

## HYSTEROSCOPY FINDINGS IN WOMEN WITH IMPLANTATION FAILURE AFTER *IN VITRO* FERTILIZATION (IVF)

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### ABSTRACT

**Objectives:** The aim of this study was to assess the uterine cavity by hysteroscopy of women with infertility and implantation failure. Intrauterine environment plays a major role in implantation and achievement in clinical pregnancy. **Materials & Methods:** This research was a cross sectional study which included 80 patients with primary or secondary infertility with also one or more In Vitro Fertilisation (IVF) cycles failed despite of good quality of embryo transfer and normal appearance of the uterine cavity in hysterosalpingography. All patients were examined by transvaginal ultrasonography (TVU) and then hysteroscopy. Evaluation of the uterine cavity, endometrium and tubal Ostia were performed by hysteroscopy and findings were recorded. Patients with severe cervical stenosis were excluded from the study. A patient with noted uterine

cavity pathology appropriate surgical management was administered in same setting.

**Results:** A total of 46.2% of the study population showed abnormality in hysteroscopy of uterine cavity. Abnormal hysteroscopic findings were including: uterine sub septum (25%), endometrial polyps (13/8%), endometrial adhesion (6.2%), and submucousal myoma (1.2%).

**Conclusions:** Reevaluating the uterine cavity by hysteroscopy prior to further IVF embryo transfer cycles can be suggested to women with implantation failure to determine intrauterine cavity abnormality and treatment of them to enhance the clinical pregnancy.

**KEYWORDS:** Infertility, Uterine Cavity, Hysteroscopy, In vitro fertilization, Implantation Failure.

## INTRODUCTION

Some of the patients in the Assisted Reproductive Technology (ART) cycles confer to implantation failure. Several factors are related to implantation failure such as embryo quality, intrauterine environment, endometrial receptivity, immunological factors, uterine tubal, peritoneal factors, and culture median [1,2]. The rate of uterine factors is about 15-20% in patients with infertility, and the abnormal uterine finding is reported in approximately %50 of infertile women [3]. According to these findings evaluation of uterine cavity is recommended to screen intrauterine abnormalities such as fibroids, polyps, adhesions and uterine mullerian abnormalities [4].

Uterine cavity commonly is evaluated by hysterosalpingography (HSG) or hysteroscopy (HSC). World Health Organization (WHO) recommends HSG alone for assessment of uterine cavity and tubal blockage in infertile women; office hysteroscopy also is suggested in conditions of abnormality in clinical or complementary exams (ultrasound, HSG) or after in vitro fertilization (IVF) failure [5]. However, several intrauterine pathologies had been noted in 18-50% of patients undergoing IVF with any abnormality in their HSG and TVS [6]. Several studies have reported high false positive and false negative rates of intrauterine abnormality with HSG. Wang et al. reported the values of 15.6% false positive and 35.4% false negative rate for HSG [7]. Many gynecologic surgeons found the HSG an accurate tool; because, it enables direct visualization of cervical canal, uterine cavity and increase the accuracy in the diagnosis of intrauterine abnormalities [8] or routine office hysteroscopy has been suggested as a minimally invasive and tolerable test before embryo transfer [9,10].

The aim of this study was to assess the uterine cavity by hysteroscopy in women with infertility and implantation failure.

## MATERIAL AND METHODS

This cross-sectional study was carried out in Emam Khomieni Hospital of Ahvaz Jundishapur University of Medical Sciences. All patients who were referred to IVF department were enrolled the study from May 2011 to December 2012. In our center of fertility and infertility we suggested hysteroscopy to all patients with the history of IVF failure, because the some of the studies reported procedure hysteroscopy increased of the rate of pregnancy preceded by embryo transfer. The sample size was calculated according to a prevalence rate of 26% of uterine abnormalities among patients with reproductive failure [11]. So a 73 patient-sample-size was calculated according to the results of mentioned study. But we included 80 patients

sample size to cover missing cases of failure of the procedure such as cervical stenosis. Inclusion criteria were patients with primary or secondary infertility with the history of one or more IVF cycles failed despite transfer of good quality embryos. These patients had HSG with normal uterine cavity and did not have any distal hydrosalpinx and occlusion of tubes. Exclusion criteria were at least acute or recent pelvic infection, suspected or confirmed pregnancy, and patients with implantation failure due to causes other than uterine abnormalities, including poor responders, cause of testicular sperm retrieval and thrombophilia.

