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Diagnostic Hysteroscopy as a Primary Tool in a Basic Infertility Workup

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ABSTRACT

Objective: To assess the value of diagnostic hysteroscopy in a primary workup of infertility.

Methods: We performed a retrospective analysis (Canadian Task Force Classification II-2) of 221 infertile patients referred to the Outpatient Center for Uterine Cavity Evaluation and the Tel-Aviv University affiliated Assaf Harofe Medical Center for evaluation of the uterine cavity. Patients underwent a diagnostic office hysteroscopy.

Results: Hysteroscopy revealed an abnormal uterine cavity in 30% of women evaluated for either primary or secondary infertility. No significance was found regarding the total number of intrauterine pathologies when comparing the groups of primary versus secondary infertility.

Conclusion: Routine diagnostic hysteroscopy should be part of an infertility workup in primary and secondary infertility.

Key Words: Primary and secondary infertility, Diagnostic hysteroscopy, Intrauterine abnormalities.

INTRODUCTION

It is widely accepted that a complete infertility workup should include an evaluation of the uterine cavity. Uterine abnormalities, congenital or acquired, are implicated as one of the causes of infertility. In fact, infertility related to uterine cavity abnormalities has been estimated to be the causal factor in as many as 10% to 15% of couples seeking treatment. Moreover, abnormal uterine findings have been found in 34% to 62% of infertile women.[1]

Today, hysteroscopy is considered the gold standard for evaluating the uterine cavity, and due to improved endoscopic developments, can be performed reliably and safely as an office procedure.[2,3] Direct view of the uterine cavity offers a significant advantage over other blind or indirect diagnostic methods.[4] Although Fayez reported hysterosalpingography (HSG) to be as accurate as hysteroscopy in the diagnosis of normal and abnormal cavities, the nature of the intrauterine filling defects is more accurately revealed by hysteroscopy.[4] Later studies have shown a correlation of only 65% between findings diagnosed with HSG compared with those diagnosed with hysteroscopy.[5] The role of hysteroscopy in infertility investigation is to detect possible intrauterine changes that could interfere with implantation or growth, or both, of the conceptus, and to evaluate the benefit of different treatment modalities in restoring a normal endometrial environment.[6] Oliveira[7] reported detection of significant, unsuspected intrauterine abnormalities, found only with hysteroscopy, in 25% of patients with repeated failed in vitro fertilization and embryo transfer (IVF-ET) cycles. All of his patient population had normal HSG within the former year. More importantly, relevant therapeutic interventions significantly improved the clinical pregnancy rate in those with abnormal uterine cavity at hysteroscopy.

Hysteroscopy can diagnose much more precisely, compared with HSG and even transvaginal ultrasonography, small intrauterine lesions that might affect fertility.

In view of all of the above, it is clear why many authors believe that uterine and endometrial integrity should be evaluated primarily by hysteroscopy in the infertile/IVF treated population.[7–12] Still, many consider hysteroscopy as only a complementary procedure in case of abnormal

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findings detected by other methods (primarily hysterosalpingography and ultrasound).[1,4,13–15] The aim of this study was to examine the role of diagnostic hysteroscopy in a basic infertility workup and to compare its use in primary versus secondary infertility. Data obtained from outpatient diagnostic hysteroscopies, performed for infertility investigation, were analyzed.

METHODS

Study Population

Included in this retrospective study were 221 women who had undergone hysteroscopy as part of their infertility workup in our outpatient clinic between October 1997 and June 2000. Of these, 106 women were diagnosed with primary and 115 with secondary infertility. Medical records were used for all relevant data.

Hysteroscopy

Hysteroscopy was performed to look for and evaluate the presence of intrauterine abnormalities. A detailed explanation of the procedure was given by the operating physician and a nurse, and all women signed an informed consent before undergoing the procedure. Diagnostic hysteroscopy was performed as an office procedure, using a 2.3-mm diameter continuous-flow endoscope (MR-PC, CIRCON ACMI). Distention of the uterine cavity was accomplished with normal saline solution. The procedure was considered complete only when the entire uterine cavity and both tubal ostia were visualized. Uterine anomalies were diagnosed according to the American Society of Reproductive Medicine classification within the limits of hysteroscopy.[16] In particular, we could not differentiate between bicornuate and septate uterus. Arcuate uterus was diagnosed when fundal protrusion was less than one fifth of the uterine cavity. At the end of the hysteroscopy, under direct vision, a endometrial biopsy sample was obtained for histologic examination when indicated. No local anesthesia or cervical dilatation was performed.

