

THERAPEUTIC LAPAROSCOPY IN INFERTILE PATIENTS

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Laparoscopy is a procedure that has a definite place in the surgical armamentarium of the gynaecologist. It is an excellent tool for diagnosis of patients with problems of infertility, acute or chronic pelvic pain, endocrine disorders and adnexal pathology including unruptured ectopic gestation (Cohen, 1970; Semm, 1975; Wheelless, 1976; Steptoe, 1973; Motashaw *et al* 1977; Padma Rao, 1977; Mark, 1979 and Corson, 1979). The scope of laparoscopy is expanding as more and more experience is gained, and presently laparoscopy, essentially a diagnostic procedure, is employed with increasing frequency in the operative treatment of infertile women. (Steptoe and Edwards, 1970; Semm, 1975; Marik, 1979; Motasaw *et al* 1977; Khandwala, 1979; Corson, 1979, and Feichtinger *et al* 1981).

Operative laparoscopy is a potential additional benefit to the diagnostic procedure, and offers valuable therapeutic measure of by a variety of surgical procedures possible. This operative technic is an extension of diagnostic laparoscopy performed in infertile women, and is made possible by a variety of less traumatic, safer accessory instruments, and thus obviates the need for a laparotomy in many occasions.

Now most gynaecologic operations, except hysterectomy, have been attempted through laparoscope. However, laparoscopic operations relevant to management of infertility are tubal lavage (chromoper-tubation), lysis of adhesions, fimbrial dilatation, salpingostomy, fulguration of endometriosis, resection of endometrial deposits, aspiration of ovarian follicular cysts or endometrial cysts, recovery of ova, removal of tubal prostheses, ovarian biopsy, uterosacral resection, myomec-tomy, uterine ventral suspension and deposition of sperms in the fallopian tubes (Corson, 1979).

We have employed laparoscopy as the integral part of infertility work-up, and feel that infertility evaluation is incomplete without a proper endoscopic inspec-

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tion of the pelvis. Concomitant with the diagnostic procedure we have carried out certain operative procedures which could be diagnostic as well therapeutic, and our experience with the different types of operative laparoscopic procedures is presented:

Materials and Methods

We depend on hysterosalpingography as the reliable investigative procedure to begin with the evaluation of tubal and uterine factors (Rajan and John, 1978, and Rapan and Joseph, 1979, 1980 and 1981), and our indications for diagnostic laparoscopy are given in Table I. We feel that the diagnostic accuracy and our decision for treatment achieve a high standard by employing HSG and laparoscopy as complementary procedures (Rajan and Joseph, 1982).

TABLE I
Indications for Infertility Laparoscopy

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|----|---|
| 1. | Evaluation of hysterosalpingographic abnormality |
| 2. | History or clinical findings suggestive of endometriosis |
| 3. | Unexplained infertility of more than 1 year's duration |
| 4. | Infertile females above the age of 30 years |
| 5. | Failure to conceive after 6 to 8 donor insemination cycles |
| 6. | Amenorrhoeic or oligomenorrhoeic subjects requiring study of ovarian status |

All patients undergoing diagnostic laparoscopy for infertility evaluation were included in this study. At laparoscopy, after proper and detailed inspection of the pelvic organs, chromopertubation was always performed using dilute methylene blue solution. Periovarian adhesions were lysed whenever possible with accessory laparoscopy forceps. We employ the double-puncture technic and the operative

instruments were passed through the second puncture made at the suprapubic region. Peritoneal adhesions involving the broad ligament either due to endometriosis or inflammatory condition were lysed and the raw area was cauterised with coagulation forceps. Endometriomas on the peritoneal surface, ovary, surface of uterus or uterosacral ligaments were either fulgurised or excised. The amount of endometriosis was carefully staged in all cases, using the classification of Acosta *et al* (1973). Follicular cysts were punctured and fluid aspirated out. Whenever required ovarian biopsy was performed and bleeding was controlled by bipolar coagulation. After any procedure which involved spilling of blood into peritoneal cavity copious saline irrigation was performed which was then aspirated from the pelvis by suction cannula.

Laparoscopy was optimally scheduled in the early luteal phase of the cycle to identify the early corpus luteum with the stigma. Examination under anaesthesia, careful uterine sounding, timed endometrial biopsy and cervical cauterisation if required were the other additional procedures carried out concurrent with operative laparoscopy.

During diagnostic laparoscopy those therapeutic operative procedures that could be completed through laparoscope were carried out by an expanded approach of operative laparoscopy. But obvious cases of tubal block and other pelvic masses were managed by laparotomy reconstructive procedures, either concurrently with the endoscopic procedure or on a subsequent date.

Operative Procedures

Over a period of 2 years we have performed laparoscopy for 81 infertile women, essentially for diagnosing or confirming a

pelvic or endocrine cause for the barren union. While 33 women had no pelvic pathology to account for the infertility, the common aetiological factors diagnosed at endoscopic inspection were endometriosis, pelvic inflammatory adhesions, obstructive lesions of the fallopian tubes and ovulatory dysfunctions (Table II).

