

LAPAROSCOPIC AND LAPAROTOMY TREATMENT OF ENDOMETRIOSIS

By

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SUMMARY

Endometriosis is the commonest cause of female infertility, and is encountered in 32.46% of diagnostic laparoscopies performed in infertile subjects. Among the conservative pelvic surgeries (laparotomies) performed for treatment of infertility, 44.39% were for endometriosis.

Since diagnostic laparoscopy is performed more frequently and very liberally, more number of endometriosis are diagnosed at the stage of mild to moderate disease. This approach offers for early and effective treatment of endometriosis by extension of diagnostic laparoscopy to operative laparoscopy.

It is felt that endometriosis, wherever possible, should be operated through laparoscopy, either by endoscopic fulguration or fulguration and adhesiolysis. This approach offers lot of advantages to the patient with no additional risk over the diagnostic procedure.

The overall pregnancy rate for conservative infertility surgery for endometriosis is 47.91%. More than one third of the conservative surgeries were carried out through laparoscopy, (37.21%), and among the 103 subjects reporting pregnancy 36.89% were following laparoscopic treatment of endometriosis.

Among those subjects with severe degree of endometriosis undergoing laparotomy, unilateral adnexal removal and conservative surgery on ovaries carry a high pregnancy rate, which ranges between 51.67% for the latter and 73.68% for the former.

Introduction

Infertility, inability to conceive within one year of marriage with unprotected coitus, is experienced by 10 to 15 per cent of married couple in our part of the country. As a single factor, male fertility disorder constitutes the most com-

mon infertility factor in 30 to 53% of the infertile couple. Excluding male factor, we observe that endometriosis is the commonest cause of infertile union. Our recent estimate among 983 infertile subjects undergoing either laparoscopy or laparotomy has been that 250 patients (25.43%) have pelvic endometriosis which could contribute to the fertility problem of the couple (Rajan, 1987). It has also been observed that ovulatory

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dysfunction is the next common etiology for infertility in 15% of subjects, and anovulatory subjects seldom have associated endometriosis as proved at laparoscopy (Rajan, 1988).

While severe degree of pelvic endometriosis is a well recognised cause for infertility, an effect mediated by the altered tubo-ovarian anatomy and ineffective ovum pick-up, there is much controversy as to the causative role of infertility in subjects with mild to moderate endometriosis (Schmidt, 1985). Nonetheless, recent reports attribute a definite antifertility role for mild to moderate endometriosis. This is proved by studying the frequency of an independent fecundity-reducing factor in women with and without endometriosis, and the final conclusion is that endometriosis is not merely a consequence of infertility, but rather a direct contributor to the decrease in fertility (Teal *et al*, 1986). Other evidences come through increased incidence of conceptions following treatment of mild to moderate endometriosis, as proved by improved ovulatory response to danazol therapy (Dmowski *et al*, 1986), and a high conception rate following laparoscopic fulguration of endometrial implants (Fayez *et al*, 1986).

If mild to moderate endometriosis do not alter the tubo-ovarian anatomy question arises as to how these lesions cause infertility. Dmowski (1987) considers endometriosis as an autoimmune disease and suggests treatment with danazol which functions as an immunosuppressive agent. The possible role of interleukin-I, the peritoneal concentration of which is high in endometriosis, has been recently considered in the pathogenesis. This protein produced by the macrophages (macrophages concentration is increased in endometriosis) induces pro-

staglandin and fibrinogen synthesis and stimulate fibroblast proliferation. Interleukin-1 causes inhibition of embryo cleavage and induce mostly degenerative changes in the embryos (Fakih *et al*, 1986). Kistner has observed (1984) a higher incidence of anovulation and corpus luteum insufficiency in subjects with mild to moderate endometriosis.

It has been well recognised that endometriosis, irrespective of the severity, is optimally and precisely diagnosed by a skillfully performed diagnostic laparoscopy. In the first round of infertility evaluation, after excluding an obvious male fertility disorder, we divide the patients into 3 groups: (i) No clinically detected pelvic disorder and having regular menstruation; (ii) menstrual disorders evidencing an endocrine infertility and other supportive findings; (iii) and those with a pelvic factor detected such as a pelvic mass or tender beeding of cul-de-sac. We avoid evaluation of pelvic factor (HSG and laparoscopy) in group II subjects, because the incidence of pelvic factor in these subjects is as low as 6.5%. However, group I subjects (25 years and above married 3 years or more) certainly need a thorough endoscopic evaluation because a pelvic factor, quite often mild to moderate endometriosis, is diagnosed in 33% of such subjects (Rajan, 1986).

