

Successful Pregnancies Following Hystero Salpingogram (HSG)

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Summary

It is crucial to prove the tubal patency in the sub-fertile couple to decide the mode of treatment. Hysterosalpingography (HSG) is one diagnostic procedure to assess tubal patency. It is of therapeutic value in the first 3 months following the procedure (Winfield & Wentz, 1987), probably by dislodging the mucus plug, debris and blood clots that might have entered the tube during menstrual flow. To prove this, a retrospective study was conducted in 340 sub-fertile patients who underwent HSG at Fertility Research Center, G.G. Hospital, Chennai from September-November 1999 in comparison to those who underwent IUI only. The study concluded showed that the conception rate was highest in the first 3 months following HSG with ovulation induction and intrauterine insemination compared to those who underwent IUI only.

Introduction

HSG is a simple procedure involving injection of a radiopaque dye into the uterine cavity. It reveals the size and shape of the uterine cavity, tubal contour, diameter and patency. It is of value in diagnosing intra cavity pathologies like adenomatous hyperplasia, intra uterine polyp and tubal pathologies like hydrosalpinx, salpingitis isthmica nodosa and tubal polyp. It helps in assessing the incompetence of the internal os.

This procedure is also helpful in assessing whether recanalisation is possible in patients who have been sterilized previously. HSG is contraindicated in patients with pelvic inflammatory disease as it does not reveal tubo-ovarian relationship or tubal motility. It should be performed prior to ovulation, when the oocyte is in prophase of meiosis I and relatively radio resistant.

It should be done 3 days after cessation of menstrual flow to prevent regurgitation of blood into the peritoneal cavity. If done in post ovulatory phase, the fertilized oocyte may be pushed in a retrograde fashion leading to an ectopic pregnancy. The procedure is well tolerated and is cost effective. In order to prevent tubal spasm, non steroidal anti-inflammatory drugs can be used.

Materials and Methods

The study was conducted at fertility Research Centre, G G Hospital, from September-November 1999 on 340 patients and another 340 patients were taken as controls and the results evaluated.

Selection Criteria

Patients belonging to the age group 25-30 years

and married for 2-7 years were taken up for the study. The male partners with a sperm count of 20 million and above with a motility rate of 40% or more were included.

Procedure of HSG

The instruments used for HSG should be those that are atraumatic, leak proof, and cause minimal discomfort to the patient. At our center we used Sims Speculum, Vollselum and Rubins Cannula. Strict aseptic technique was followed. The dye used was water soluble Diatrizoate Meglumine and Diatrizoate Sodium Injection U.S.P. (Urograffin 60% Schering AG German Remedies Ltd). It was easily injectable with rapid resorption, excellent visualization and least discomfort with no allergic reactions.

The patients were counselled and prepared for the procedure. Prostaglandin inhibitor and diazepam 5mg were administered half an hour prior to the procedure. The patient was positioned for HSG on the X-ray table with 10° inclinations, in frog-leg position.

About 5ml of the dye was injected very slowly and the X-ray picture was taken to record any intra uterine pathology. Another 5ml was injected further to visualize tubal contour and spillage. A course of broad-spectrum antibiotic was administered for five days following the procedure with advise to avoid intercourse for the next 2-3 days.

A normal HSG picture was considered as one with a triangular uterine cavity. Patency of the tube, was documented by visualizing spillage of contrast from the fimbrial end of the ampulla into the peritoneal cavity. Any level of tubal occlusion was identified and bilateral tubal blocks were excluded from the study.

The couples were initially treated with antibiotics for Chlamydia, Mycoplasma and Ureaplasma infections. The females, after evaluation of day 2 LH (<5 mIU) were given clomiphene citrate 100mg/day from

day 5-9. HSG was performed on day 8/9 followed by follicular study from day 12 onwards to evaluate the follicular size and endometrial reaction. Only patients with bilateral/unilateral spillage were taken up for the study. Surrogate LH in the form of HCG 5000/10,000 IU IM was administered when the dominant follicle reached 2.0 x 2.0cms. Two intrauterine inseminations (IUI) were done, one, on the day following HCG and the other following follicular rupture (48 hours). Luteal support was given in the form of oral progesterone 10mg/day (Dydrogesterone) or vaginal suppositories 100 mg (micronised pure progesterone) for 10 days.

