attached. At the end of the trochar are perforations which allow the release of gas lost or absorbed due to laparoscopy.

Ancillary Equipment

A second trochar and cannula and a manipulative probe can be used to perform surgical procedures by way of the laparoscope.

A Jarcots intra uterine cannula is used to stabilise the uterus along with Littlewood forceps and provides one the ability to manipulate the uterus and visualize the pelvis in its entirety.

APPLICATION

The laparoscope is a valuable clinical tool that has changed gynaecologic practice. It can confirm a clinical impression; establish a definitive diagnosis, follow the course of a disease and modify therapy. Certain operative procedures can be accomplished alos.¹ This includes tubal

sterilization, uterine suspension, ovarian cyst aspiration and biopsy of intraperitoneal structures. It can also be an option to exploratory laparotomy in cases of obscure pelvic pain.^{2 3 4}

STUDY

The study consisted of 10 cases which were personally tended to by the author over a two month period, whilst the author was attached to the National Women's Hospital, Auckland.

All the patients were referred to the hospital with a history of abdominal pain either acutely or through the gynaecological clinic.

Necessary clinical examination and routine investigations were carried out. This included urine pregnancy tests, urinalysis for infection, a haematological profile and ultrasound scanning if necessary.

When the diagnosis remained in doubt a diagnostic laparoscopy was carried out to ascertain the underlying pathology. Based on this, further management of the case was carried out. Retrospective analysis of the data was then carried out.

TECHNIQUE

All laparoscopies were performed with the patients under general anaesthesia with cuffed endotracheal tube. Following induction of general anaesthesia the patients were placed in a modified lithotomic position allowing access to the perineal region as well as the abdomen.

The perineum and abdomen were swabbed and draped. The bladder was catheterised and a bimanual examination carried out. Subsequently two Littlewood forceps were attached to the cervix and a Jarcots intra-uterine cannula inserted and attached to the two Littlewood forceps for stabilisation.

Abdominally a subumbilical crease incision of 1cm was made. A Verre's needle, after checking for patency, was inserted into the peritoneal cavity and generally a 3 litre pneumoperitoneum created.

Percussion of the abdomen and liver areas and respiratory excursions on the pressure gauge guided the operator during the insufflation, i.e. that carbon dioxide gas was entering the appropriate cavity. In the event of raised pressure, gas was released and the Verre's needle resited appropriately.

The trochar and cannula were inserted through the same incision on removal of the Verre's needle, and a corkscrew motion was used to direct the apparatus into the peritoneal cavity. When the abdominal wall was thick, the operators left hand lifted up the abdominal wall whilst the right hand directed the trochar and cannula into the peritoneal cavity.

The laparoscope was inserted with the light source switched on and the pelvic and abdominal viscera visualised. If difficulty occurs in total visualization then a second trochar and cannula were inserted through a suprapubic midline transverse incision of about 1cm. A manipulative probe was introduced through this cannula to follow the various structures in their entirety.⁵

Table I
Correlation of Clinical and Laparoscopic Findings

Name Hosp. No.	Age	Gravidy/ Parity	Symptoms	Clinical Findings	Ultrasound Scan	Laparoscopic Findings
Mrs H.C. 206 DN2040	42	2/2	Lower abdominal pain — 15 years duration	Cervical excitation — Vaginal Mass felt.	Not done	NAD *
Mrs M.P. 206 DN1847	26	1/0	? Ectopic pregnancy Lower abdominal pain	Bulky uterus — Pouch of Douglas Mass. Pregnancy test negative	Empty uterus	1. Ectopic (R) Proceeding to Laparotomy. 2. Dermoid (R) Ovary 3. Endometriosis
Mrs R.O. 206 DN1642	18	0/0	Lower abdominal pain ? Ectopic	Tenderness left Adnexal region	Empty uterus	NAD *
Mrs J.E. 206 CN5667	44	3/3	Lower abdominal pain	Vague Tenderness	Not done	NAD *
Mrs D.P. 206 DN0407	21	0/0	Lower abdominal pain	Nil	Not done	NAD *
Mrs M.M. 206 CN7479	25	0/0	Lower abdominal pain	Nil	Not done	NAD *

Mrs S.M. 206 DN1414	30	1/0	Lower abdominal pain Menstrual irregularity for 1 week	Bulky uterus Vague pelvic mass	No anomalies detected	Unruptured ectopic pregnancy proceeded to laparotomy
Mrs S.H. 206 DN1415	38	3/3	Lower abdominal pain for 10 days	Vague pelvic mass	No anomalies detected	Focus of pus and a right tubo-ovarian mass proceeded to laparotomy
Mrs S.J. 206 BN4279	23	2/2	Lower abdominal pain for one month	Vague pelvic fullness	No anomalies detected	NAD *
Mrs M.M. 206 DN1288	18	0/0	Low abdominal pain 2 years. Dyspareunia for three months	Nil	Not done	NAD *

NOTE:— NAD = NO ABNORMALITY DETECTED.

Table II
Laparoscopic Findings in this Series:

Findings	No.
Normal Findings	7
Ectopic Pregnancy	2
Ovarian Cyst	1
Endometriosis	1
Pelvic Infection	1
TOTAL CASES	10

DISCUSSION

The study group was generally healthy and young. The age ranged between 18 and 44 years with a median of 28.5 years.

