Pregnancy outcome in patients with early recurrent abortion following laparoscopic tubal corneal interruption of a fallopian tube with hydrosalpinx

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Objective: To investigate the outcome of pregnancy following laparoscopic unilateral tubal fulguration of hydrosalpinges in patients with recurrent spontaneous early abortion.

Design: Prospective randomized controlled trial.

Setting: University tertiary center.

Patient(s): Thirteen patients with history of unexplained recurrent early spontaneous abortion and a unilateral hydrosalpinx diagnosed by sonography and hysterosalpingography in whom other causes of abortion were excluded.

Intervention(s): The treatment group (group I) consisted of seven women who underwent laparoscopic unilateral tubal fulguration. The control group (group II) consisted of six patients for whom no surgical intervention was performed.

Main Outcome Measure(s): Continuation of pregnancy over first trimester.

Result(s): Six patients in the treatment group and five in the control group conceived. Five patients in the treatment group and none in the control group had pregnancy beyond the first trimester and finally reached 36–40 weeks gestational age (P= .02).

Conclusion(s): Laparoscopic tubal fulguration improves pregnancy outcome in selected patients with previous recurrent early abortion and a unilateral hydrosalpinx. (Fertil Steril 2006;86:149–51. ©2006 by American Society for Reproductive Medicine.)

Key Words: Recurrent abortion, hydrosalpinx, laparoscopy tubal fulguration

Tubal disease remains an important factor in female infertility. Many investigators have reported that patients with a hydrosalpinx have decreased clinical pregnancy rates and increased miscarriage rates, resulting in a decreased ongoing pregnancy rate, when compared with that of patients with other types of tubal disease (1, 2).

Studies performed over the past 10 years have suggested that a hydrosalpinx reduces the pregnancy rate in IVF (2–4). A report of spontaneous pregnancy following salpingectomy or proximal tubal fulguration was also published (3). The main mechanism for the adverse effect of a hydrosalpinx on pregnancy rate and implantation failure is the embryotoxic properties of the hydrosalpinx fluid. The endometrial receptivity may be reduced as an effect of disturbed expression of the cytokines cascade, which is essential for implantation (5).

In addition, the presence of excessive fluid in the uterine cavity may be a mechanical hindrance to implantation (5). Our study is the first to investigate the effect of proximal tubal fulguration of a unilateral hydrosalpinx on the outcome of pregnancy or abortion rates in patients with histories of previous recurrent early abortion.

MATERIALS AND METHODS

During the 2.5-year period from March 2002 until September 2004, 13 women with recurrent abortion and a unilateral hydrosalpinx (detected at first by ultrasound and then by hysterosalpingography), who had occlusions and fluid-filled areas in the tubes, met the inclusion criteria for entry to this study: [1] less than 40 years of age; [2] a history of recurrent early abortion with evaluation indicating normal karyotypes, hormonal assessment, endometrial biopsy, anticardiolipin antibody titers, and partial thromboplastin time (PTT).

After all the patients were informed and written consents obtained, seven women were assigned for laparoscopic proximal tubal fulguration using electrocautery (group I). The control group consisted of six patients with a hydrosalpinx who did not undergo the procedure (group II). The selection of patients for tubal fulguration was made randomly by computerized randomization. Laparoscopic tubal fulguration using electrocautery method was performed in the area adjacent to uterus; that segment was then cut.

We consecutively enrolled these patients in the current study, and the outcome of their pregnancies was evaluated.
No ectopic pregnancies were included in this study population, and all the patients had singleton intrauterine pregnancies. Data were analyzed with the Fisher’s exact probability test.

RESULTS
The mean patient age was 28.3 years at the time of treatment (range 22–35 years), and the number of previous abortions was between 3 and 9. The differences were not statistically significant between groups I and II. Group I consisted of seven patients who underwent laparoscopic proximal tubal fulguration on the side of the hydrosalpinx, and none had complications during or after this surgery.

Six patients in group I and five in group II conceived spontaneously after 3–14 months of procedure time (Table 1). Two women in both groups did not conceive. With this method of treatment, pregnancy outcome appeared comparable, and the pregnancy duration was significantly longer following tubal fulguration ($P = .02$, Fisher’s exact probability test). The mean duration of pregnancy (gestational age) was 33.1 weeks and 8.4 weeks at the time of follow-up in group I and group II, respectively. All of group I, except one, had term pregnancies, but none of group II had pregnancies beyond the first trimester.

DISCUSSION
In some studies, decreased implantation rates have been reported in patients with a hydrosalpinx, as demonstrated by hysterosalpingography (3, 5, 6). The main focus is on the embryotoxic properties of hydrosalpinx fluid, which include microorganisms, endotoxins, cytokines, oxidative stress, and a lack of nutrients (2, 5). During the past decade, the influence of the presence of a hydrosalpinx on IVF success rates has been an issue of debate and research. Several retrospective reports have indicated an impaired IVF outcome in the presence of a hydrosalpinx. The results revealed a reduction by half in the probability of achieving a pregnancy in the presence of a hydrosalpinx and a double rate of spontaneous abortion (5, 8, 11). One mechanism, is the theory that the hydrosalpinx fluid plays a causative role, and it was suggested that surgical intervention to interrupt the communication of the fluid may restore pregnancy rates (2, 3, 5, 7, 9, 10). These findings encouraged us to perform unilateral proximal tubal fulguration in cases of unexplained early recurrent abortion, in that unilateral hydrosalpinx diagnosed by hysterosalpingography was the only positive finding.

Our data indicated that pregnancy outcome in terms of early miscarriage improved significantly after proximal tubal fulguration of the hydrosalpinx tube.

There may be various mechanisms that explain this finding, and many reports support the theory that hydrosalpinx fluid plays a key role in impairing implantation potential (2, 5, 6, 7, 12). It was reported that, in the presence of pure hydrosalpinx fluid in the uterine cavity, there is certainly impairment of embryo development. Reflux phenomenon is another mechanism that was explained by Eytan et al. (6). On the basis of this theory that a spontaneous myometrial contraction occurs from the cervix toward the fundus, they demonstrated that in hydrosalpinx, fluid accumulation in the tube increases tubal pressure and thereby induces a pressure gradient from the fundus toward the cervix and generates reflux contents that may thrust an embryo away from the implantation site. Overall, the most likely possibility is that the cause could be a combination of these mechanisms.

The present data clearly supports surgical treatment of a unilateral hydrosalpinx in selected patients with unexplained recurrent early abortions and a normal patent contralateral tube. This is a preliminary report with a limited number of patients, and we recommend future studies with a larger number of patients to investigate this effect.

In conclusion, selected patients with a unilateral hydrosalpinx and a normal patent contralateral fallopian tube may improve their pregnancy outcomes with tubal fulguration of the affected tube.

REFERENCES

<table>
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<tr>
<th>Pregnancy outcome</th>
<th>Group I (proximal tubal fulguration)</th>
<th>Group II (no intervention)</th>
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<td>Term pregnancy</td>
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<td>Abortion</td>
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<tr>
<td>Total</td>
<td>6</td>
<td>5</td>
<td>11</td>
</tr>
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</table>

$P = .02$ (Fisher’s exact probability test).