The purpose of this communication is to insist that the surgeon should not just stop at endoscopic diagnosis of endometriosis, but must proceed further to operate on the endometriosis through the endoscope. Wherever possible a laparotomy should be avoided, and as proved in this study it should be possible at least in 37.21% of occasions. It is also highlighted that subjects with mild to moderate endometriosis are highly suited for

endoscopic treatment, and selected subjects with severe degree endometriosis could also be operated through the laparoscope. This approach has many advantages to its credit without adding to the risk of the diagnostic procedure. Our observation that 36.89% of the conceptions resulting following treatment of endometriosis are consequent to endoscopic surgery further adds to the attraction and importance of the surgical approach.

Material and Methods

Over a period of 10 years ending with April, 1988, there have been 421 infertile subjects in whom endometriosis was diagnosed and operated through laparoscopy or laparotomy. A diagnostic laparoscopy is advocated for all infertile subjects who are 25 years or more, and married for 3 years or more, excluding those with evidences of anovulatory infertility. Those with obvious pelvic findings at clinical examination, such as adnexal mass or tender beeding of the cul-de-sac, are subjected to diagnostic laparoscopy to ascertain: (i) the diagnosis of endometriosis; (ii) stage of the disease; (iii) the role of preoperative danazol therapy; and (iv) feasibility of endoscopic fulguration and lysis of the disease.

Subjects with regular menstruation and revealing a negative finding at clinical examination are subjected to diagnostic laparoscopy with the aim of locating mild to moderate endometriosis and simultaneous endoscopic treatment.

Laparoscopy is always accomplished under general anesthesia on inpatient basis. A single puncture operating laparoscope with a 5 mm operating channel is employed for this purpose. A second

puncture is made at the suprapubic region as an additional operating channel. This channel allows entry of manipulating instruments such as the grasper forceps to retract or hold vital organs in a position so that proper visualization of the endometriosis can be obtained. Self retaining cannula in the cervix facilitates anteversion of the uterus allowing a superb inspection of the posterior cul-de-sac, peritoneal reflections and the uterosacrals.

Diagnostic procedure includes a thorough inspection of the uterus, tubes, ovaries and the pelvic peritoneal reflections, and whenever indicated inspection of the appendix. Uterus is examined for its mobility, fibroids, malformations and the presence of surface implants of endometriosis. Ovaries are inspected for adhesions, endometriomas, endocrine status and ovulatory status (a corpus luteum with stigma is considered as a recent evidence of ovulation). Tubes are checked for their patency, surface adhesions, nature of fimbria and salpingitis isthmica nodosa. Currently we prefer to inspect the tubal filling and spill after injecting Ringer's lactate solution, instead of methylene blue solution. When the fluid passes through the tube, tubal ampullary distension, elongation and gradual spillage through the fimbria (preceded by air bubble and some blood stained fluid) could be appreciated.

After ascertaining the diagnosis of endometriosis, mild to moderate lesions are operated through laparoscope. Either a bipolar or monopolar cautery is employed for this purpose. After properly anteverting the uterus, and displacing the vital organs with the help of the grasper forceps the endometrial implants on the posterior uterine surface, uterosacral ligaments, cul-de-sac, and broad ligament

are fulgurated by employing the suction-coagulation canula passed through the first puncture operating channel. Ovarian endometriosis is fulgurated after grasping the ovarian ligament and steadying the organ. By rotating the grasper forceps the entire ovarian surface could be meticulously inspected. Ovarian adhesions to uterosacral ligaments (a common observation) is released by employing cutting-coagulation scissors passed through the first puncture. Safe area at the interface of the uterosacral with the ovary is coagulated and simultaneously cut, so that the ovary is completely freed from adhesions. The raw area is coagulated to obtain complete hemostasis (usually there will be no bleeding). Endometriomas which are small are aspirated and then completely cauterised. Large endometrial cysts are not managed through laparoscopy.

