

Salpingectomy for Unilateral Hydrosalpinx May Improve in vivo Fecundity

Jung Choe Jerome H. Check

Department of Obstetrics and Gynecology, Division of Reproductive Endocrinology and Infertility, University of Medicine and Dentistry of New Jersey, Robert Wood Johnson Medical School at Camden, Cooper Hospital/University Medical Center, Camden, N.J., USA

Key Words

Unilateral Hydrosalpinx · In vitro fertilization · Toxic factors · Salpingectomy

Abstract

The objective of this study was to determine whether unilateral salpingectomy for hydrosalpinx could improve fecundity in women with an apparently normal contralateral tube. Two women with unilateral hydrosalpinx and with an apparently normal contralateral tube, and a long history of infertility, including failure to conceive despite several cycles of in vitro fertilization (IVF), had unilateral salpingectomies prior to considering subsequent IVF cycles. Case 1 conceived after 1 month following surgery and case 2 after 8 months without the use of assisted reproductive technology. Though the ensuing pregnancies may have been fortuitous, the possibility exists that in cases of unilateral hydrosalpinx, the performance of salpingectomy may improve fecundity without the need for IVF. Hopefully the outcome of these 2 case reports may generate interest in a larger cooperative prospective study.

Copyright © 1999 S. Karger AG, Basel

Introduction

Data have previously been published suggesting that the presence of a hydrosalpinx can reduce pregnancy rates (PRs) and implantation rates following in vitro fertilization-embryo transfer (IVF-ET) [1-6]. Decreased PRs were found following IVF-ET whether the hydrosalpinx was bilateral or unilateral [7]. Salpingectomy has been found to improve PR following IVF-ET in patients with hydrosalpinx [8-14].

Recently in mice it has been shown that even a small amount of fluid from a hydrosalpinx added to culture media may have a significant adverse effect on subsequent blastocyst formation [Mukherjee T, Copperman HB, McCaffrey C, Cook C, Iraj G, Bustillo M: ASRM 1996, abstract 0.003]. Thus one possible mechanism for the reduction of PRs following IVF when a hydrosalpinx is present is that the hydrosalpinx may resemble a follicle and it may thus be punctured during oocyte retrieval. If indeed this is the operative mechanism then the adverse effect of the hydrosalpinx would be restricted to IVF-ET.

However, it is also possible that the hydrosalpinx harbors deleterious bacteria or other chemical agents that may diffuse into the endometrial cavity and thus inhibit

implantation [15]. In this scenario, a unilateral hydrosalpinx could possibly cause infertility in the *in vivo* circumstance of a perfectly normal contralateral tube.

Presented herein are 2 case descriptions of patients with long-standing infertility who conceived without the use of assisted reproductive techniques following unilateral salpingectomy.

Case Reports

Case 1

The patient is a 26-year-old woman, gravida 0, who presented to our infertility clinic in May 1997 with a 5-year history of primary infertility. The patient had 2 laparoscopies in 1994 and 1995 for endometriosis and tubal disease. Subsequently she had been treated with clomiphene citrate or human menopausal gonadotropin induction of ovulation with intrauterine insemination for 5 cycles without success. She failed to conceive after one cycle of IVF-ET at another infertility center.

A hysterosalpingogram was performed in January 1997 which showed a normal uterine cavity, right tubal patency, and the left tube showed a hydrosalpinx. Menses were regular at 28-day intervals. Her husband's semen analysis was normal.

The patient was treated at our infertility clinic as follows. Clomiphene citrate plus hMG induction of ovulation, plus IUI, for two cycles without a successful pregnancy. The patient had IVF-ET at the Cooper Center for IVF in August 1997, but failed to conceive. Salpingectomy for hydrosalpinx was recommended before frozen ET. Laparoscopic unilateral salpingectomy was performed because the contralateral tube appeared normal and was patent. The patient conceived spontaneously the cycle after the surgery. At the present time, she has a normal intrauterine second-trimester pregnancy.

Case 2

The patient is a 30-year-old woman, gravida 2, para 0-0-2-0. Her first pregnancy was an elective abortion at the age of 16 and her second pregnancy was an ectopic pregnancy. The patient presented to our clinic in April 1995 with a 5-year history of secondary infertility.

A diagnostic laparoscopy had been performed in April 1990, and a laparotomy with lysis of adhesions and tuboplasty was performed in June 1990. She had a repeat laparoscopy with lysis of pelvic adhesions and bilateral salpingolysis and hysteroscopy in October 1991. In December 1991, the patient had an ectopic pregnancy in the left tube which was confirmed by ultrasonography, and the patient was treated with methotrexate. A hysterosalpingogram was done in 1992 which showed a normal uterine cavity and a left tubal hydrosalpinx, and the right tube showed questionable tubal patency. Semen analysis was within the normal range.

The patient subsequently had three cycles of IVF and four cycles of ET without a successful pregnancy (2 fresh ETs and 2 frozen ETs).

The patient underwent a laparoscopic left salpingectomy in preparation for another IVF cycle and lysis of adhesions and diagnostic hysteroscopy was performed in November 1996. The contralateral tube showed a relatively normal appearance with patency confirmed by chromopertubation.

The patient was waiting to prepare for frozen ET, but spontaneously conceived 8 months after unilateral salpingectomy. The patient completed her first trimester with a viable pregnancy by sonography.

