



TRANSVAGINAL SALINE INFUSION SONOHYSTEROGRAPHY - ROLE IN INFERTILITY

Priscilla Poornima, B., Latha K., Jayashree V and Sethurajan S

^{1,2,3}Department of Obstetrics and Gynaecology, Rajah Muthiah Medical College and Hospital, Annamalai University, Annamalai Nagar – 608 002

⁴Department of Radiodiagnosis, Rajah Muthiah Medical College and Hospital, Annamalai University, Annamalai Nagar – 608 002

ARTICLE INFO

Article History:

Received 18th August, 2016
Received in revised form 27th
September, 2016 Accepted 4th
October, 2016 Published online 12th
November, 2016

Key words:

Infertility; Endometrial cavity
pathology; Transvaginal
sonohysterography.

Copyright © 2016 Priscilla Poornima, B et al. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Transvaginal sonohysterography was carried out with dynamic instillation of normal saline in the uterine cavity in thirty infertile patients. Sonohysterography was found to be simple, accurate and specific in delineating endometrial cavity lesions like polyp, submucous myoma, intrauterine synechiae and endometrial hyperplasia.

INTRODUCTION

Hysterosalpingography has been traditionally used to delineate uterine cavity, although it is considered to be less specific. Hysteroscopy is considered to be gold standard in evaluating endometrial cavity lesions. Vaginal sonography has significantly influenced fertility management and greatly extended the role of ultrasound in Obstetrics and Gynaecology. The use of ultrasonography together with instillation of intrauterine saline (Sonohysterography) is an appealing alternative to hysterosalpingography (HSG) and hysteroscopy in the evaluation of endometrial pathologies. Sonohysterography (SHG) has been found to be sensitive, specific and accurate in identifying abnormalities like myoma, polyp, synechiae, septae and uterine anomalies etc [1-3]. In this study, we describe our experience of performing sonohysterography (SHG) in a limited number of infertility patients at RMMC&H, Annamalai University.

MATERIALS AND METHODS

During the period of Nov 2015 to Oct 2016, a total of thirty infertility patients underwent sonohysterography. All patients presenting to OG OP with primary or secondary infertility were included in this study. All patients were briefed adequately about the simplicity and accuracy of the procedure

and hence patient compliance was excellent. The procedure was conducted in the department of Obstetrics and Gynaecology, RMMCH. Sonohysterography (SHG) was performed in the follicular phase of the menstrual cycle. We have used Foley's catheter No.8 and SI catheter. The procedure was performed in the following steps:

Patient position: supine with knees flexed.

Preliminary Transvaginal sonography (TVS) for evaluation of endometrial and uterine anatomy.

Aseptic cleaning of vulvovaginal region.

Insertion of SIS /Foley's catheter

Reintroduction of TVS probe and localization of the catheter followed by inflation of the balloon under direct visualization, if Foley's is used.

Injection of sterile saline in a pulsatile fashion and looking for endometrial cavity/ uterine pathology. With the balloon in place the endometrial cavity is examined in longitudinal as well as coronal plane. In most cases, 10-15 ml of saline is sufficient to demonstrate the endometrial cavity. The inflated balloon does not permit retrograde flow of saline through the cervix and hence allows a prolonged examination of the endometrial cavity. In case of Saline Infusion catheter, the stopper is snugly fit against the cervix and thus prevents backflow.

Gradually deflate the balloon and slowly withdraw the catheter while still injecting saline. This allows visualization of internal os and cervical canal.

Take out the catheter and the TVS probe.



Procedure	Advantage	Disadvantage
HSG	Easy to perform Tubal lumen can be delineated	Low specificity Use of ionizing radiation Use of iodinated contrast media with potential for allergic reaction Inability to study adnexal and myometrial pathology accurately.
Hysteroscopy	High specificity Therapeutic option available.	Invasive procedure. Requires local/ general anaesthesia in OT. Inability to study myometrial and adnexal pathologies.
SHG	Easy to learn and perform. Reasonably sensitive, specific and accurate. Can be performed as an OPD procedure. Simultaneous evaluation of endometrial cavity, myometrium and adnexa possible. Use of saline eliminates risk of allergic reaction.	

RESULTS

Majority of our patients were between 26-30 years of age. Primary infertility constituted 56.7% (17 patients) and secondary infertility 43.3% (13 patients). Foley's catheter was used in 15 patients and Saline infusion catheter in 15 patients. Sonohysterography resulted in excellent discrimination of endometrial cavity detail. Patients complained of mild degree of pain during distention of the uterine cavity. This pain was transitory and subsided after the procedure was over.

Abnormalities found during SHG were given the following diagnoses: Fibroid (n=5), endometrial hyperplasia (n=1), endometrial polyp (n=2), synechiae (n=1). Normal uterine cavity was found in 21 cases.

