

SURGICAL TREATMENT OF ENDOMETRIOSIS IN INFERTILE FEMALE

by

R. RAJAN

and

P. AMBIKA

SUMMARY

Unilateral adnexal removal: 66.67%. Contralateral adnexum needing repair surgery: 42.10%. Ovarian conservative surgery alone: 62.50%, with associated cul-de-sac adhesions: 30.77%.

Endometriosis externa is a common gynaecological disease and is a frequent cause of infertility. Beginning from May, 1977, over a period of 6 years and 8 months, endometriosis was diagnosed in 140 subjects among the 605 infertile women undergoing diagnostic laparoscopy or laparotomy (23.14%). Diagnosis of endometriosis was based on the characteristic visual presentation of the disease: brownish, haemorrhagic, or purplish to black areas typically found at the uterosacral ligaments, cul-de-sac, utero-vesical fold and ovarian surface, quite frequently associated with ovarian adhesions but not involving the tubes with the tubal fimbriae remaining healthy and tubes patent. Ovarian cysts, with or without adhesions, containing chocolate material is yet another typical presentation. Ovary is the organ most frequently affected by endometriosis, and next in order will be the peritoneal reflections in the pelvic cavity which lead

to varying degrees of pelvic adhesions. The fallopian tubes are rarely seen affected except secondary to extensive ovarian involvement (Table I).

Numerous treatment regimens have been derived for infertility developing secondary to endometriosis, and have included a variety of surgical and hormonal types of therapy. Conservative surgery continues to be the standard and the most accepted therapeutic modality for improvement of fertility (Buttram, 1979 and Malinak, 1980). Laparoscopic surgery wherever possible has been recommended for mild endometriosis by Corson (1979) and Cohen (1980), and this is only an extension of diagnostic laparoscopy. Induction of Pseudopregnancy with progestational agents have been more frequently recommended for relief of symptoms than for improving the fertility (Kistner, 1979). Recently, induction of pseudomenopause with danazol has been employed alone or following or preceding conservative surgery with varying success rates (Barbieri *et al*, 1982; Buttram *et al*, 1983; Wheeler and Malinak, 1981

From: Medical College Hospital, Alleppey, Kerala.

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TABLE I
Distribution of Endometriosis

Sites of Endometrial lesions	Number	Per cent
Bilateral tubo-ovarian adhesions with involvement of uterus, and cul-de-sac	37	26.43
Unilateral tubo-ovarian mass with involvement of uterus and cul-de-sac	11	7.85
Bilateral tubo-ovarian mass	8	5.71
Unilateral tubo-ovarian mass	4	2.85
One ovary	18	12.86
Both ovaries	18	12.86
Ovary and uterosacral adhesions	8	5.71
Uterosacral ligaments	18	12.86
Cul-de-sac, rectal wall and uterosacral ligaments	8	5.71
Surface of the uterus	7	5.00
Surface of fallopian tube	3	2.14

and Puleo and Hammond, 1983). However, still controversy persists as to danazol's side effects, method of action, optimal dosage and effectiveness. It will be prudent to select the therapeutic choice depending on the individual case merit, and it is hoped that escalating experience and research with surgical and/or medical management will result in an optimal plan of therapy with the best fertility outcome.

In this communication we present our experience with surgical treatment of endometriosis in infertile female.

Conservative Surgery

We perform diagnostic laparoscopy for infertile women with (i) long period infertility, (ii) above 30 years of age, (iii) abnormal HSG findings, (iv) 6 cycles of failed AID, (v) endocrine disorders, (vi) history or clinical finding suggestive of pelvic inflammatory conditions and (vii) history or pelvic findings suggestive of endometriosis. Among the 442 infertile subjects undergoing diagnostic laparoscopy, endometriosis was diagnosed in 99 occasions (22.40%).

Cervical dilatation and if necessary endometrial study was the preliminary surgical measure offered to all subjects with endometriosis, and this procedure is integral part of laparoscopy. At endoscopy the scope for surgical correction of endometriosis is determined.

Peritoneal surface implants with or without minimal adhesions involving the uterosacral ligaments, ovarian ligaments, cul-de-sac, uterine surface or round ligaments are subjected to endoscopic fulguration with bipolar coagulation forceps, provided the risk to uterus, bowel or tubes are excluded. Endometrial surface implants on the ovary were also managed in the same lines. Endoscopic ovariolysis was performed in suitable selected subjects, and if found convenient the endometrial cysts were aspirated employing the aspiration needle. After completion of the surgical procedures, tubal lavage was performed to confirm tubal patency, and a thorough peritoneal lavage was performed with steroid saline mixture to cleanse the peritoneal cavity. In effect, operative laparoscopy in endometriosis is only an extension of the diagnostic procedure, with the added benefit of treat-

ment of less severe endometriosis without a recourse to laparotomy.

Subjects with severe endometriosis, obvious pelvic adhesion and big endometrial cysts of ovary were subjected to laparotomy correction on a separate occasion.

