Spontaneous intrauterine pregnancy after unilateral placement of tubal occlusive microinsert

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Objective: To present a case in which the use of a titanium/nickel microinsert in the management of unilateral hydrosalpinx contributed to a spontaneous intrauterine pregnancy.

Design: Case report.

Setting: University hospital.

Patient(s): A 37-year-old nulligravid female with dense pelvic adhesive disease and unilateral hydrosalpinx.

Intervention(s): Unilateral proximal occlusion of left fallopian tube with titanium/nickel microinsert.

Main Outcome Measure(s): Pregnancy.

Result(s): Spontaneous intrauterine pregnancy after confirmation via hysterosalpingogram of left tubal occlusion and right tubal patency.

Conclusion(s): Transcervical proximal tubal occlusion using titanium/nickel microinserts provides an alternative in the management of hydrosalpinx in the setting of tubal factor infertility. Additionally, in the setting of a unilateral hydrosalpinx, unilateral occlusion can contribute to spontaneous intrauterine pregnancy. (Fertil Steril® 2009;92:393.e15–e17. ©2009 by American Society for Reproductive Medicine.)

Key Words: Proximal tubal occlusion, hysteroscopic microinsert, hydrosalpinx, Essure, tubal factor, infertility

Tubal factor infertility accounts for approximately 30%–35% of couples seeking infertility treatment (1). Hydrosalpinges are associated with a decreased rate of implantation and pregnancy rates with IVF-ET (2–5). Fluid from the hydrosalpinx has been thought to [1] be directly embryo toxic, [2] deprive the embryo of normal nutrients, [3] disrupt endometrial receptivity to the embryo, and [4] physically wash out the embryo (6, 7).

A growing body of evidence indicates that outcomes with IVF-ET are improved after salpingectomy for hydrosalpinx (8, 9). An alternative to laparoscopic salpingectomy or laparotomy would be ideal in patients with dense pelvic adhesions as there is an increased concern of injury to pelvic viscera or vasculature in these patients during the procedure. Additionally, dense pelvic adhesions may impair the surgeon’s ability to effectively perform the procedure. Transcervical placement of titanium/nickel microinserts to occlude the fallopian tubes has been performed as an alternative in patients who are poor surgical candidates. Individual case reports suggest that transcervical placement of microinserts into the tubal ostium on the side of the hydrosalpinx results in tubal occlusion and ultimately pregnancy and live birth in IVF-ET cycles (10–12). This method of occlusion results from benign tissue fibrosis (13). We report a case in which unilateral hysteroscopic placement of a tubal occlusive microinsert in preparation for IVF-ET resulted in a spontaneous intrauterine pregnancy.

MATERIALS AND METHODS

All private health information for the patient has been deidentified for publication purposes, and the patient consented to participate in the publication of this report. This report is in accordance with the Helsinki Declaration of 1975 regarding human experimentation.

CASE REPORT

A 37-year-old nulligravida presented to our reproductive center in April 2008 with a diagnosis of tubal factor primary infertility. Her medical history was significant for a history of chlamydia as a teenager. Her surgical history included an exploratory laparotomy due to hemoperitoneum as a result of a motor vehicle accident in 1990. The patient also reported a second exploratory laparotomy for a bowel obstruction caused by pelvic adhesions. A hysterosalpingogram (HSG) from April 2006 showed a left hydrosalpinx with right tubal patency. At that time her gynecologist referred her to a local fertility center for evaluation. They recommended laparoscopic lysis of adhesions and left salpingectomy, which was attempted in August 2006. Intraoperatively, the decision was made to abandon the procedure secondary to concern for potential visceral injury due to significant bowel and pelvic adhesions. Three months later, the patient underwent an...
IVF-ET cycle that did not result in pregnancy. Post-IVF-ET counseling suggested a 2-week course of doxycycline before her next egg retrieval if the patient wished to proceed with another IVF-ET cycle.

