Vaginal parturition decreases recurrence of endometriosis

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Objective: To evaluate the role of parturition in the recurrence of endometriosis.
Design: Retrospectively analyzed, prospectively obtained data.
Setting: Unit of Physiopathology of Reproduction, Health Care Unit of Rimini, and University of Bologna Cervesi General Hospital, Cattolica, Italy.
Patient(s): Three hundred forty-five patients with stage II–IV endometriosis, dysmenorrhea, and infertility were treated for endometriosis and divided into four groups according to parity and mode of parturition.
Intervention(s): The patients were laparoscopically treated for endometriosis upon the occurrence and recurrence of the disease. Ultrasound measurements of the uterine internal ostium (IOS) were performed at each study interval.
Main Outcome Measure(s): Degree of dysmenorrhea, occurrence and recurrence of endometriosis, and uterine IOS measurements were established and related to parity and mode of parturition.
Result(s): After parturition, dysmenorrhea recurrence was significantly higher in nulliparous women than in women with vaginal parturition. The endometriosis recurrence rate was higher in women who did not have vaginal parturition. The IOS significantly enlarged after vaginal delivery but not after cesarean delivery. There were significant negative correlations between IOS and the recurrence of endometriosis and dysmenorrhea. Odds ratios indicated that as the IOS enlarged, the risk of recurrence decreased.
Conclusion(s): Vaginal parturition plays a protective role in the recurrence of endometriosis. (Fertil Steril® 2010;94:850–5. ©2010 by American Society for Reproductive Medicine.)

Key Words: Endometriosis, parturition, cesarean section, dysmenorrhea, recurrence rate of endometriosis, retrograde bleeding, uterine contractions

Endometriosis is a debilitating, progressive disease that affects 1%–50% percent of premenopausal women (1–5), with a prevalence of 38.5% in infertile women and 5.2% in fertile women (6). Endometriosis may cause dyspareunia, dysmenorrhea, lower back pain, and infertility (7). In women with dysmenorrhea, the incidence of endometriosis is 40%–60%; in women with subfertility, it is 20%–30% (2, 8–10). A definitive diagnosis of endometriosis can be made only with laparoscopy. The recurrence of endometriosis is a clinical problem in terms of general health and reproductive potential.

Despite several hypotheses, the pathogenesis of endometriosis remains unclear. However, the notion that endometriosis results from the retrograde transport of endometrial debris through the uterine tubes and subsequent implantation in the pelvic peritoneum and visceral organs is compelling (11–15). The first clinical consequence of endometriosis is "infertility," and pregnancy may reduce the recurrence of endometriosis (16) and dysmenorrhea through mechanisms that are not yet clear. The present study evaluated the role of parturition in reducing the recurrence rates of endometriosis and dysmenorrhea. We also investigated the role of uterine internal ostium (IOS) enlargement in the recurrence of endometriosis following vaginal parturition.

Received August 11, 2007; revised February 23, 2009; accepted April 3, 2009; published online June 13, 2009.
C.B. has nothing to disclose. A.M. has nothing to disclose. P.L.S. has nothing to disclose. A.P. has nothing to disclose. F.U. has nothing to disclose. A.B. has nothing to disclose.
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MATERIALS AND METHODS

This study was approved by the Institutional Review Board at Rimini General Hospital, Rimini, Italy.

Patients

One thousand twenty-two infertile, nulliparous women with severe dysmenorrhea (aged 18–35 years) were evaluated between 1997 and 2003 in the Unit of Physiopathology of Reproduction at Rimini's General Hospital. Inclusion and exclusion criteria used to select the study group were as follows. Nine hundred fifty-five of the women underwent laparoscopy, which was required to diagnose endometriosis; 760 did not have a partner with severe male factor, and women with

0015-0282/$36.00
doi:10.1016/j.fertnstert.2009.04.012

a partner with severe male factor were excluded; 655 had tubal patency, which was requested to establish the role of retrograde bleeding in the recurrence of the disease; and 460 were diagnosed with endometriosis stage II–IV according to the revised American Fertility Society (AFS) classification (17), and stage I cases were excluded. Four hundred thirty-three women had FSH serum levels of <13 mUI/mL before and after laparoscopic surgery; those with levels >13 mUI/mL were excluded. Eighty-eight patients were not followed-up owing to ectopic pregnancy, spontaneous abortion, nonelective cesarean section (cesarean for failure to progress), breastfeeding for more than 3 months, or relocation to a different geographic area and were excluded. Thus, the final sample consisted of 345 patients (mean age 26.8 ± 5.1 years). The patients did not use any adjuvant therapy in addition to salutary pain relief drugs for endometriosis after diagnosis. A second laparoscopy was performed for unacceptable increases in dysmenorrhea and/or the persistence of infertility.