Statistical Analysis

Statistical analysis was performed using the Fisher's exact test. A result of $P<0.05$ was considered significant.

RESULTS

Hysteroscopy was performed in 221infertile women: 106 (48%) were diagnosed with primary infertility and 115 (52%) with secondary infertility. The median age was 30 years (range, 18 to 52) and 34 years (range, 20 to 50), respectively. In the group with secondary infertility, the parity ranged from 1 to 5, the spontaneous abortions ranged from 0 to 7, and induced abortions ranged from 0 to 5.

The indications for performing a diagnostic hysteroscopy are summarized in Table 1. The most common indication for diagnostic hysteroscopy was as a part of an early infertility workup. Other indications included cases being part of a continuous workup either before IVF treatment or after a number of failed IVF cycles **(Table 1)**. Hysteroscopy revealed a normal uterine cavity in 156 (70%) women **(Table 2)**.

Among women with primary infertility, intrauterine pathologies were diagnosed in 28 (26%). These pathologies were divided into acquired findings diagnosed in 15 women (14%) and congenital malformations found in 13 women (12%).

Considering the group with secondary infertility, intrauterine pathologies were diagnosed in 36 women (31%). Of these, 23 (20%) had acquired findings, and 13 (11%) were diagnosed with congenital uterine malformations **(Table 2)**.

A significantly higher rate of patients with submucous fibroids and a significantly higher rate of patients with arcuate uterus were found in the group with secondary infertility ($P<0.04$ and $P<0.02$, respectively). Besides that, no statistically significant difference was found in other uterine findings while comparing the 2 groups **(Table 2)**.

DISCUSSION

One of the basic steps of an infertility workup is to evaluate the shape and regularity of the uterine cavity.[2] Acquired uterine lesions, such as uterine fibroids, endome-

Table 1.
Indications for Hysteroscopy in 221 Infertile Women

Secondary Infertility No. (%)	Primary Infertility No. (%)	Indication
55 (48)	55 (52)	As part of infertility workup
31 (27)	23 (22)	Before IVF treatment
18 (16)	14 (13)	After 1–3 failed IVF cycles
9 (7.8)	10 (9.4)	After 4–6 failed IVF cycles
2 (1.2)	4 (3.6)	After >6 failed IVF cycles
115 (100%)	106 (100%)	Total

Table 2.
Hysteroscopic Findings in 219 Infertile Women

Findings	Primary Infertility (n = 105) (%)	Secondary Infertility (n = 115) (%)	*P* Value
Normal uterine cavity	77 (73)	79 (68)	NS*
Abnormal intrauterine finding	28 (26)	36 (31)	NS
Acquired Findings	15 (14)	23 (20)	NS
Submucous fibroid	0	5	<0.04
Endometrial polyp	8	5	NS
Multiple focal findings	4	5	NS
Intrauterine adhesions	3	5	NS
Cervical polyp	0	3	NS
Congenital Malformation	13 (12)	13 (11)	NS
Arcuate uterus	2	8	<0.02
T-shape uterus	1	0	NS
Unicornuate uterus	1	1	NS
Bicornuate/Septate uterus	8	4	NS
Uterus didelphys	1	0	NS
Total	105	115	

*NS = nonsignificant.

trial polyps, intrauterine adhesions, or all of these, may cause infertility by interfering with proper embryo implantation and growth.[1] Congenital uterine malformations are also thought to play a role in delaying natural conception.[17]

Hysteroscopy has been proved to be the definite method for evaluation of the uterine cavity and diagnosis of associated abnormalities.[2,15] Several studies have demonstrated that once the uterine cavity has to be investigated as part of the infertility workup, hysteroscopy is much more accurate than other diagnostic methods, mainly HSG.[2,9] In the current study, this also was the main indication for performing diagnostic hysteroscopy. Based on the results of the previous studies, it appears that more than 1/3 of the patients interpreted as normal following HSG are found to have a uterine abnormality after diagnostic hysteroscopy, which might be a significant cause of reproductive failure. These women may be wrongly treated, or unnecessarily investigated, while their intrauterine lesion has been missed.[2]

