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# The Importance of Laparoscopic Coagulation of Mild Endometriosis in Infertile Women*

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**ABSTRACT:** To evaluate the effect of fulguration of endometriotic implants in patients with mild endometriosis, we divided 123 patients into two groups: (A) patients whose endometriotic implants were coagulated, and (B) patients whose implants were left intact. In group A, 42 of 69 (60.8%) patients achieved a pregnancy within eight cycles following laparoscopic fulguration, in comparison with 10 of 54 (18.5%) patients from group B. The difference between this study and others is that all other infertility factors were meticulously corrected prior to laparoscopic treatment, and patients were allowed at least eight "normal" cycles before their endometriosis was treated. This is a report of 8 months' postoperative follow-up. The study was prospective and treatment was assigned randomly. We feel that laparoscopic fulguration significantly improves fertility in these carefully selected patients.

## INTRODUCTION

THE ROLE OF MILD ENDOMETRIOSIS AS a cause of infertility is quite controversial. Many articles have been written, both pro and con, concerning medical and surgical therapy. Several recent controlled studies show no benefit compared to placebo for danazol therapy.[1] Similar doubts could be raised about conservative surgery; if this modality provides no benefit, then this would needlessly subject the patient to the risk of surgery, loss of time, and risk of developing adhesions. A study by Garcia and David failed to demonstrate any benefit from conservative surgery for mild endometriosis.[2] Although laparoscopic coagulation of endometriotic implants would offer the patient decreased risk as compared with conservative laparotomy, nevertheless, operating through the laparoscope is more risky than just observation and adds an increase in surgical time. We therefore initiated a study to evaluate whether laparoscopic coagulation of endometriosis improves fertility.

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## PATIENTS AND METHODS

We meticulously evaluated follicle maturation and ovulation using follicle dynamic studies, employing sonographic monitoring of the size of the follicle and serum estradiol ($E_2$) measurement. We considered the follicle mature when it reached a size of 18–24 mm in diameter and $E_2$ level was 200 pg/mL

or more. A repeat ultrasound study was performed two to three days after the follicle was deemed mature. A decrease of at least 5 mm in size and a concurrent rise of serum progesterone over 1.2 ng/mL was considered sufficient evidence of release of the ovum. Luteal function was assessed by endometrial biopsy 12 to 13 days post-ovulation for two menstrual cycles. A normal semen analysis of the husband was required (a minimum of $20 \times 10^6$/mL, 60% motility, grade 3 (of 4) quality, and a volume of more than 1 mL). A postcoital test was performed 6 to 12 hours after sexual intercourse at the time of a mature follicle; five or more spermatozoa per high-power field, with forward progressive motion, was considered normal. Hysterosalpingography was performed. If all of the above-mentioned factors were normal, the patient was followed closely for eight normal treatment cycles. If a pregnancy was not achieved, a laparoscopy was performed. At the time of laparoscopy, all patients with adhesions and Stage 3 and 4 endometriosis (revised American Fertility Society classification)[3] were excluded. Similarly, patients with Stage 1 endometriosis were excluded when the position of endometriotic implants precluded coagulation. This gave us more reliable information for the purpose of comparing fulguration of implants with no electrosurgical coagulation.

Patients were randomly divided into two groups based on the last digit of their social security number: group A, patients with an even number—all endometriotic implants on the surface of the peritoneum were fulgurated, as well as endometriomas measuring up to 10 mm in diameter; a unipolar microtip electrode was employed for fulguration of the implants; endometriomas were drained and fulgurated, and the surface of the ovary was washed with Ringer's lactate solution; group B, patients with an odd number—patients had only a diagnostic laparoscopy and a retrograde chromopertubation; no endometriosis was fulgurated. All surgeries and staging of the disease were performed by only two surgeons. Following the laparoscopy, the pre-laparoscopy therapy was resumed.

## RESULTS

The incidence of pregnancy in the two groups was compared. The minimum duration of infertility before surgery was 26 months. Of the patients whose endometriotic implants were successfully fulgurated, 42 of 69 (60.8%) conceived within 8 months after laparoscopy. The shortest interval post-surgery was one cycle.