Discussion

The possibility exists that the achievement of these 2 *in vivo* pregnancies following unilateral salpingectomy was fortuitous. However, their long history of infertility including failure to conceive following ET, and the short-time interval needed from surgery to conception, certainly gives some credence to the concept that some toxic factor from the unilateral hydrosalpinx contributed to the infertility and was subsequently surgically eliminated [16].

Recently, another study confirmed the importance of salpingectomy for hydrosalpinges to improve PRs following IVF-ET [17]. They concluded, nevertheless, that only bilateral hydrosalpinges and not the unilateral hydrosalpinx has an adverse effect on conception outcome following IVF-ET [17]. Hopefully the cases described herein will renew interest in evaluating the unilateral hydrosalpinx as a contributing cause to infertility especially with a normal contralateral fallopian tube.

Despite the mounting plethora of published manuscripts suggesting improved fecundity with IVF following salpingectomy for hydrosalpinx, we believe this is the first report in the English literature suggesting improved fecundity following salpingectomy for hydrosalpinx without the use of assisted reproductive technology. Possibly these 2 case reports may generate interest in a future prospective multi-centered study where patients with unilateral hydrosalpinx with a patent contralateral tube will be randomly selected to have salpingectomy or not. *In vivo* PRs could be calculated for 6 months.

These cases suggest that if one performs unilateral salpingectomy for preparation for IVF-ET, some finite time interval should be given to patients with patent contralateral tubes for *in vivo* conception to possibly circumvent expensive and potentially risky IVF-ET.

References

- 1 Strandell A, Waldenstrom U, Nilsson L, Hamberger L: Hydrosalpinx reduces in vitro fertilization/embryo transfer pregnancy rate. *Hum Reprod* 1994;9:861-863.
- 2 Blazar AS, Hogan JW, Seifer DB, Frishman GN, Wheeler CA, Haning RV: The impact of hydrosalpinx on successful pregnancy in tubal factor infertility treated by in vitro fertilization. *Fertil Steril* 1997;67:517-520.
- 3 Vandromme J, Chasse E, Lejeune B, Van Ryselberge M, Selvigne A, Leroy F: Hydrosalpinges in in vitro fertilization: an unfavorable prognostic feature. *Hum Reprod* 1995;10:576-579.
- 4 Andersen AN, Yue Z, Meng FJ, Petersen K: Low implantation rate after in vitro fertilization in patients with hydrosalpinges diagnosed by ultrasonography. *Hum Reprod* 1994;9:1935-1938.
- 5 Fleming C, Hull MG: Impaired implantation after in vitro fertilization treatment associated with hydrosalpinx. *Br J Obstet Gynaecol* 1996;103:268-272.
- 6 Katz E, Akman MA, Damewood MD, Garcia JE: Deleterious effect of in vitro fertilization. *Fertil Steril* 1996;66:122-125.
- 7 Kassabji M, Sims JA, Butler L, Muasher SJ: Reduced pregnancy outcome in patients with unilateral or bilateral hydrosalpinx after in vitro fertilization. *Eur J Obstet Gynecol Reprod Biol* 1994;56:129-132.
- 8 Pie-Zeigler R, Shelton KE, Toner JP: Salpingectomy(ies) improves the pregnancy rate after IVF in patients with unilateral or bilateral hydrosalpinx. *J Assist Reprod Genet* 1995;12(suppl):65.
- 9 Shelton KE, Butler L, Toner JP: Salpingectomy improves the pregnancy rate in in vitro fertilization patients with hydrosalpinx. *Hum Reprod* 1996;11:523-525.
- 10 Puttemans PJ, Brosens IA: Salpingectomy improves in vitro fertilization outcome in patients with a hydrosalpinx: Blind victimization of the fallopian tube? *Hum Reprod* 1996;11:2079-2081.
- 11 Aubriot FX, Chapron C, Morice P, Dubuisson JB: Hydrosalpinx et stérilité: Indications de la salpingectomie. *Contracept Fertil Sex* 1995;23:670-673.
- 12 Andersen AN, Linhard A, Loft A, Ziebe S, Andersen CY: The infertile patient with hydrosalpinges: IVF with or without salpingectomy? *Hum Reprod* 1996;11:2081-2084.
- 13 Dechaud H, Daures JP, Arnal F, Humeau C, Hedon B: Does previous salpingectomy improve implantation and pregnancy rates in patients with severe tubal factor infertility who are undergoing in vitro fertilization? A pilot prospective randomized study. *Fertil Steril* 1998;69:1020-1025.
- 14 Shelton KE, Butler L, Toner JP, Oehninger S, Muasher SJ: Salpingectomy improves the pregnancy rate in in-vitro fertilization patients with hydrosalpinx. *Hum Reprod* 1996;11:523-525.
- 15 Mansour RT, Aboulghar MA, Sevour TI, Riad R: Fluid accumulation of the uterine cavity before embryo transfer: A possible hindrance for implantation. *J In Vitro Fert Embryo Transfer* 1991;8:157-159.
- 16 Dubuisson JB, Aubriot FX, Mathieu L, Foulot H, Mandelbrot L, Bouquet de Joliniere J: Risk factors for ectopic pregnancy in 556 pregnancies after in vitro fertilization: Implications for preventive management. *Fertil Steril* 1991;56:686-690.
- 17 Wainer R, Camus E, Camier B, Martin C, Vas-seur C, Merlet F: Does hydrosalpinx reduce the pregnancy rate after in vitro fertilization? *Fertil Steril* 1997;68:1022-1026.