The patient presented to our center 2 years later. The patient reported normal, regular menstrual cycles, her day 3 E2 and FSH levels were within normal limits, and her antral follicle count was 13. The patient’s partner’s semen analysis was within normal limits. Given the patient’s prior failed surgical attempt at removing or isolating her left hydrosalpinx, the patient was offered hysteroscopic placement of a titanium/nickel microinsert. She underwent hysteroscopic placement of a titanium/nickel microinsert (Essure Conceptus Inc., Mountain View, CA) into the proximal left fallopian tube on June 6, 2008, to isolate her left hydrosalpinx. Two to three coils of the microinsert were noted outside of the left tubal ostium. Three months after placement, on September 23, 2008, a repeat HSG was performed confirming surgical blockage of the left fallopian tube and persistent patency of the right fallopian tube.

After counseling, the patient elected for IVF-ET given her dense pelvic adhesive disease and concerns for potential ectopic pregnancy. However, on October 17, 2008, the patient reported missing her menses and her beta-hCG was noted to be 2041 IU/L. She returned 3 days later for an ultrasound that showed a gestational sac consistent with her last menstrual period dating. The patient denied any bleeding or pain. The patient returned 1 week later for a repeat ultrasound that confirmed a 6-week, 2-day singleton intrauterine pregnancy with fetal cardiac activity.

DISCUSSION

The Essure hysteroscopic microinsert system for permanent sterilization was approved for use in 2002 by the United States Food and Drug Administration. The use of the microinserts before IVF in those patients with tubal factor infertility and hydrosalpinges is an off-label use of the device. The first reported use of the Essure device in an IVF-ET cycle that resulted in a successful pregnancy was reported in 2005 (10). Two more reports of successful pregnancy in IVF-ET cycles were reported in women with microinserts, however, these devices were placed for previously desired permanent sterilization (12). A report of five patients who underwent transcervical Essure placement was published; however, two of the five cases were unsuccessful in resulting in pregnancy, and results of the other three were not known at the time of publication (14).

Another group reported bilateral microinsert placement in five women with bilateral hydrosalpinges undergoing IVF and unilateral placement in one woman with unilateral hydrosalpinx. Of these six women, three became pregnant and had term deliveries, one was 3 months pregnant at the time of report, one did not achieve pregnancy, and the other was awaiting confirmation of occlusion (11). Of the nine reported cases of IVF-ET in which the Essure microinsert was used to neutralize hydrosalpinges, six resulted in term deliveries (see Table 1).

Concern over whether the microinsert may disrupt implantation or pregnancy in IVF-ET cycles may be diminished by the case series and reports discussed here and by additional reports of pregnancy after placement of the Essure microinserts in women who desired permanent sterilization (15, 16). Additionally, follow-up hysteroscopy noting tissue encapsulation and exclusion of the leading coils of the microinsert from the uterine cavity should provide further reassurance that implantation should not be disrupted (17).

Although the novel use of the Essure device in the setting of hydrosalpinges before IVF-ET has become more common, the standard of care for managing hydrosalpinges before IVF-ET remains bilateral salpingectomy. However, the transcervical approach provides an alternative to those patients who are poor surgical candidates, like our patient. Ultimately, this report notes the challenges associated with tubal factor

<table>
<thead>
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<th>Study</th>
<th>Hydrosalpinx present?</th>
<th>No. of women</th>
<th>Pregnant</th>
<th>Delivered</th>
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<tbody>
<tr>
<td>(10)</td>
<td>Yes</td>
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<td>1</td>
<td>Twins, 34 weeks by c-section</td>
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<td>(12)a</td>
<td>No</td>
<td>2</td>
<td>2</td>
<td>Singleton intrauterine pregnancy NSVD 37 weeks; singleton intrauterine pregnancy NSVD 39 weeks</td>
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<td>(14)</td>
<td>Yes</td>
<td>5</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>(11)</td>
<td>Yes</td>
<td>6b</td>
<td>4c</td>
<td>Term × 3, route not specified</td>
</tr>
</tbody>
</table>

Note: NSVD = normal spontaneous vaginal delivery.

a Patient’s IVF after permanent sterilization with Essure.
b One patient did not achieve pregnancy, and another is awaiting confirmation of occlusion.
c One patient was 3 months pregnant at the time of the report.

disease, particularly in the setting of dense pelvic adhesions. Secondly, it adds to the literature another example of the use of transcervical placement of proximal tubal occlusion using titanium/nickel microinserts as an alternative to laparoscopic salpingectomy or even laparotomy in the management of hydrosalpinx.

REFERENCES