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SHORT COMMUNICATION

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Vaginal disinfection with povidone iodine immediately before oocyte retrieval is effective in preventing pelvic abscess formation without compromising the outcome of IVF-ET

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***Purpose*:** In this study, the method of employing pre-retrieval vaginal douching with aqueous povidone iodine is examined to see if it can decrease the incidence of pelvic abscess without compromising the clinical outcome of IVF-ET.
***Methods*:** Patients with ovarian endometrioma and received IVF-ET treatment were retrospectively classified into two groups according to the difference of vaginal douching solution immediately before oocyte retrieval.
***Results*:** There was no difference in the fertilization rate (81.2% versus 79.8%, $P > 0.05$), implantation rate (19.2% versus 23.3%, $P > 0.05$), clinical pregnancy rate (39.3% versus 46.2%, $P > 0.05$) between the two groups. There was no infection in patients of group two but two cases in group one developed pelvic abscess and needed surgical intervention.
***Conclusions*:** Vaginal douching with aqueous povidone iodine followed by normal saline irrigation immediately before oocyte retrieval is effective in preventing the pelvic infection without compromising the outcome of IVF treatment.

KEY WORDS: Endometrioma; in vitro fertilization; infection; pelvic abscess; complication.

INTRODUCTION

Pelvic abscess is a rare but life-threatening complication following transvaginal oocyte retrieval (OCR) for infertile woman receiving in vitro fertilization and embryo transfer (IVF-ET) (1). Even with prophylactic antibiotics, the reported incidence of pelvic infection in OCR was around 0.6% (2). So far, there is no effective method of preventing this undesired complication. Among its risk factors, incidental aspiration of an ovarian endometrioma during the process of oocyte retrieval is believed to be a common cause for developing the pelvic infection (3,4). In this study, the method of employing pre-retrieval vaginal douching with aqueous povidone iodine (Sindine, Sinphar Pharma., I-Lan, Taiwan) followed by normal saline irrigation was performed in these high risk patients to see whether it could decrease the incidence of pelvic abscess without compromising the clinical outcome of IVF-ET.

PATIENTS AND METHODS

Routine vaginal douching with normal saline prior to OCR was performed in our hospital until year 2000 when we had two cases of pelvic abscess formation after aspiration of endometrioma during OCR. Since then, an alternative modification to the pre-retrieval vaginal disinfection with aqueous povidone iodine followed by a thorough irrigation of normal saline solution was employed. This change has been examined and approved by the ethical committee in our hospital. Only patients who gave their informed consent received this new preparation for OCR.

In this study, patients with ovarian endometrioma and received IVF-ET treatment were retrospectively classified into two Groups. Group 1 included 56 patients who received IVF-ET between July 1997 and March 2000. The vulva and vagina were rinsed and irrigated with sterilized normal saline solution just prior to OCR. Group 2 included 52 patients who received IVF-ET between April 2000 and June 2002. The vulva and vagina were carefully rinsed and disinfected with gauze balls soaked with aqueous povidone iodine (30 mL) first and then followed by a thorough irrigation with normal saline solution (approximately 2000 mL) immediately prior to OCR. In both Group, douching and irrigation were carried out by the author or his assistance under author's guidance. Only patients who were younger than 35 years of age and had endometrioma aspirated during OCR were included in this analysis.

Ovulation induction was performed as reported previously (5). The embryos were transferred on day 3 after OCR. Oral and intramuscular progesterone were prescribed as luteal phase support. Patients in both Groups took prophylactic oral antibiotics Cleocin (Clindamycin) 300 mg every 8 h starting 1 day before OCR for 3 consecutive days.

Clinical outcome of treatment and the incidence of pelvic abscess after OCR were compared between two Groups. Only clinical pregnancy, which was defined as a gestation sac with fetal heart beat visualized on ultrasound was calculated. Two-sample *t*-tests and χ^2 tests were used for statistical analyses. $p < 0.05$ was considered statistically significant.

RESULT

Two patients developed acute abdomen due to pelvic abscess formation and required hospitalization in Group 1. Both patients required surgical intervention due to persistent abdominal pain, fever and leukocytosis despite antibiotics treatment. Right tubovarian abscess was found in Case 1 and right salpingoophorectomy was performed. Cultures from the abscess revealed abundant *Enterococcus* and *E. coli* species. Although left tubovarian abscess was found in Case 2, the left ovary was preserved after drainage of the abscess. Pus culture from the abscess also revealed abundant *E. coli* proliferation. There was no evidence of pelvic infection in any patients of Group 2.