In the current study, 30% of women, undergoing infertility evaluation, had abnormal uterine findings on hysteroscopy. These results are comparable to those of the other studies reporting that only 43% to 69% of infertile patients have a normal uterine cavity.[1,4,18] No significant difference in the rate of uterine pathology was found between women with primary and secondary infertility (26% and 31%, respectively). Yet, more cases of arcuate uterus ($P<0.02$) and submucous fibroid ($P<0.04$) occurred in the group of women with secondary infertility.

While the relationship between congenital uterine malformations and impaired pregnancy outcome (such as recurrent pregnancy loss, late abortions, preterm deliveries, and malpresentations) is quite established, the issue of these malformations as a cause of infertility is still debatable. The incidence of uterine malformations in other series of infertile patients varies between 1% and 26%, with a mean incidence of 3.4%. We observed an incidence of 23% for both primary and secondary infertility. In concordance with other reports, septate/bicornuate uterus was the most common anomaly found.[17]

The reported incidence of myomas in infertile women without any obvious cause of infertility is estimated to be between 1% and 2.4%. In the current study, submucous myomas were diagnosed in 4.3% of patients with secondary infertility.

Donnez and Jadoul[19] tried to address the issue of whether

myomas influence fertility, by reviewing 106 relevant articles. They concluded that they do influence fertility, mainly based on the favorable pregnancy rates obtained after myomectomy. Furthermore, they concluded that submucous and intramural myomas distort the cavity, impairing implantation and pregnancy rates in women undergoing IVF. Several theories have been proposed regarding this issue, including alteration of uterine contractility or induction of inflammatory and vascular changes leading to a less receptive implantation site.[7] Hysteroscopy cannot only diagnose these pathologies accurately, but also enables optimal assessment for possible myomectomy.[18]

Endometrial polyps were diagnosed in both primary and secondary infertility groups with no statistically significant difference (7.6% vs 4.3%, NS). The true incidence of endometrial polyps in the general population is difficult to determine, because many of them are clinically asymptomatic. Nevertheless, Shokeir[20] found such lesions to be more frequent in the unexplained infertility population compared with fertile women. The possible role of these polyps in infertility is yet unclear, although follow-up on these women revealed improved reproductive outcomes after polypectomy. He concluded, in view of his results, that it seems logical to propose surgical treatment of all endometrial polyps among eumenorrheic infertile women, since even if small, they are likely to impair fertility. Removal of these polyps may enhance reproductive outcome.

No significant difference was found in the rate of intrauterine adhesions comparing the patients with primary versus secondary infertility, in spite of the known relationship between secondary infertility and the existence of adhesions, being mostly the result of uterine curettage for postpartum or postabortion residua. Oliveira[7] also found intrauterine adhesions in 10% of patients with repeated failed IVF cycles of whom none had undergone previous abortions or other uterine manipulation. He suggested that other causes of intrauterine adhesions must be ruled out.

While debating the need for routine diagnostic hysteroscopy in the evaluation of the infertile woman, one must keep in mind that this procedure today is no longer a complicated "in-patient-general-anesthesia one," but rather a simple, fast, outpatient procedure, requiring short training with high success rates.

Diagnostic hysteroscopy allows complete, accurate identification of intrauterine abnormalities that might negatively affect endometrial receptivity and implantation. The information derived from hysteroscopy helps the physician to institute appropriate therapy, and by doing so improve conception rates over shorter intervals.

CONCLUSION

Our results show that the incidence of uterine pathologies (congenital and acquired) in women with primary or secondary infertility approximates 30%, thus, justifying, in our opinion, the use of diagnostic hysteroscopy in the primary routine investigation of infertile women. Because no significant difference was found regarding the intrauterine findings between women with primary and secondary infertility, we believe that diagnostic hysteroscopy has a similar importance in the evaluation of patients with both primary and secondary infertility.

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