

Do Women with Unilateral Fallopian Tube Abnormality Require Assisted Reproductive Technology Treatment as the Primary Treatment?

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Abstract:

Aim:

To evaluate whether useful treatment unilateral fallopian tube abnormality patients receive spontaneous treatment under primary treatment.

Methods:

Total of 823 patients with a desire to achieve pregnancy who underwent hysterosalpingography (HSG) were divided into three groups according to their HSG results as follows: normal, unilateral abnormality, and bilateral abnormality. Treatment results (pregnancy rate, spontaneous abortion rate, and multiple pregnancy rate) with or without assisted reproductive technology (ART) were determined and compared.

Results:

Of the 823 patients, 483 (58.7%) achieved a pregnancy, 95 (19.7%) suffered a spontaneous abortion, 7 (1.4%) had ectopic pregnancies, and 13 (2.7%) had multiple pregnancies. The 483 patients who became pregnant were classified as follows: 432 of 715 (60.4%) in the normal Fallopian tube group; 46 of 90 (51%) in the unilateral abnormality group; and 5 of 18 (28%) in the bilateral abnormality group. No significant difference was found between the groups.

Conclusion:

There were no significant pregnancy rate differences between the three groups. The study demonstrated that a high pregnancy rate could be achieved with general infertility treatment to unilateral Fallopian tube abnormality patients.

Keywords: Unilateral Fallopian tube abnormality; pregnancy; hysterosalpingography; HSG; non-ART treatment;

Capsule: Women with unilateral fallopian tube abnormality treat prior to spontaneous treatment than assisted reproductive technology as primary treatment option

Introduction:

Recently, it is feared on a global scale that a couple of infertility diseases are on the rise. Usually when patient visits at clinic for desiring to get baby, infertility treatment begins with a history-taking interview of the patient followed by general infertility tests and subsequent development of an overall treatment plan.

Hysterosalpingography (HSG) is one of the general infertility tests; it is a useful procedure that provides valuable pregnancy information such as Fallopian tube blockage and the presence of adhesions. Obviously, Fallopian tube blockage requires treatment. The treatment plan varies depending on whether the blockage is unilateral or bilateral and also on the causes and the degree of abnormality.

Compared to primary infertility, the frequency of bilateral blockage is not very different in secondary infertility; however, unilateral blockage abnormality is significantly more prevalent in secondary infertility patients [1,2]. The question becomes: Is there a tendency to emphasize assisted reproductive technology (ART) centered around in-vitro fertilization (IVF) for not only Fallopian tube issues but infertility cases in general? According to the fiscal 2015 annual report (year 2014) of the Ethics Committee of the Japan Society of Obstetrics and Gynecology, approximately 425,000 cycles treatments under ART treatment cycles on an annual basis [3]. Is ART needed in all the cases? Studies have shown that general infertility treatments including intrauterine insemination (IUI) should be considered more often [4,5].

To determine the extent of successful pregnancies following general infertility treatment among unilateral Fallopian tube abnormality patients, clinical results were compared between ART and non-ART cases.

Materials and Methods:

The subjects of our study were 823 patients who underwent HSG at our outpatient infertility clinic from January 2012 through December 2013. HSG was recorded by observing the flow of the contrast media on the TV monitor. An oil-based contrast media was used. To determine the relationship between HSG results and pregnancy, data up to December 2014 (three-year post-test) were collected. Patient background comparison was conducted by classifying the HSG results into three groups: normal, unilateral abnormality, and bilateral abnormality. Previous publication of a preliminary reported on the local journal [6]. The abnormality group included patients with one or more of the following conditions: hydrosalpinx, adhesions, and/or blockage. For cases resulting in pregnancy, the correlation of the pregnancy rate, treatment method, time required to become pregnant, mean age, and body mass index (BMI) were compared between the three groups.

In addition, for successful pregnancies in the unilateral abnormality group, a predictive pregnancy rate was determined, assuming that pregnancy must have resulted from fertilization in the contralateral Fallopian tube even when ovulation was from the ovary on the abnormal Fallopian tube side. This study was certified by Yokota Maternity Hospital ethical committee which received informed consent to patients.

The Kruskal-Wallis and Fisher's exact tests were used as statistical significance tests. The criteria for significant difference were set at $P < 0.05$.

Results:

The breakdown of the HSG results for the 823 patients in this study was: 715 patients (86.9%) in the normal group; 90 patients (10.9%) in the unilateral Fallopian tube abnormality group; and 18 patients (2.2%) in the bilateral Fallopian tube abnormality group. No significant differences were found between the three HSG-result groups in terms of mean age, BMI, primary/secondary infertility and history of chlamydia infection (Table 1).

