Abnormal hysteroscopic findings in infertile patients

Thesis

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Abstract

One of the basic steps of the infertility workup is to assess the shape and regularity of the uterine cavity.The HSG has been the most commonly used test for this purpose.During the last two decades ,several studies have demonstrated that when the uterine cavity has to be investigated within the infertilityworkup, hysteroscopy is much more accurate than HSG.

This study was conducted on 100 females who attended the outpatient clinic Cairo University hospital.Its objective was to assess the role of hysteroscopy in investigation of infertile women.The study was designed to assess the role of hysteroscopy in determining the uterine cavity abnormalities that were missed during routine investigation of infertility.

The study revealed presence of intrauterine polyps, submucous fibroids, intrauterine adhesions and septate uterus that were missed by standard investigation.These lesions can be treated during hysteroscopy and their treatment may lead to successful conception as reported by some authors.

Keywords:

Infertility

Hysteroscopy

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List of Abbreviations

2D US	Two dimensional ultrasound
3D US	Three dimensional ultrasound
ANA	Anti DNA
AOA	Anti Zona and Anti ovarian
ART	assisted reproductive technologies
ASA	Anti Sperm antibody
aCL	Anticardiolipin
aPS	Anti-Phosphatidylserine
aPE	Anti Phosphatidylethanolamine
AUB	Abnormal uterine bleeding
BMI	Body mass index
CCU	camera control unit
CFTR	cystic fibrosis transmembrane conductance regulator
CI	confidence interval
D&C	Dilatation and curettage.
D.M.	Diabetes mellitus.
DVT	Deep venous thrombosis
ET	embryo transfer
FISH	fluorescence in situ hybridization
FSH	follicle-stimulating hormone
HSG	Hysterosalpingography
HTN	Hypertension
ICSI	Intra Cytoplasmic Sperm Injection
IL12	interleukin12
IL18	interleukin18
IUA	Intrauterine adhesions
IUI	intrauterine insemination
IVF	In vitro fertilization
LA	Lupus anticoagulant
LH	luteinizing hormone

LPD	luteal phase defect
LUF	Luteinized unrupture follicle syndrome
NNT	number needed to treat
NAD	No Abnormality Detected .
OD	outside diameter
PCO	polycystic ovary syndrome
PGD	preimplantation geneticdiagnosis
PID	Pelvic inflammatory disease
RI	resistance index.
RVF	Retroverted Uterus.
ROC	receiver-operating characteristics.
ROS	reactive oxygen species.
SIS	Saline infusion sonography.
TSH	thyroid-stimulating hormone.
TURP	transurethral resection of the prostate.
UK	United Kingdom.
USA	United States of America.
VCR	video cassette recorder.
WHO	World Health Organization

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INTRODUCTION

Infertility can be defined as the failure to achieve a pregnancy within one year of regular unprotected intercourse **(Zegers et al., 2006)**. Its overall prevalence has been stable during the past 50 years **(Stephen and Chandra, 1998).**

The state of the art of the infertility workup, strange as it may appear, has never been accurately defined. A recent survey, that was designed to determine how reproductive endocrinologists practice on a daily basis, demonstrated that the five basic tests that were regarded as the cornerstone of the infertility evaluation were: semen analysis, assessment of ovulation, hysterosalpingogram, laparoscopy, and post-coital test **(Glatstein et al, 1997).**

Since 10-15% of the infertility causes are uterine factors, a main part of reproductive problems can be solved by using hysteroscopy **(Yao and Schust 2002).**

Hysteroscopy has traditionally been performed as an adjunct tool to evaluate abnormalities suspected as a result of HSG evaluation. Recent studies have shown increased benefit from combining hysteroscopy and HSG in the evaluation of female infertility. Moreover, hysteroscopy is useful in identifying endometrial abnormalities not detectable on HSG **(Brown et al., 2000)**.

During the last two decades, hysteroscopy has increasingly been gaining acceptance and is today a necessary tool in the investigation of female infertility. Hysteroscopy permits direct visualization of the cervical canal and the uterine cavity, enabling observation of the shape, relief, and vascular pattern of any abnormality **(Roma et al., 2004).**

Since nowadays it is performed in the office, so it can be offered as a first-line diagnostic tool for evaluation of uterine abnormalities in patients with abnormal uterine bleeding and/or infertility. In addition, the hysteroscopic approach offers the possibility of obtaining endometrial/myometrial biopsies under visual control (**Molinas and Campo, 2006)**.

Makris et al., 1999 performed hysteroscopy in patients with history of abortions, infertility and repeated failure of IVF. They showed that abnormal hysteroscopic findings were observed in 40.5% of cases in which intrauterine adhesions, endometrial hyperplasia and polyps were the most common. **Faghali et al, 2003** evaluated the benefits of a diagnostic hysteroscopy prior to IVF which shows that systematic hysteroscopy prior to IVF could improve the pregnancy rate. La Sala and Oliveira and their colleagues showed relation between IVF-ET failure and unsuspected intrauterine abnormalities **(La Sala et a., 1998 and Oliveira et al., 2003).**

Endometrial cavity assessment should be included in the evaluation of infertile couples. Most endometrial pathologies implicated in infertility result in both structural and functional impairments **(Alatas, et al., 1997)**. In many practices, diagnostic hysteroscopy is the preferred procedure for the diagnosis of uterine pathology in infertile patients **(Wong et al., 2000).**

AIM OF THE WORK

The aim of the study is to detect the uterine abnormalities missed in ultrasound scan and/or hysterosalpingography using hysteroscopy , in females presenting with infertility according to the criteria of the study.