Velamentous tubal adhesions and minimal tubal kinking are managed by endoscopic fulguration and adhesiolysis. Marked tubo-ovarian adhesions are operated through laparotomy preferably after a course of danazol. After completion of endoscopic fulguration or adhesiolysis the peritoneal cavity is rinsed with Ringer's lactate solution (about 150 ml) and the fluid is aspirated out. This procedure cleanses the peritoneal surfaces, removes the debris and blood clots and allows proper inspection for raw areas and missed endometrial implants (which could be fulgurated now). At the completion of the procedure 200 to 300 ml of Ringer's lactate solution containing dexamethasone is placed in the peritoneal cavity. Currently hysteroscopic inspection of uterus is routinely carried out.

Subjects with major degree of endometriosis are managed by laparotomy.

Endometrial cysts of the ovary are enucleated, ovarian adhesions are released and implants are coagulated. When tubal adhesions are not associated, these procedures give optimal results for the surgery. When significant tubal adhesions are present the preference will be for unilateral adnexal removal if the contralateral adnexum is normal; or if both sides are affected, severely affected adnexum is removed and the other side repaired. Dense cul-de-sac adhesions are left undisturbed (Rajan, 1987). Since the last 2 years preoperative danazol therapy for 3 months in a dose of 400 mg/day is preferred before laparotomy and conservative surgery is planned. Post-operative danazol is generally avoided both in the laparoscopy and laparotomy group. This is because of the observation that majority of the conceptions occur within the first 6 months of surgery. Moreover, in mild to moderate endometriosis if one aims at correction of ovulatory dysfunction following endoscopic surgery the treatment could be started in the very next month itself (Rajan, 1987).

Results and Discussion

Between May, 1986 to April, 1988 (2 years period) 342 diagnostic laparoscopies have been performed for investigation of infertility. Among them 111 subjects had endometriosis (32.46%). During the same period among the 196 conservative laparotomy pelvic surgeries performed 87 were for endometriosis (44.39%). This high incidence of pelvic endometriosis could reflect the geographic distribution and our interest in this particular speciality (Table I).

The therapeutic outcome following various forms of laparoscopic and laparotomy treatment clearly demonstrates the strategic

TABLE I
Incidence of Endometriosis in Infertility
(27th May, 1986 to 4th May, 1988)

Diagnostic/therapeutic procedure	Total patients	Endometriosis	Percentage
Laparoscopy	342	111	32.46
Laparotomy	196	87	44.39

role of endoscopic surgery in endometriosis. Excluding the subjects who were operated recently (from January, 1988), among the 215 subjected operated 80 were operated through laparoscopy (37.21%), indicating that every 3rd patient atleast is a suitable candidate for endoscopic correction (Table II).

The overall pregnancy rate following surgery has been 47.91%; Among the 215 subjects operated 104 had become pregnant. Of the total 103 conceptions 38 were following endoscopic surgery (36.98%). This indicates that more than one-third of the conceptions harvested for conservative sur-

gery are following operative laparoscopy (Table III).

Such of those with severe degree of endometriosis, who are not suited for endoscopic corrective procedures, certainly will go for laparotomy. In this group the pregnancy rate has been excellent for subjects undergoing unilateral adnexal removal (73.68%), unilateral adnexal removal with contralateral repair (62.96%), and unilateral or bilateral ovarian surgery (51.67%). However, salpingolysis was attended with a poor pregnancy rate of 12.50% (Table IV). Among the endoscopic surgeries, fulgurations for mild endometriosis recorded

TABLE II
Laparoscopic and Laparotomy Treatment of Endometriosis
(Period of Study: 9 years)

Total operated	Conservative surgery (laparotomy)	Operative laparoscopy	Percentage of operative laparoscopy among the total operated
215	135	80	37.21

TABLE III
Pregnancy Following Surgical Treatment of Endometriosis
(9 years' study)

Operative treatment	No. operated	No. conceived	Success rate %
Laparoscopy or laparotomy	215	103	47.91
Operative laparoscopy	80	38	47.50
Laparotomy (conservative surgery)	135	65	48.15

Of the total 103 pregnancies, 38 (36.89%) conceived following Operative Laparoscopy.