		Overall	Normal group	Unilateral abnormality group	Bilateral abnormality group
Total number of cases		823	715	90	18
Mean age (years)		33.3±4.9	33.3±4.9	33.1 ± 4.6	35.1 ± 5.0
Mean BMI		21.3±3.4	21.3±3.5	20.4 ± 2.4	23.2 ± 4.8
Infertility	Primary	569	488	66	15
	Secondary	254	227	24	3
Chlamydia IgG	Present (%)*	62/592	130/515	25/58	7/19
Antibody positivity		(27.4)	(25.2)	(43.1)	(36.8)
Presence of myoma		9	5	2	1
Presence of endometriosis		10	5	3	2
Presence of uterine deformity		11	8	1	0

Table 1.: Background of patients who underwent HSG

* Of all cases, aggregate data based on cases in which a chlamydia test was performed.

BMI, Body mass index; HSG, hysterosalpingography. Of the 823 patients that were tested, 483 (58.7%) became pregnant, 95 (19.7%) had spontaneous abortions, 7 (1.4%) had ectopic pregnancies and 13 (2.7%) had multiple pregnancies. The pregnancy rate was 432 of 715 (60.4%) in the normal HSG group, 46 of 90 (51%) in the unilateral Fallopian tube abnormality group, and 5 of 18 (28%) in the bilateral Fallopian tube abnormality group. There was no statistical difference between the three groups (Table 2). The pregnancy rate within the three groups that did not undergo ART was 378 of 601 (62.9%) in the normal HSG group, 37 of 64 (58%) in the unilateral abnormality group, and 2 of 5 (40%) in the bilateral abnormality group. No significant differences were observed between the groups. Conversely, the pregnancy rate in the ART group was 54 of 114 (47%) in the normal HSG group, 9 of 26 (35%) in the unilateral abnormality group, and 3 of 13 (23%) in the bilateral Fallopian tube abnormality group, and no significant differences were found between the groups (Table 2).

	Overall	Normal group	Unilateral abnormality group	Bilateral abnormality group
Number of treated patients	823	715	90	18
Number of pregnancies* (%)	483/823 (58.7)	432/715 (60.4)	46/90 (51)	5/18 (28)
Multiple pregnancies (%)	13 (2.7)	11 (2.5)	2 (4.3)	0 (0)
Spontaneous abortions (%)	95 (19.7)	85 (19.7)	10 (21.7)	0 (0)
Ectopic pregnancies	7 (1.4)	5 (1.2)	2 (4.3)	0 (0.0)
General infertility treatment patients/ART treatment patients	670/153	601/114	64/26	5/13
Pregnancy rate with general infertility treatment (%)	417/670 (62.2)	378/601 (62.9)	37/64 (58)	2/5 (40)
Pregnancy rate with ART treatment (%)	66/153 (43)	54/114 (47)	9/26 (35)	3/13 (23)
Mean time until pregnancy after HSG (months)	6.5 ± 5.5	6.4 ± 5.5	7.6 ± 6.0	4.1 ± 2.3

Table 2. Breakdown of pregnancy establishment and outcomes

ART, assisted reproductive technology; HSG, hysterosalpingogr. There was no significant difference in terms of time required to become pregnant after the HSG test and for treatment method (ART vs. general infertility treatment) in pregnancy cases of all three groups (Table 2). Of the 90 patients in the unilateral Fallopian tube abnormality group, 26 received ART treatment and 9 became pregnant. For the 3 patients (3 of 26; 12%) who became pregnant, it was theorized that ovulation from the follicle on the obstructed side passed to the normal Fallopian tube on the contralateral side.

It was emphasized that successful pregnancy rate was higher following procedure clomiphene half tablet plus hMG plus IUI treatment (Table 3).