The following surgical principles were adhered to at laparotomy:

(i) In unilateral adnexal involvement removal of the diseased adnexa was more frequently practised. Similarly, when there was asymmetrical adnexal involvement, the more damaged adnexa was removed and the less involved adnexa was repaired.

(ii) Endometrial implants which could be removed with proper reperitonisation were excised, but extirpation was not attempted, particularly when dense cul-de-sac adhesions were present, when the potentiality for damage to vital organs, injury to important blood vessels or chance of post-operative adhesions were high.

(iii) Careful and complete enucleation of ovarian cysts and proper closure of ovarian incisions.

(iv) A thorough reperitonisation of all the raw areas.

Endometrial implants diagnosed at laparoscopy which could not be coagulated for fear of rectal injury were treated with progestational agent (Proluton) or Danazol. In a recent series where surgical

extirpation was grossly incomplete and if the patient could afford the cost, danazol was advised in a dose of 400 mg per day or more, for a period of 3 to 6 months (aim is to achieve atleast 3 months amenorrhoea).

Results of Conservative Surgery

Among the 140 infertile subjects in whom endometriosis was diagnosed at laparoscopy or laparotomy, 101 underwent conservative pelvic surgery, 32 underwent laparoscopic surgery, and the remaining 7 were not operated. Excluding the recently operated subjects (those operated after middle of September, 1983), those with other fertility disorders and those who were lost for follow-up, the prognosis was evaluated for 76 subjects of whom 25 subjects became pregnant (32.89%) over a period of 1 month to 3 years after the surgery. Twenty-one of the 25 pregnancies were conceived within the first 6 months of surgery (84.00%).

Incidence of pregnancy based on the severity of the disease and the type of operative procedure are given in Tables II, III and IV.

Unilateral adnexal removal: Wherever major involvement and extensive adhesions were encountered on one side, preference was always for removal of the diseased adnexa than repair. Among the 22 subjects thus operated and followed

TABLE II
Severity of Endometriosis and Incidence of Pregnancy

Classification	No. operated	No. followed	No. pregnant	Per cent
Mild	31	12	3	25.00
Moderate	24	12	5	41.67
Severe	78	52	17	32.69
Total	*133	76	25	32.89

* Of the 140 patients diagnosed only 133 were operated and 7 were not operated.

TABLE III
Nature of Conservative Surgery and the Incidence of Pregnancy

Conservative surgery	No. operated	No. followed	No. pregnant	Per cent
Unilateral or bilateral ovariolysis (cul-de-sac adhesions not disturbed)	10	7	3	42.86
Unilateral or bilateral ovariolysis (no adhesions in the culdesac).	13	4	3	75.00
Unilateral or bilateral ovarian cystectomy and ovariolysis (cul-de-sac adhesions not disturbed)	10	6	1	16.67
Unilateral or bilateral ovarian cystectomy and ovariolysis (no cul-de-sac adhesions)	7	4	2	50.00
Unilateral adnexal removal, Other side normal (cul-de-sac adhesions not disturbed)	2	2	1	50.00
Unilateral adnexal removal, other side normal (with no cul-de-sac adhesions)	1	1	1	100.00
Unilateral adnexal removal, other side adhesiolysis (cul-de-sac adhesions not disturbed)	17	16	7	43.75
Unilateral adnexal removal, other side adhesiolysis (with no cul-de-sac adhesions)	5	3	1	33.33
Salpingo-ovariolysis (cul-de-sac adhesions not disturbed)	21	19	1	5.26
Salpingo-ovariolysis (with no cul-de-sac adhesions)	7	3	nil	—
Laparotomy resection of peritoneal implants (with no other pathology)	8	4	1	25.00

TABLE IV
Pregnancy Following Laparoscopy Surgery

Laparoscopic surgery	No. operated	No. followed	No. pregnant	Per cent
Fulguration of implants	23	4	2	50.00
Ovariolysis	3	2	1	50.00
Aspiration of endometrial cyst and ovariolysis	2	—	—	—
Fulguration of ovarian implants	2	—	—	—
Surface implants on rectal wall, pseudo-pregnancy for 3 months	2	1	1	100.00

conception occurred in 10 patients (45.45%).

In this group there were 3 subjects in whom the contralateral tube and ovary were normal and healthy, and 2 of them conceived (66.67%). However, when the

contralateral adnexum evidenced lesser affection and needed surgical intervention in the form of ovariolysis, ovarian cystectomy or salpingo-ovariolysis, among the 19 subjects only 8 conceived a pregnancy (42.10%) (Table V).

