Role of Diagnostic Hysteroscopy before the First Trial of ICSI/IVF

Thesis

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List of Abbreviations

Abbr.	Full-term
ACOG	: American college of obstetricians and gynecologists
ARDS	: Adult respiratory distress syndrome
ART	: Assisted reproductive techniques
ASRM	: American Society of Reproductive Medicine
CI	: Confidence interval
HSG	: Hysterosalpingography (HSG)
ICSI	: Intracytoplasmic sperm injection
IVF	: In vitro fertilization
MAC	: Monitored Anesthesia Care
MRI	: Magnetic resonance imaging
OD	: Outer diameter
OR	: Odds ratio
PID	: Pelvic inflammatory diseases
RCT	: Randomized controlled trials
RPL	: Recurrent pregnancy loss (RPL)
SIS	: Sonohysterography
SD	: Standard deviation
SPSS	: Statistical package for social science
TVUS	: Transvaginal ultrasonography
2D US	: Two-dimensional ultrasound
3D US	: Three-dimensional ultrasound

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Introduction

Hysteroscopy in asymptomatic woman prior to their first IVF cycle could improve treatment outcome when performed just before commencing the IVF cycle. Robust and high-quality randomized trials to confirm this finding are warranted. Currently, there is evidence that performing hysteroscopy (camera examination of the womb cavity) before starting IVF treatment could increase the chance of pregnancy in the subsequent IVF cycle in women who had one or more failed IVF cycles ***(Pundir et al., 2013).***

Endometrial polyps, submucous fibroids, uterine septa, and intrauterine adhesions can be found by ultrasound (US), HSG, hysteroscopy, or any combined in 10-15 % of infertile women. Observational studies suggest a better reproductive outcome when these anomalies are removed by operative hysteroscopy. The current Cochrane review assesses the effectiveness of hysteroscopy for treating these suspected anomalies in women with otherwise unexplained infertility or prior to intrauterine insemination, in vitro fertilization, or intracytoplasmic sperm injection ***(Bosteels et al., 2013).***

Observational studies suggest higher pregnancy rates after the hysteroscopic removal of endometrial polyps, submucous fibroids, uterine septum or intrauterine adhesions,

which are detectable in 10% to 15% of women seeking treatment for subfertility ***(Bosteels et al., 2014).***

Hysteroscopic myomectomy might increase the odds of clinical pregnancy in women with unexplained subfertility and submucous fibroids, but the evidence is at present not conclusive. The hysteroscopic removal of endometrial polyps suspected on ultrasound in women prior to IUI might increase the clinical pregnancy rate. More randomised studies are needed to substantiate the effectiveness of the hysteroscopic removal of suspected endometrial polyps, submucous fibroids, uterine septum or intrauterine adhesions in women with unexplained subfertility or prior to IUI, IVF or ICSI ***(Bosteels et al., 2014).***

Diagnostic hysteroscopy prior to COH may not increase the implantation rate and live birth rate for the first IVF/ICSI programs. The efficacy of routinely performing diagnostic hysteroscopy before the first IVF program is needed to re-evaluate ***(Yu et al., 2012).***

Implantation failure represents a major cause of stress to both clinician and patient undergoing ICSI cycle. Even minor uterine cavity abnormalities, such as endometrial polyps, small submucous myomas, adhesions, and septa are considered to have a negative impact on the chance to conceive through ICSI ***(Elsetohy et al., 2014).***

Many couples fail to achieve pregnancy instead repeated FIV-TE-ICSI cycles. Good quality embryos for successful pregnancy rates should not be count apart over endometrial receptivity ***(Ozgur et al., 2014).***

Instead previous diagnosis of an apparently normal uterine cavity, pathologic abnormalities were found in a significant number of patients. We observed an improvement in pregnancy rates in patients in with HC was realized previous to FIV-TE-ICSI, particularly on those were endometrial pathology was found and corrected, even though the study sample did not allowed to reach results with statistical difference ***(Gavino-Gavino et al., 2010).***

Aim of the Work

Evaluation of effect of performing the diagnostic hysteroscopy prior to IVF/ICSI on the success rate in women with or without previous IVF/ICSI trial.

Chapter (1): Hysteroscopy

The development of hysteroscopy has provided a minimally invasive approach to common gynecologic problems, such as abnormal uterine bleeding. Increased clinician training, smaller diameter hysteroscopes, and increased emphasis on office-based procedures have led to a widespread use of this important technology ***(Bosteels et al., 2013).***

A hysteroscope is a telescope that is inserted into the uterus via the vagina and cervix to visualize the endometrial cavity, as well as the tubal ostia, endocervical canal, cervix, and vagina. Hysteroscopy can be performed for diagnostic or therapeutic indications ***(Di Spiezio Sardo et al., 2008).***

A hysteroscope is an endoscope that carries optical and light channels or fibers. It is introduced in a sheath that provides an inflow and outflow channel for insufflation of the uterine cavity. In addition, an operative channel may be present to introduce scissors, graspers or biopsy instruments ***(Nouri et al., 2010).***

Procedure

Hysteroscopy has been done in the hospital, surgical centers and the office. It is best done when the endometrium is relatively thin, that is after a menstruation. Diagnostic can

easily be done in an office or clinic setting. Local anesthesia can be used. Simple operative hysteroscopy can also be done in an office or clinic setting. Analgesics are not always necessary ***(Yang et al., 2006).***

A paracervical block may be used using a Lidocaine injection in the upper part of the cervix. The patient is in a lithotomy position during the procedure. Hysteroscopic intervention can also be done under general anesthesia (endotracheal or laryngeal mask) or Monitored Anesthesia Care (MAC). Prophylactic antibiotics are not necessary ***(Agostini et al., 2008).***

Cervical dilation

The diameter of the hysteroscope is generally too large to conveniently pass the cervix directly, thereby necessitating cervical dilation to be performed prior to insertion. Cervical dilation can be performed by temporarily stretching the cervix with a series of dilators of increasing diameter. Misoprostol prior to hysteroscopy for cervical dilation appears to facilitate an easier and uncomplicated procedure only in premenopausal women ***(ASRM, 2012).***

Insertion and inspection

The hysteroscope with its sheath is inserted transvaginally guided into the uterine cavity, the cavity insufflated, and an inspection is performed ***(Polyzos et al., 2012).***

Insufflation media

The uterine cavity is a potential cavity and needs to be distended to allow for inspection. Thus during hysteroscopy either fluids or CO2 gas is introduced to expand the cavity. The choice is dependent on the procedure, the patient's condition, and the physician's preference. Fluids can be used for both diagnostic and operative procedures. However, CO_2 gas does not allow the clearing of blood and endometrial debris during the procedure, which could make the imaging visualization difficult. Gas embolism may also arise as a complication. Since the success of the procedure is totally depending on the quality of the high-resolution video images in front of surgeon's eyes, CO_2 gas is not commonly used as the distention medium ***(Van Kruchten et al., 2010).***

Electrolytic solutions include normal saline and lactated Ringer's solution. Current recommendation is to use the electrolytic fluids in diagnostic cases, and in operative cases in which mechanical, laser, or bipolar energy is used. Since they conduct electricity, these fluids should not be used with monopolar electrosurgical devices. Non-electrolytic fluids eliminate problems with electrical conductivity, but can increase the risk of hyponatremia ***(Polyzos et al., 2012).***

These solutions include glucose, glycine, dextran (Hyskon), mannitol, sorbitol and a mannitol/sorbital mixture