All patients had TVS to assess uterine pathologies, including uterine anomaly, intramural or subserosal leiomyoma. Hysteroscopy was performed in the early proliferative phase under general anesthesia using a 9-mm, 0 angle hysteroscope with an external sheath for providing inflow, outflow and using instruments. The hysteroscopy was inserted in the external os (ostium), with gentle movements through the cervical canal insert into the uterine cavity. Uterine cavity distention achieved with normal saline.

The endometrial tubal ostium was identified and when hysteroscopy was pulled back towards the internal orifice a panoramic view of the whole cavity was obtained. During withdrawal of the hysteroscopy the cervical canal was inspected. Patients with abnormal uterine cavity such as adhesion, sub septum and endometrial polyps were operated in the same setting. Diagnostic findings and operative outcomes were recorded.

## RESULTS

A total of 80 patients met our inclusion criteria. Table 1 shows demographic data. The abnormalities of uterine were sub septum uterine endometrial polyp, endometrial adhesion, and submucosal myoma (table 2). 46.2% of patients were reported with abnormal findings in hysteroscopy examinations and 53.7% did not have any evident of pathology.

<b>Table1. Patients characteristic (sample size=80).</b>	
Characteristics	Means±SD
Age (year)	30 ±5.5
Duration of infertility (years)	6 ±2.6
Number of failed IVF cycles	1.5 ± 0.5

<b>Hysteroscopy finding</b>	<b>No. of cases (%)</b>
Normal hysteroscopy finding	43 (53.7)
Abnormal pathology detected	37 (46.2)
Sub septum uterine	20(25)
Endometrial polyps	11 (13.8)
Endometrial Adhesions	5 (6.2)
Submucosal Myoma	1 (1.2)

## DISCUSSION

Hysteroscopy is a reliable diagnostic instrument to examine uterine cavity [4]. However uterine cavity has been most usually evaluated by HSG before undergoing IVF treatment. HSC has more diagnostic reliability than HSG in small intrauterine lesions such as submucosal liomyoma, polyps, and adhesions. These abnormalities may be the most important reason of the implantation failure [4]. Cicinelli et al reported a false negative rate of 59% for HSG [12]. Shokeir et al found the same results for HSG [13]. Demerol and Gurgan conducted a study on 210 women with a history of two or more IVF failure. The results of hysteroscopy showed the rate of 26% of intrauterine abnormality in women [11]. A study by Rama Raju et al. reported abnormal hysteroscopy in 37.25% of patients with recurrent IVF embryo transfer failures [4]. Moini et al. found the rate of 33.6% of abnormal uterine cavity in the study with 238 patients with previous IVF failure [14]. Fatma Aletebi realized the results of hysteroscopy in 132 women. The rate 38% (from 132 patients) with abnormal hysteroscopic findings in a population with a history of repeated implantation failures despite the transfer of good quality embryos transfer [15]. Oliveira et al. showed that 47% of women had abnormal endometrial findings on hysteroscopy of 55 women with a history of two previous failed IVF attempts [16].

Our study demonstrated that 46.2% of patients with the history of failed IVF had abnormal hysteroscopic findings despite unsuspected on pervious diagnostic tools. The results also support the findings of the previous studies who have reported that diagnostic value of hysteroscopy in endometrial cavity assessment is more than HSG. Treatment of some intrauterine abnormalities (intrauterine adhesions, congenital uterine malformation, endometrial polyp, and liomyoma) are suspected beneficial in infertile women [17]. In our study the prevalence of sub septum uterine and endometrial polyp in patients with IVF failure were about 25% and 11%. The uterine septum has been caused recurrent pregnancy loss. Diagnosis and its resection improve outcomes of IVF embryo transfer [18]. Mollo et al.

reported the live birth rate in patient with resection of uterine septum was significantly higher than control group [19]. Uterine polyp could cause infertility (5-10%) and recurrent abortion (15-50%) of all cases [14]. Hysteroscopy is an invaluable tool to determine these anatomical pathologies. La- Sala et al, in their study suggested the procedure of hysteroscopy as a routine exam in infertile women because it is economically advantageous in regard to the costs of assisted reproductive technology [20].

## CONCLUSION

In our study we found abnormal hysteroscopic findings in 46.2% of the infertile women with implantation failure. Our study revealed that reevaluation of uterine cavity by hysteroscopy prior to further IVF embryo transfer cycles can be suggested to women with implantation failure to determined intrauterine cavity abnormality and treatment of them to enhance the clinical pregnancy. Hysteroscopy is a reliable diagnostic tool to evaluate uterine cavity abnormalities and recommended be used as a first line.

## CONFLICT OF INTERESTS

The authors declare that they have no conflict of interest.

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