The control group of 340 patients who after fulfilling the above criteria, underwent a similar procedure as the study group but did not undergo HSG.

Results and Discussions

Among the 340 patients in the study group who were subjected to HSG, 279 patients had bilateral patent tubes, 26 patients had left tubal block and 20 patients had right tubal block. 15 patients had bilateral corneal block and were advised IVF & ET and 37 patients were lost in follow up. (Table I and Table II)

The above 288 patients underwent ovulation induction and intrauterine insemination (IUI) following HSG of which 50 (17.3%) patients conceived within the first 3 months. In order to tally the study and control group we reduced the number of patients in the control group to 288, who underwent ovulation induction and IUI only. The conception rate in this group was 38 (13.2%) (Table III).

Table III
Comparison of Pregnancy Rates in Patients Undergoing HSG & IUI

Pregnancy in the study group	Pregnancy in patients who had IUI without HSG
50 (17.3%)	38 (13.2%)

Table I
Results of HSG

Bilateral spill	Right spill with Left block	Left spill with Right block	Bilateral corneal block
279	26	20	15

Table II
Uterine Anomalies

Normal Cavity	Dilated Cavity	Arcuate	Unicornuate	Bicornuate/Septate
295	20	11	5	9

Among the 50 patients who became pregnant, 23 (46%) conceived in the first month, 18 (36%) in the second month and 9 (18%) in the third month following HSG. (Table IV)

Table IV
Pregnancy Outcome Following HSG

Pregnancy in the same cycle after HSG	Pregnancy in the second cycle after HSG	Pregnancy in the third cycle after HSG
23 (46%)	18 (36%)	9 (18%)

Complications

Complications like uterine perforation, tubal rupture, reactivation of pelvic inflammatory disease, haemorrhage, and anaphylactic shock can occur, though rare. Venous intravasation is another complication but as the dye is water soluble it dissipates quickly and does not cause embolization. The incidence of PID following HSG is 0.5-6% (Winfield and Wentz 1987).

Table V
Complications Following HSG

Complications	No. of Patients	%
Pain	25	7.35
Reactivation of PID	1	0.3
Uterine Perforation	1	0.3

In our study, 25 patients (7.35%) developed pain after IUI, reactivation of PID was found in 1 patient (0.3%) and the accidental perforation of the uterus occurred in 1 patient (0.3%) who recovered uneventfully and subsequently conceived through ET. (Table V)

Out of 288 patients who were taken up for the study 50 patients conceived giving a pregnancy rate of 17.3% within 3 months of HSG. This, when compared to

Weir et al (1957) is less who published a conception rate of 30% after 3 cycles and 45% following 8 cycles. Our results are comparable to that of DeCherney et al (1980), who gave 13% as pregnancy rate in the first 4 months following HSG. Schwabe et al (1983) compared oil and aqueous of contrast medium and found that higher pregnancy rate with oil (77.8%) when compared to aqueous (10%) contrast medium.

Conclusion

HSG may be used as first line diagnostic procedure for investigating infertile women and provides immediate information regarding tubal patency and abnormalities of the uterine cavity at minimal cost. It is an office procedure requiring no anaesthesia and is well tolerated by the patient. The pregnancy rate is high within first to three months following the procedures (Winfield and Wentz, 1987). Our study proves that pregnancy outcome is better following HSG when compared to those who did not undergo this procedure. Even the 4% difference is gratifying as when compared to ART procedures, which is extremely expensive and not reachable for the lower and middle socio-economic groups.

References

1. DeCherney AH, Kort H, Barney JB, Devore GR: *Fertil. Steril.* 33: 407, 1980.
2. Schwabe MG, Shapiro SS, Haning RV Jr; *Fertil Steril* 40: 604, 1983.
3. Weir WC, Weir DR, Littell AS. *Am J Obstet Gynecol* 73: 412, 1957.
4. Winfield C Alan, Wentz Colston Anne; *Diagnostic Imaging of Infertility*; Editor, Timothy Grayson, Williams and Wilkins, 428, East Preston St, Baltimore, M.D 21202, USA, 1987.