Precedure	Total	Normal	Unilateral abnormality	Bilateral abnormality
ART	67	54	10	3
Un-treatment	51	45	5	1
Clomiphene 1/2+hMG+IUI	47	44	3	0
Cyclofenil	37	35	2	0
Clomiphene 1/2+hMG	33	30	3	0
Clomiphene+hMG+IUI	32	29	3	0
Clomiphene +hMG	25	24	1	0
Clomiphene 1/2	24	24	0	0
Cyclofenil +hMG+IUI	24	22	2	0
Cyclofenil +hMG	23	19	4	0
Cyclofenil + HSG	19	17	2	0
Clomiphene	18	16	1	1
HSG	10	9	1	0
Clomiphene 1/2+IUI	9	9	0	0
Cyclofenil+IUI	8	6	2	0
Clomiphene +IUI	7	6	1	0
Clomiphene 1/2 + HSG	5	5		0
Clomiphene + HSG	4	3	1	0
Clomiphene +hMG+HSG	4	3	1	0
Clomiphene +rec FSH	3	1	2	0
Cyclofenil +hMG+HSG	3	3	0	0
hCG + HSG	3	3	0	0
hMG+hCG	3	2	1	0
HSG + treatment of chlamydia.	3	3	0	0
Removed endometrium polyp.	3	3	0	
Clomiphene 1/2+hMG + HSG	2	1	1	0
Clomiphene 2T+hMG+IUI	2	2	0	0
Cyclofenil +IUI+HSG	2	2	0	0
hCG	2	2	0	0
Clomiphene + HSG + Removed inner membrane polype.	1	1	0	0
Clomiphene 1/2+hMG + Leuprolide	1	1	0	0
Clomiphene 1/2+AIH + HSG	1	1	0	0
Clomiphene +hMG+ HSG + Removed endometrium polyp.	1	1	0	0
Clomiphene +hMG+ Leuprolide	1	1	0	0
Clomiphene +recFSH + Leuprolide	1	1	0	0
Clomiphene +rec FSH+IUI	1	1	0	0
Cyclofenil + HSG+ Removed endometrium polyp.	1	1	0	0
hMG+hCG+IUI	1	1	0	0
hMG+hCG+HSG	1	1	0	0

Table 3. The effective treatment for pregnancy in Fallopian tube abnormality groups.

Discussion:

Among the causes of female infertility, tubal factor infertility is the most prevalent; it accounts for 31.2% of all cases [7]. Therefore, in order to proceed with infertility treatment, a tubal function test is essential. In order to determine lesions in the tubal lumen and its surroundings, tubal function tests such as the Rubin test, hydrotubation and HSG are generally performed. Of the factors of tubal infertility, Fallopian tube blockage is a cause of infertility that occurs with high frequency. A HSG is a widely used diagnostic test for common blockages.

When tubal blockage is suspected from the HSG results, a treatment plan is developed with the patient's interest and medical condition in mind. However, there are times when one hesitates as to whether to choose ART treatment or general infertility treatment. When ART is performed on patients with a hydrosalpinx, pregnancy and implantation rates decrease, and the rate of early spontaneous abortion increases, compared to tubal infertility patients without a hydrosalpinx. In other words, hydrosalpinx reduces the ART treatment results [8]. Numerous studies have shown that pregnancy rates improved by performing a salpingectomy prior to ART on hydrosalpinx cases [9-11]. Conversely, studies have also shown that adhesions develop in the pelvic cavity when a salpingectomy is performed [12,13]. A number of studies have reported on the various treatment modalities that exist, depending on the condition of the tubal blockage. These studies have shown that (i) ART improves pregnancy outcome even in blockage cases; (ii) clinical outcomes differ depending on the location of the tubal blockage; and (iii) there is no difference in outcome even with a salpingectomy [14-16].

When the patients in our study were divided into three groups (normal, unilateral abnormality, and bilateral abnormality), based on their HSG results, and underwent general infertility treatment, there was no significant difference in terms of the pregnancy rate between the groups (Table 2). In many cases, patients became pregnant within 1 year after undergoing HSG. In some patients, the HSG itself may have cleared the blockage. If, for instance, a treatment plan that prioritizes ART treatment was selected for the tubal abnormality groups, most of the cases in our study would have received ART instead of general infertility treatment, and as a result of IVF, the pregnancy rate from ART would have increased. Results from this study showed that there are women that can achieve a pregnancy with general infertility treatment without having to select ART even if there are abnormalities in the HSG results.

Especially, when we treated half tablet clomiphene plus hMG plus IUI, we got successful pregnancy rate, therefore, it is emphasized that the effective treatment of clomiphene half tablet plus hMG plus IUI would be recommended for the primary treatment option. In our opinion, ART is a continuation of general infertility treatment. Since we performed the HSG immediately upon commencement of treatment, the average age of our subjects was slightly young (Table 1). The results of this study demonstrated the need to actively consider general infertility treatment instead of immediately resorting to ART when unilateral abnormality is identified through HSG at an early stage of treatment of patients with a desire to achieve a pregnancy.

Interestingly, 3 (12%) of the 26 ART patients with unilateral blockage who became pregnant were suspected of having a pregnancy where the embryo passed through the contralateral Fallopian tube when the ovulation occurred from the ovary on the abnormal Fallopian tube side. According to Ross, et al., 32% of the ova in tubal pregnancies were ectopic pregnancies with a contralateral corpus luteum [17]. It should be noted that pregnancy must have occurred from the ovum in the ovary of the unilateral tubal blockage side; it would have to float in the peritoneal fluid and enter the fimbria of the Fallopian tube.

In conclusion, one should consider general infertility treatment without immediately resorting to ART when HSG results indicate tubal abnormalities. The treatment plan should be decided while considering the patient's age and medical condition.

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