Only 10 of 54 (18.5%) of patients whose endometriotic implants were not coagulated achieved a pregnancy ($P < .001$). Neither intraoperative nor postoperative serious complications were observed. Operation time was between 20 and 90 minutes for each case. Most of our patients' hospital stay was about two to four hours post-operatively. The most common postoperative complaints were shoulder pain and chest discomfort. Nineteen patients had Stage 3 and 4 disease (revised classification).[3] Thirty-two patients with mild endometriosis were excluded because of the presence of adhesions interfering with anatomy and motility of the oviducts. Ten patients had implants on the peritoneal surface, and thus laparoscopic fulguration was not performed to avoid possible injury to other organs. Five of the 42 (12%) women who underwent fulguration of the endometriotic implants aborted, but none of the 10 patients whose endometriosis was not treated aborted.

## DISCUSSION

Our study was designed to evaluate the role of laparoscopic fulguration of endometriotic implants in mild endometriosis. Controversy about both medical and surgical therapy of endometriosis continues. Reich and McGlynn[4] reported up to 60% term pregnancy after treatment of ovarian endometriomas using the laparoscope when patients were followed up to 18 months. Nezhat et al[5] reported 60.7% conceptions within 24 months after laser laparoscopy for the treatment of endometriosis (41% of Stage 1 patients conceived in 6 months, and 75% of Stage 1 patients conceived in 18 months of post-operative follow-up). Hasson[6] reported up to a 75% pregnancy rate 1 to 12 months post-operatively when laproscopic fulguration of endometriosis was performed (6/8 Stages 1–3). Sulewski and associates[7] treated 100 women with mild or moderate endometriosis by laparoscopic fulguration and reported a 40% pregnancy rate in 37 months. Buttram et al[8] reviewed the results of a 6-year prospective study, and concluded that the use of danazol alone resulted in a pregnancy rate lower than those achieved with conservative surgery alone.

In contrast to the preceding data from various authors supporting the beneficial aspects of laparoscopic fulguration of endometriosis implants, other authors do not provide confirmation. Ronnberg and

Järvinen[9] recommended the treatment to be medical for mild to moderate endometriosis. Their conclusion was based upon evaluation of 215 patients with endometriosis treated between 1977 and 1982 by different modalities: (1) conservative surgery, (2) danazol alone, (3) surgery followed by danazol, and (4) laparoscopic electrocauterization. He reported a 56% pregnancy rate in the medically treated group versus 43% in the conservative surgery group, and only 17% in the group having laparoscopic cauterization.

Guzick and Rock[10] compared 133 patients who underwent surgery for mild to moderate endometriosis with 99 patients who were treated with danazol. They concluded that there was no significant difference in the pregnancy rate. Daniell and Christianson[11] reported a 70% pregnancy rate after treatment of mild endometriosis with danazol. Garcia and David[2] failed to show any benefit from conservative surgery, while Hull et al[1] report no benefit from danazol therapy. Kable and Yussman[12] reported a 52% (9/17) pregnancy rate after laparoscopy alone, without fulguration of endometriotic implants, and questioned whether "tubal lavage at laparoscopy has any therapeutic effect."

One problem with many previous studies—and why there is such a discrepancy of opinion—centers on the fact that many women who have endometriosis may still conceive after other infertility factors are corrected. Other factors that may influence the result of surgery were included in some of those other reports, e.g., periadnexal adhesions and distortion of the anatomy of the oviducts and ovaries, and these make it difficult to determine whether correcting the anatomical problem helped to achieve the pregnancy, rather than treating the endometriosis per se. The possibility exists that those studies suggesting no benefit from fulguration of endometriotic implants were marred by not selecting the proper patients for treatment; if the majority of infertile patients with endometriosis have infertility factors other than endometriosis, then the failure to correct all factors would cause a seemingly marked reduction in the efficacy of laparoscopic coagulation. We were able to select a group very likely to be adversely affected by their endometriosis by first meticulously correcting all other infertility factors and allowing 8 months for conception prior to laparoscopic coagulation. This included follicular dynamic studies and close monitoring for luteal phase function. Thus, we feel that laparoscopic fulguration of endometriotic implants may improve fertility, but should (usually) be performed only if the patient has had eight normal cycles with all other factors corrected to whatever extent possible.

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