The gravidy and parity of the group was evenly distributed with 4 patients being nulligravidae whilst 3 patients had three living children.

Based on their symptomatology, clinical examination was carried out and in view of nondescript findings a diagnostic laparoscopy resorted to. Whenever an ectopic pregnancy was suspected, additionally an ultrasound scan examination was carried out. This examination did not help materially in the three cases of this study although used in conjunction with clinical findings and Human chorionic gonadotrophin levels (HCG — urine and plasma β -subunit) it can help in the evaluation of abdominal or pelvic pain.^{6 7} (Kadar N et al, 1982).

Diagnostic laparoscopy is not without risk and complications can arise with the procedure itself. This is especially so in the creation of pneumoperitoneum.⁸

In this study no complications occurred and patients were discharged within 24 hours if laparotomy had not been undertaken secondary to the 'scope' procedure.

This study remains small and 3 cases needed laparotomy. Seven cases were saved major surgical intervention and subsequent patient morbidity. Of interest, is the single

patient who had three different pathologies noted on laparoscopy: namely a dermoid cyst, deposits of endometriosis and an unruptured ectopic gestational sac (Table I).

Several large studies have shown that abnormal pre-operative vaginal examination correlates better with abnormal findings on laparoscopy¹ (Cunanen et al, 1983). In this study 3 cases had no abnormal findings on bimanual examination and laparoscopic findings in these cases were normal. Of the 7 cases with abnormal clinical findings, 3 indeed had abnormal laparoscopic findings whilst 4 had no abnormal findings. This is contrary to the larger study by Cunanen et al. This difference is due to the very small number of cases in this study group.

On the other hand where no organic pathology was determined on laparoscopy, the patients were appropriately reassured and the etiology of the pelvic pain sought elsewhere. Of interest was that 3 of these patients, on further interrogation had family histories of genital or pelvic malignancy, and felt reassured that they were not 'doomed'.

In these cases on subsequent review, the pelvic pain had fully resolved. Consequent to this, the author now directly questions all patients with pelvic pain on their fears of malignancy at the initial review.

CONCLUSION

This review supports the view that diagnostic gynaecologic laparoscopy remains a valuable tool in the armamentarium of the gynaecologist.

The error in clinical diagnosis varies and diagnostic laparoscopy provides better correlation between symptoms and the disease entity.

Diagnostic laparoscopy provides us with a definitive diagnosis in patients with pelvic pain. In the event of no organic findings patients are reassured and the oetiology of pain was sought elsewhere.

Many psychosomatic and functional disturbances manifest in the lower abdomen and their diagnostic differentiation from organic diseases are often in question.⁹

Diagnostic laparoscopy carries low operative risks, provides good diagnostic information and remains an excellent diagnostic tool for the evaluation of pelvic pain.¹⁰

References:

1. Cunanan R G et al. Laparoscopic findings in patients with pelvic pain. Am J. Obstet. Gynaecol., July 1, 1983; 589-592.
2. Punnonen R. Diagnostic Gynaecologic Laparoscopy — Analysis of 1226 Cases — Asia — Oceania Journal of Obst. and Gynaecology. Vol. 9 No. 2 June, 1983; 199-202.
3. Serour G I et al. Laparoscopy on Patients with previous Lower Abdominal Surgery — A New Technique, Int. J. Gynaecol. Obstet, 1982, 20; 357-361.
4. Gupta N et al. Diagnostic Laparoscopy in Gynaecology. Journal of Indian Medical Assn., Vol 79 No. 9&10 Nov. 1982; 134-137.
5. Cohen M R. Laparoscopy, Culdoscopy and Gynaecography Techniques and Atlas. Vol. 1 Series on Major Problems in Obstetrics and Gynaecology 1970, W.B. Saunders Company.

6. Kadar N et al. The Timing of a Repeat Ultrasound Examination in the evaluation of Ectopic Pregnancy. J. Clin. Ultrasound, 10: 211-214, May-June 1982.
7. Kadar N et al. Discriminatory HCG Zone: Its use in the sonographic evaluation of ectopic pregnancy. Obstetrics and Gynaecology. Vol. 58, No. 2, August 1981.
8. Gynaecological Laparoscopy, 1978. The report of the Working Party of the confidential Enquiry into Gynaecological Laparoscopy conducted by the Royal College of the Obstetricians and Gynaecologists. Ed. Chamberlain G et al.
9. Gynaecological Pain in the Lower Abdomen McFayden I, 1981. Clinics in Obst, and Gynae. Vol. 8, No. 1 April, 1981 pp 33-47.
10. Perone N. Conventional vs Open Laparoscopy, American Family Physician. Vol. 27 (2): 147-149, Feb. 1983.


Acknowledgement:

This paper is published with the permission of the Permanent Secretary for Health.



FUJI


The mark of excellence...



FUJI MEDICAL X-RAY FILMS

Reliability for you and your patients.

The first choice of major hospitals throughout the world.
Also used by hospitals throughout Fiji.



FUJICOLOR FILMS

Used and appreciated by millions of people around the world. In fact in 120 countries of the world 10 million pictures a day are taken on Fuji Film. For great shots get the green box.




Sole Distributors :—

BRIJLAL & Co Ltd

70 - 72 Cumming Street, Suva.