TABLE II

Laparoscopic findings in 81 Infertile Subjects

1. Unexplained infertility with no pelvic findings	33
2. Endometriosis	12
3. Pelvic inflammatory conditions	8
4. Bilateral cornual block	8
5. Unilateral tubal block	2
6. Unilateral hydrosalpinx	1
7. Polycystic or sclerocystic ovaries (anovulation)	3
8. Follicular cysts	2
9. Uterine fibroids	5
10. Post-tubectomy (pomeroy's)	2
11. Genital tuberculosis	1
12. Uterus didelphys	1
13. Laparoscopy not completed	3

Among the operative procedures attempted during the endoscopic evaluation the commonest was tubal lavage (Chromosalpingoscopy or chromopertubation) performed in 60 patients. Fulguration of endometrial implants was done in 5 patients, and resection and cauterisation of endometrioma was done in 1 patient. One patient with ovarian adhesions due to endometriosis had ovariolysis and fulguration of surface deposits. Peritoneal adhesions involving the broad ligament were lysed in 2 subjects.

In addition to ovariolysis and fulguration of surface deposits the other operations performed on the ovary included ovarian biopsy in 2 patients and puncturing and aspiration of follicular cysts in 2 patients. After completion of operative procedures which involve some bleeding,

copious saline irrigation was performed and the pelvic cavity was cleansed by suction cannula, and this procedure was necessitated in 3 patients. As a routine the dye collected in the cul-de-sac following chromopertubation was aspirated out in all patients at the end of the procedure.

TABLE III

Laparoscopic Operations

1. Tubal lavage (chromopertubation)	60
2. Fulguration of endometriosis	5
3. Resection and cauterisation of endometrial implants	1
4. Lysis of adhesions	2
5. Release of ovarian adhesions and fulguration of endometriosis	1
6. Ovarian biopsy	2
7. Puncture of follicular cysts and aspiration	2
8. Peritoneal lavage	3

Discussion

Wherever possible if operative corrections could be completed through laparoscopy the patient gets the benefit of simple and comfortable operative procedure requiring minimum period of hospitalisation. Moreover operative laparoscopy can be repeated without severe stress to the patient. As far the operative procedures of the fallopian tube, all the objectives, namely, establishment and maintenance of tubal patency, avoidance of post-operative adhesions and elimination of chances of infections are well met by operative laparoscopy. (Mettler *et al*, 1979).

Tubal lavage may be diagnostic as well as therapeutic in a manner similar to HSG. Not infrequently, pregnancy has occurred within one to more cycles following chromopertubation at laparoscopy. In our present series we have recorded 6 conceptions occurring following diagnostic

laparoscopy which included tubal lavage. Similar therapeutic effect has been reported by Eorson (1979).

Surgical treatment of endometriosis, excision of endometriomata, release of adhesions and fulguration of surface implants, is an attractive proposition and is rewarded by impressive results which are comparable to laparotomy corrections. Eward (1978) has reported a conception rate of 80% and 71% respectively for stage I and II endometriosis. Combined laparoscopic surgery and Danazol therapy for mild and moderate endometriosis has also been favoured for further improvement in success rate (Daniell and Christianson, 1981).

Although controversial, aspiration of simple ovarian follicular cysts may increase fertility through better ovarian-tubal positional relationships (Corson, 1979). This method of puncturing the follicular cysts may also correct the ovulatory dysfunction that may be compromising the fertility. Hence it is felt that during endoscopic inspection of infertile subject if follicular cysts are located they are best punctured and if the puncture site bleeds haemostasis obtained by electrocoagulation.

Gomel (1975) has reported on the value of laparoscopic salpingolysis and dilatation of phimotic ostia. Similarly, successful outcome has been reported following ovariolysis, salpingolysis, fimbrioplasty, and salpingostomy through the laparoscope (Metter *et al*, 1978).

Removal of ovarian tissue from polycystic ovaries for examination may have a therapeutic value similar to that of conventional wedge resection (Marik, 1979). Biopsy from the ovary may be technically difficult because the ovarian surface is firm and smooth. However, we have found that the site from which tissue is removed

usually does not bleed heavily, and haemostasis can be accomplished by cauterisation.

Conclusion

Quite often diagnostic laparoscopy is resorted to in women who have no explainable cause for their infertility as revealed by the basic infertility work-up. In such patients as well as in those who require a confirmation of pelvic pathology detected by other investigative procedures, if the diagnosed pelvic disorder could be successfully operated by extension of diagnostic laparoscopy into an operative laparoscopy it certainly offers something more to the patient. The patient stands to benefit through operative laparoscopy which can be shown to be an optimal method for the treatment of well-defined cases of infertility with a minimum of physical stress, a shortened hospitalisation time, a lower operative risk, and a decreased incidence of postoperative infection and adhesions. This procedure also allows for a possibility for repeat endoscopy or subsequent laparotomy.

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