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# Fimbrioscapy and Salpingoscapy in Patients With Minimal to Moderate Pelvic Endometriosis

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Fimbrioscapy and salpingoscapy were performed with a rigid salpingoscope during operative laparoscopy in 100 patients with minimal to moderate endometriosis and in 20 normal controls. Five women with endometriosis had perimfimbrial adhesions, compared with none of the controls. No subject in either group had adhesion formation of the endosalpinx. These observations indicate that there is no association between endometriosis and intratubal disease. (*Obstet Gynecol* 75:15, 1990)

Fimbrioscapy and salpingoscapy (endoscopic evaluation of the fimbria and endosalpinx, respectively) are procedures that can be performed to ascertain the quality of the fimbriae and endosalpinx and the prognosis for future fertility.<sup>1</sup> A recent report suggested that salpingoscopic findings may help the reproductive surgeon to counsel infertile patients better regarding the difficult choice between reconstructive tubal surgery and performance of in vitro fertilization and embryo transfer.<sup>2</sup>

Salpingoscopic findings in patients with a previous history of pelvic inflammatory disease and hydrosalpinges have been reported previously.<sup>1,3,4</sup> Salpingoscopy has not been a regular part of the evaluation of the fallopian tube in patients with pelvic endometriosis. Shapiro et al<sup>2</sup> reported that four of six patients with mild endometriosis had intratubal abnormalities (such as tubal dilatation, multiple flattened regions of the mucosa occurring in areas with absent primary folds, or synechiae) in at least one fallopian tube. These authors called for further investigation to support or refute the interpretation of their data. We performed the following study for that express purpose.

## Materials and Methods

This study included 100 women who underwent vid-eolaseroscopy<sup>5</sup> for the treatment of minimal to moder-

ate ovarian and peritoneal endometriosis (minimal 16, mild 32, moderate 52). Classifications were made according to the categories of the American Fertility Society. None of the infertile women had a history of previous laparotomy, pelvic inflammatory disease, or use of an intrauterine device (IUD). Preoperatively, all of these patients had a negative cervical culture for gonorrhea and negative chlamydia titers.

Sixty-one of the endometriosis patients had a preoperative history of infertility, and the remaining 39 patients had complained only of pelvic pain. Forty-one were multigravidas and 59 were nulligravidas. The patients ranged in age from 21-38.

Twenty women served as controls. Eight underwent diagnostic laparoscopy as part of their infertility work-up or for pelvic pain, and had a normal pelvis. Twelve others, also with a normal pelvis, were undergoing laparoscopic tubal ligation. We advised patients in both groups preoperatively regarding the nature of the procedures and obtained appropriate consent.

All infertile patients had normal hysterosalpingograms. The fimbrioscopies and salpingoscopies were performed and evaluated by a single observer.

The technique of salpingoscopy and its feasibility have been described.<sup>2,6-8</sup> Fimbrioscapy was accomplished with a small laparoscope-mounted video camera, a recorder, and a high-resolution monitor. The laparoscope was used to "zoom" in on the fimbria. The fimbria were floated in lactated Ringer's (Travenol Laboratories, Inc., Deerfield, IL) in the posterior cul-de-sac. If adhesions were seen under magnification as the fimbria floated in the solution, they were excised.

Chi-square test was used for statistical analysis of the data.

## Results

Five endometriosis patients had unilateral filmy perimfimbrial adhesions, compared with none of 20 controls ( $\chi^2 = 0.167$ ;  $P > .05$ ). Thirty women with endometri-

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osis had unilateral or bilateral peritubal cysts, compared with eight controls ( $\chi^2 = 0.377$ ;  $P > .05$ ). During fimbrioscropy, none of the patients showed evidence of fimbrial agglutination or endometriosis. Perifimbrial adhesions were lysed with the carbon dioxide laser.

Flattening and separation of tubal folds were observed during salpingoscopy. Five patients had bilateral flattening and 27 had unilateral flattening. This finding was also seen in nine of 20 patients in the infertile control group ( $\chi^2 = 0.741$ ;  $P > .05$ ). The remainder of both groups showed normal major and minor folds as described by Puttemans et al<sup>4</sup> and Brosens et al.<sup>6</sup>

No endosalpingeal adhesions were seen in patients with endometriosis or in controls. Five women from the study group conceived and had intrauterine pregnancies within 6 months of their surgery.

No complications occurred during fimbrioscropy. Occasionally during salpingoscopy, it was difficult to pass the salpingoscope into the fallopian tube and it took several attempts until this was accomplished.

In 24 patients, a small amount of bleeding was encountered on the tubal serosa at the site of stabilization of the tube with forceps. The bleeding stopped spontaneously except in one patient, who required microbipolar electro-surgery to effect hemostasis.

## Discussion

The usefulness of tubal endoscopy during laparoscopy or laparotomy has been discussed previously.<sup>1,2,6,9</sup> Salpingoscopy provides information that correlates directly with postoperative reproductive outcome independent of hysterosalpingographic or laparoscopic findings.<sup>9</sup>

Shapiro et al<sup>2</sup> described intratubal adhesions and dilatation in four of six patients with endometriosis, but we found no intratubal abnormalities.

A normal pattern of minor and major folds, the vascularity of the normal tube, and mucosal lesions in patients with previous pelvic inflammatory disease and hydrosalpinges have been described. These patterns are commonly variable. The fimbriae can have either a complex or simple structure of folds. The more complex structure is often associated with the "tortuous" tube, which gives the appearance of herniation of the mucosa or aplasia of the myosalpinx.<sup>2,4</sup> The tube is patent; however, the lumen of the ampullary portion contains flattened, separated folds and an extremely thin, translucent wall. This pattern may involve segments of different lengths and may occur unilaterally or bilaterally. The significance of this condition as a cause of infertility is not clear because bilateral tortuous tubes can occur in patients with

proved fertility.<sup>10-12</sup> It may be a variation of the normal fallopian tube.

Fimbrial attachments can be single or multiple and can cross the fimbrial ostia. These are also normal variations. These attachments should not be divided, because of the possibility of resulting bleeding or adhesion formation. In the present study, there was no agglutination of the fimbriae and no endometriosis of the fimbriae.

Mucosal adhesions may be filmy, avascular, irregular, frayed extensions of the folds or they may adhere between normal folds. Severe adhesions appear thick and vascularized and are associated with little or no luminal fold. In this study, no patients showed intratubular adhesions, abnormal vascularity, or tubal endometriosis. Five of the women with minimal to moderate endometriosis, but none of the controls, had perifimbrial adhesions.

In contrast to findings described by other authors,<sup>13</sup> the data from this study did not show any significant difference in the existence of peritubal cysts between patients with and without endometriosis.

Salpingoscopy is more diagnostic for examining the interior of the fallopian tube in patients with hydrosalpinges and pelvic adhesions caused by pelvic inflammatory disease.<sup>1</sup> However, in patients with minimal to moderate endometriosis who have normal-appearing tubes, salpingoscopy does not appear to offer any advantages; the fimbriae can be examined endoscopically while they float in fluid in order to search for adhesions and distinguish those that are perifimbrial from those that are intrafimbrial.

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