Table I illustrated the comparison of clinical outcome between the two Groups. There was no difference in the mean age between the two Groups {30.9 ± 2.9 vs. 31.3 ± 3.0, $p > 0.05$, not significant (NS)}. The fertilization rate in Group 1 was 81.2% (306/377) compared to 79.8% (288/361) in Group 2 (NS). The implantation rate in Group 1 was 19.2% (34/177) compared to 23.3% (37/159) in Group 2 (NS). The average number of embryos per transfer was 3.2 ± 1.3 compared to 3.1 ± 1.0 in Group 2 (NS). The clinical pregnancy rate in Group 1 was 39.3% (22/56) compared to 46.2% (24/52) in Group 2 (NS).The take home baby rate was 32.1%(18/56) in Group 1 compared to 44.2%(23/52) ink Group 2 (NS).

DISCUSSION

Today, ultrasound guided transvaginal OCR has become the standard procedure for oocyte pick up in IVF treatment. Under normal circumstances, it is a safe procedure without major complications. However, sometimes infection does occur after OCR and has been reported in patients who had a history of endometriosis, pelvic inflammatory disease, pelvic adhesions or previous pelvic surgery (6). Although antibiotics can control the infections, in rare incidences, infection became severe and developed abscess, the removal of the infected ovary in order to cure the infection may be required. Although most physician advocate the use of prophylactic antibiotic to prevent infection (7); its role in preventing abscess formation following OCR is still controversial (4). Formation of pelvic abscess has been reported even in patients taking prophylactic antibiotics especially if the pre-existing endometriotic cysts were punctured during the process of OCR. The two cases in our series that developed tubovarian abscess formation after OCR, further reaffirmed this finding. Although the lack of infection in the second Group is not statistically significant, the experience suggests an added benefit if douching with aqueous povidone iodine can be used immediately prior to oocyte retrieval.

since no incidence of pelvic infection was reported in large series with laparoscopic or abdominal OCR, a direct inoculation of vaginal micro-organisms

Table I. Characteristics and Clinical Outcome Between Group 1 (normal saline only) and Group 2 (povidone iodine + normal saline)

	Group 1	Group 2	
	Normal saline	Povidone iodine + Normal saline	*p* value
No. of cycles	56	52	
Age (years)	30.9 ± 2.9	31.3 ± 3.0	NS
Average number of embryos transferred per cycle	3.2 ± 1.3	3.1 ± 1.0	NS
E_2 on day of HCG (pg/mL)	1841 ± 1439	1890 ± 1163	NS
Fertilization rate	81.2% (306/377)	79.8% (288/361)	NS
Implantation rate	19.2% (34/177)	23.3% (37/159)	NS
Clinical pregnancy rate	39.3% (22/56)	46.2% (24/52)	NS
Take home baby rate	32.1% (18/56)	44.2% (23/52)	NS

Note. Values are mean ± SD. Two-sample *t*-tests and $\chi 2$ tests were used for statistical analyses. $p < 0.05$ was considered statistically significant. NS: not significant.

following transvaginal OCR is thought to be the cause of pelvic infection (2). Indeed, pathogenic bacteria in the vagina floras were found to be the aetiological agents in pelvic abscesses after transvaginal OCR. *Escherichia coli*, *Bacteroides fragilis*, *Enterococcus* and *Peptococcus* are the commonly found microorganisms in pelvic infection (1). Traditionally, before OCR, antiseptic solutions (e.g. aqueous povidone iodine), considered to be embryotoxic, are not used to prepare vagina. Employing only normal saline irrigation of vagina is usually the norm prior to OCR. However, most believed that using only normal saline rinsing and irrigating the vaginal canal can only wash away the vaginal discharge without destroying potentially harmful bacteria pre-existed in the vagina flora. Applying an additional antiseptic solution followed by normal saline solution, as demonstrated in our series with aqueous povidone iodine, one can eliminate most if not the entire vagina flora. This modification would not jeopardize the development of the oocyte because all the antiseptic solution has been completely flushed away before OCR. The comparable clinical outcome of fertilization rate and implantation rate between two Groups in our series has also proved this effect.

So far, there is no universal agreement on the optimal treatment regarding the pre-exist endometrioma before OCR. Since presence of endometrioma is a risk factor for the development of a TOA or an ovarian abscess at OCR, it is reasonable to apply some infection preventing measures before the procedure. Our data demonstrated that vaginal douching with addition of aqueous povidone iodine is effective in preventing the infection without compromising the outcome of IVF treatment. Accordingly, we highly recommend this method be applied in the routine vaginal preparation before OCR.

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