TABLE V
Pregnancy Following Unilateral Adnexal Removal

Operative procedure	No. followed	No. pregnant	Per cent
Unilateral adnexal removal contralateral adnexa normal	3	2	66.67
Unilateral adnexal removal, contralateral adnexiolytic	19	8	42.10

Ovarian conservative surgery: There were 21 subjects who were followed after conservative surgery on the ovaries either unilateral or bilateral. In them the tubes were totally unaffected and the ovarian pathology was in the form of ovarian adhesions with surface implants, endometrial cysts with or without periovarian adhesions. Among them 13 had extensive cul-de-sac adhesions which was undisturbed. The surgical procedure included ovariolysis, ovarian cystectomy with or without ovariolysis, resection of endometrial implants, careful approximation of ovarian wound and proper re-peritonisation.

Of the 21 subjects 9 conceived (42.86%). Pregnancy rate was significantly high for ovarian surgery when there were no cul-de-sac involvement or other endometrial lesions. There were 5 pregnancies in 8 followed (62.50%), as against 4 pregnancies for 13 followed (30.77%) (Table VI).

Salpingo-ovariolysis and adhesiolysis: When there were extensive involvements

including tubal adhesions, salpingolysis with or without ovariolysis presented a very poor surgical outcome. Among the 22 such subjects followed only one achieved a conception.

Influence of cul-de-sac adhesions: When there were endometrial deposits on the uterine surface, rectal wall, utero-sacral ligaments and peritoneal surface, forming dense adhesions in the cul-de-sac and fixed retroversion of the uterus, we prefer not to disturb the adhesions than to produce injury to vital organs or promote still worse post-operative adhesions. Among the patients undergoing various types of operations detailed above there were 15 subjects in whom there were no cul-de-sac involvement and 7 achieved a pregnancy (46.67%). And in 50 subjects there were cul-de-sac adhesions in whom 13 conceived (26.00%). Thus it is evident that the fertility rate following conservative surgery is definitely influenced by the present or absence of cul-de-sac pathology that cannot be operated (Table VII).

TABLE VI
Pregnancy Following Ovarian Conservative Surgery

Operative procedure	Cul-de-sac	No. followed	No. pregnant	Per cent
Ovariolysis and/or ovarian cystectomy, and resection of implants—either both or one ovary	No adhesions	8	5	62.50
	adhesions present (not disturbed)	13	4	30.77

TABLE VII
Influence of Cul-De-Sac Adhesions on Pregnancy Rate

Operative procedure	Cul-de-sac	No.	No.	Per cent
		followed	pregnant	
Conservative surgery on the ovary and tube, or unilateral adnexal removal	No adhesions	15	7	46.67
	Adhesions present (not disturbed)	50	13	26.00

Laparoscopic surgery: Among the 32 subjects who underwent laparoscopic fulguration of endometrial deposits, ovariolytic, adhesiolysis and aspiration of endometrial cysts, pregnancy was achieved in 4 subjects. The very low fertility rate for this surgical approach may be because these patients had some other cause for infertility and mild endometriosis diagnosed and treated at diagnostic laparoscopy was only an incidental finding (Table IV).

Discussion

From the results documented for conservative pelvic surgery for endometriosis it is evident that unilateral adnexal disease offers the best fertility outcome following removal of the adnexum (66.67% pregnancy rate). However, when the contralateral adnexum is less affected and needed some repair surgery the pregnancy rate was reduced to 42.10%.

The next best fertility rate was encountered in treatment of ovarian pathology with no involvement of fallopian tubes. There again where there were no cul-de-sac lesions, unilateral or bilateral ovarian conservative surgery resulted in 62.50% pregnancy rate. But when associated with inoperable cul-de-sac adhesions the pregnancy rate was only 30.77%. In general subjects with inoperable cul-de-sac adhesions exhibited reduced ferti-

lity rate following conservative surgery (26.00%) as against those with no cul-de-sac pathology (46.67%).

Definite involvement of tubes along with ovaries necessitating salpingo-ovariolytic did not show any promise for improvement of fertility. Similarly laparoscopic surgery for mild endometriosis also did not significantly improve the fertility, probably because mild endometriosis diagnosed at laparoscopy was only an incidental finding in the patient with some undetected obvious cause for infertility.

Since danazol therapy has a reported higher incidence of pregnancy rate following surgery (Wheeler and Malinak, 1981), and since Bilerogue and Behrman (1981) reported reduced response of ovarian endometriosis to danazol it is worth discussing the role of danazol therapy in our reported series of endometriosis. We have established best pregnancy rate for unilateral adnexal removal (contralateral normal tube and ovary) and for conservative ovarian surgery (with no cul-de-sac involvement), and also observed that 84% of the total pregnancies are conceived within 6 months following surgery. For these reasons the above mentioned two surgical approaches need not be followed by post-operative danazol, and it may even be harmful because of the unnecessary delay in achieving conception. However, the other situations such as contralateral adnexal

repair, in-operable cul-de-sac lesions and tubo-ovarian adhesions are best treated by danazol either before or after conservative surgery. The exact approach to be followed must be individualised, and the proper therapeutic regimen to be instituted can be selected at the time of laparoscopic diagnosis.

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