INFERTILITY

Infertility is defined as one year of frequent, unprotected intercourse during which pregnancy has not occurred.

Many of these couples present first to their primary care physician ,who may initiate evaluation and treatment. Infertility can be attributed to any abnormality in the female or male reproductive system. In most cases, the etiology is distributed fairly equally among male factors, ovarian dysfunction , and tubal factors . A smaller percentage of cases attributed to endometriosis, uterine or cervical factors, or other causes. In approximately one fourth of couples, the cause is uncertain and is referred to as "unexplained infertility" **(Hull et al., 1985)**. The etiology is multifactorial for some couples.

Table 1: Etiology of Infertility:

1) Male (25 percent)
2) ovulatory (27 percent)
3) Tubal/Uterine (22 percent)
4) Other (9 percent)
5) Unexplained (17 percent)
(Practice Committee of the American Society for Reproductive Medicine, 2006).

Evaluation of Infertile couple:

In general, infertility evaluation is initiated after 12 months of unprotected intercourse during which pregnancy has not been achieved **.**

Earlier investigation may be considered when historical factors, such as previous pelvic inflammatory disease or amenorrhea, suggest infertility, although physicians should be aware that earlier evaluation may lead to unnecessary testing and treatment in some cases **(Practice Committee of the American Society for Reproductive Medicine, 2004).**

Evaluation also may be initiated earlier when the female partner is older than 35 years, because fertility rates decrease and spontaneous miscarriage and chromosomal abnormality rates increase with advancing maternal age **(Pal and Santoro, 2003).**

In the studies by **Gnoth *et al.* (2003) and Wang *et al.* (2003)**, 80% of the couples conceived successfully within 6 months, whereas only 10% of patients conceived in the 6 months thereafter. The results of these studies were used as an argument for the early evaluation of the reproductive capacity of couples who had not conceived after 6 months, since 50% of those that had not conceived after 6 months would not conceive in the next 6 months. Now let us flip the coin, and look at it from the other side. The same data implicate that 50% of couples who had not conceived after 6 months will conceive in the next 6 months. Pregnancy rates as high as 50% are rarely reported in reproductive medicine. As a matter of fact, we are not aware of any treatment that has such pregnancy rates, without generating harm, side effects and costs. Thus, whereas used as an argument for starting a diagnostic work-up, the data of Gnoth *et al.* and Wang *et al.* are a strong motive for reassurance of couples who did not conceive after 6 months, to aim for natural conception for another 6 months **(Van der steeg et al., 2005).**

The recently published NICE guidelines recommend performance of ovulation detection, semen analysis as well as hysterosalpingography (HSG) in couples who do not conceive within 12 months **(National Collaborating Centre for Women's and Children's Health, 2003**).

Apparently , these tests are valuable for couples who have tried to conceive for >12 months. What will happen if we perform these tests after 6 months of unfulfilled child wish As an example, we use HSG .For HSG, the sensitivity is known to be 65% for a specificity of 83% **(Mol et al., 1996)** When these tests are used in a population of subfertile couples who have been trying to conceive for at least 12 months, the prevalence of tubal pathology in this group will be ~20**% (Mol et al., 1997)**

Important topics to address include the frequency and timing of intercourse, and the use of lubricants or other products that may impair fertility **(Stanford et al., 2002; Zhou H et al.,1996).** The duration of infertility and history of previous fertility for the couple and for each partner individually also need to be addressed, because they affect prognosis and may help in determining etiology **(Hull et al., 1985; Rowe et al.,1993).**

A. Evaluation of the male partner:

Any condition that results in impaired sperm quality, quantity, or both can lead to male factor infertility. Testicular failure or dysfunction, also referred to as primary hypogonadism, is the most common identifiable cause **(De Kretser et al., 1997)**. Less common causes are hypothalamic-pituitary dysfunction, also referred to as secondary hypogonadism, and conditions that affect sperm transport. The etiology remains unclear in nearly one half of cases **(Rowe et al., 1993; Jarow et al., 1994).**

The reference values for the semen analysis are shown in the following table:

Table 2: World Health Organization 1999 Seminal Fluid Analysis Reference Values

Variable	*Measurement*
Volume	More than 2 mL
Sperm concentration	More than 20 million per mL
Total sperm number	More than 40 million per ejaculate
Sperm motility	More than 50 percent motile and/or more than 25 percent progressively motile
Sperm morphology	More than 14 % normal forms using strict criteria

WHO Laboratory Manual for the Examination of Human Semen and Sperm-Cervical Mucus Interaction, 1999.Kruger, 1988.

In patients with a low volume of ejaculate, postejaculatory urinalysis and transrectal ultrasonography may be performed to rule out retrograde ejaculation and ejaculatory duct obstruction, respectively. Scrotal ultrasonography also can be helpful in evaluating suspected testicular and scrotal abnormalities such as hydroceles and tumors **(Jarow al., 1994).** Specialized semen tests, including testing for sperm vitality, sperm culture, and analysis of sperm biochemistry and function, should be considered if evaluation of the female partner fails to reveal a cause **(WHO Laboratory Manual for the Examination of Human Semen and Sperm-Cervical Mucus Interaction, 1999).**