Study Groups

Seventy-two (mean age 26.8 ± 5.2 years) of the 345 women were nulliparous (group 0), and 273 women (mean age 26.8 ± 5.1 years) delivered (group 3). In group 3, 175 women (mean age 27 ± 5.1 years) delivered spontaneously by the vaginal route (group 1) and 98 (mean age 26.5 ± 5.1 years) delivered by cesarean section (group 2). There were no significant age differences between the groups.

Detection of Endometriosis

Endometriosis was detected with laparoscopy and classified according to the AFS classification (17).

Dysmenorrhea Rating

The visual analog scale (VAS) was used to rate the pain associated with dysmenorrhea, rating from 1 (none) to 10 (worst ever) (18, 19).

Design

This cohort study of endometriosis recurrence was based on a sample of 345 patients (aged 18–35 years) with severe dysmenorrhea who underwent laparoscopy between 1997 and 2003 in the Unit of Physiopathology of Reproduction at Rimini General Hospital, Rimini, Italy. Patients who did not deliver were followed for 24 months after laparoscopy (72 nulliparous patients), the others until the first menstrual cycle after parturition (273 women). Dysmenorrhea was rated before the first laparoscopy (time 0), 6 months after laparoscopy or 6 menstrual cycles after delivery (time 1), 12 months after laparoscopy or 12 menstrual cycles after delivery (time 2), and 24 months after laparoscopy or 24 menstrual cycles after delivery (time 3). Endometriosis was diagnosed by laparoscopy and classified according to the revised AFS classification (17) by the two surgeons who performed the laparoscopies. Laparoscopies were performed at the outset of the study (time 0) and during follow-up (time 1, 2, or 3) at the time that endometriosis recurrence was diagnosed based on increasing dysmenorrhea and/or the persistence of infertility. These women underwent laparoscopy twice: at the time of recruitment, when endometriosis was both scored and treated, and at the time of recurrence between time 0 and time 3. Endometriosis scores (time 0) were not different between the groups.

Internal Ostium Measurement

The validity and reproducibility of ultrasound (US) internal ostium (IOS) measurements were established in a cohort of 80 women before the study. Two independent measurements of the IOS performed in each patient by two doctors varied insignificantly with each other and with three measurements in the same subject at different times by a unique doctor. Test comparisons were also made between the US measurement of IOS in candidates for hysterectomy and direct measurement in the specimens after hysterectomy, which did not significantly differ.

Uterine IOS corresponds to the last tract (approximately 1 cm) of the cervical channel between the vagina and uterine lumen cavity compartments. Measurement of the uterine IOS was performed by two independent experts in obstetrics and gynecologic ultrasound using an Elegra US (Siemens, Stuttgart, Germany) with the probe in the sagittal plane. The size of the IOS was established at times 0, 1, 2, and 3. There were no statistical interevaluator differences in the IOS measurements.

Statistical Analysis

Statistical analyses were performed by Stata 8 (Stata Corp, College Station, TX). Each variable was first analyzed descriptively as mean value and standard deviation. Group and time differences were analyzed with paired and unpaired Student *t* tests. Pairwise correlation coefficients were calculated to evaluate the relationship between quantitative and ordinal variables. Logistic regression was used to calculate odds ratios (OR). Risk ratios (RR) were also calculated. *P* values of <.05 were considered to be significant.

RESULTS

Endometriosis Stage

The mean stage of endometriosis for the 345 study patients, according to the revised AFS classification, was 3.1 ± 0.7. Individual group stages were 3.6 ± 0.5 (group 0; n = 72), 2.8 ± 0.7 (group 1; n = 175), 3.3 ± 0.7 (group 2; n = 98), and 3.0 ± 0.7 (group 3; n = 273). The mean stages of group 0 and group 3 were significantly different ($P<.01$), as were the mean stages of group 2 and group 1 ($P<.01$). The number of patients in each group with each stage is as follows.

Group 0: stage IV = 46 (64%); stage III = 20 (28%); stage II = 6 (8%).