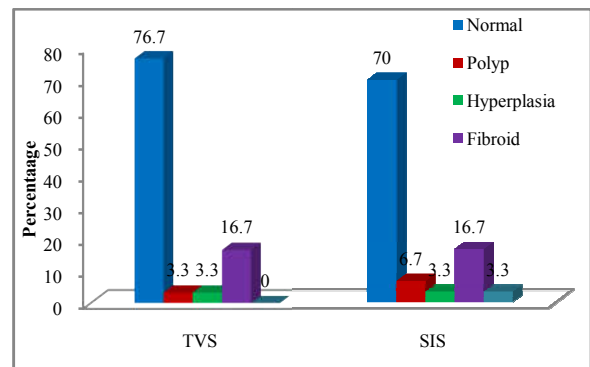
Tubal patency was also assessed and tubes were found to be patent in 27 patients. In one case, there was delayed minimal fluid collection in the pouch of Douglas after the procedure. Later hysterolaparoscopy done for that patient revealed right tubal block and patent left tube. 2 patients had bilateral tubal block.

Catheter	Advantage	Disadvantage
Foley's	Readily available in sterile pack. Adequate space available for maneuvering TVS probe.	Bulb inflated in the uterine cavity partly obscures cavity detail. Nulliparous cervix may not allow passage of a Foley's catheter.
SIS	Readily available in sterile pack. Adequate space available for maneuvering TVS probe. Can be introduced easily in nulliparous cervix. NO retrograde flow.	

Findings according to Transvaginal ultrasound and saline infusion Sonohysterography.

Diagnosis	TVS		SIS	
	No. of Cases	Percentage	No. of Cases	Percentage
Normal	23	76.7	21	70
Total Abnormal	7	23.33	9	30
i. Polyp	1	3.3	2	6.7
ii. Hyperplasia	1	3.3	1	3.3
ii. Fibroid	5	16.7	5	16.7
iv. Intrauterine adhesions	-	-	1	3.3

On TVS, abnormalities were detected in 7 patients constituting 23.3%. SIS was then done for all 30 patients. Of the 21 patients who had normal study on TVS, 2 patients were found to have abnormalities on SIS. 1 patient had endometrial polyp and 1 patient had intrauterine adhesions which was detected on saline infusion Sonohysterography, but not on Transvaginal ultrasound.



DISCUSSION

Structural abnormalities of the uterus and endometrial cavity may affect reproductive outcome adversely by interfering with implantation and causing spontaneous abortion. With the introduction of Transvaginal probes in early eighties, it became possible to obtain images of finer endometrial detail and uterine pathologies. The transvaginal probe contributes to an increased diagnostic accuracy through improved resolution afforded by the proximity of the transducer to the target organs and by the higher transducer frequencies used producing better axial and lateral resolution. Despite tremendous improvement in visualization of endometrial changes and uterine pathologies with TVS, it is extremely difficult to demonstrate intrauterine adhesions. It is equally difficult at times to differentiate between submucousmyoma, endometrial polyp and proliferative endometrium. Distending the uterine cavity with saline coupled with simultaneous real time visualization of the uterine cavity with a transducer results in excellent discrimination of uterine cavity detail.

Randolph et al in 1986[1] described instillation of intra-uterine saline during transabdominal ultrasound evaluation and found that the findings correlated well with hysteroscopic findings. Parson and Lense [3] evaluated 39 patients with vaginal sonohysterography and found that SHG resulted in excellent discrimination between intracavitary, intramural and submucous lesions. Various studies confirmed that SHG can easily identify normal uterine cavity, endometrial polyp, intrauterine adhesions, submucous or intramural myomas and other uterine pathologies [1-5].

During routine evaluation of infertility patients at our centre, we were at times confronted with focal/ diffuse hyperechoic endometrium on TVS. There were occasions when HSG findings were equivocal. Influenced by the positive results of SHG published worldwide, we have done SHG for our patients. Although the number of cases in our study are limited, the results are gratifying and equally encouraging. The sensitivity, specificity and accuracy of sonohysterography is established worldwide [1-4,6,7,8]. Our experience confirms the same although all cases did not undergo hysteroscopy. The relative advantage and disadvantage of HSG, hysteroscopy and SHG are discussed in Table 1. Our experience of using Foley's and saline infusion catheter is discussed in Table 2.

The rate of complications of SHG is not more than HSG and hysteroscopy. Sonohysterography not only delineates endometrial cavity detail but also myometrial and adnexal detail, an information which cannot be achieved with HSG or hysteroscopy. SHG can be easily performed as an OPD procedure without any analgesia / anaesthesia. We therefore, recommend the routine use of sonohysterography for uterine screening in infertility treatment programme.

References

1. Randolph JR, Ying YK, Maier DB, Schmidt CI, Riddick DH. Comparison of real-time ultrasonography, hysterosalpingography and laparoscopy / hysteroscopy in the evaluation of uterine abnormalities and tubal patency. *FertilSteril* 1986; 46:828-32.
2. Keltz MD, Olive DI, Kim AH, Arici A. Sonohysterography for screening in recurrent pregnancy loss. *FertilSteril* 1997; 67:670-4.
3. Parsons A, Lense J. Sonohysterography for endometrial abnormalities: Preliminary results. *J Clin Ultrasound* 1993; 21:87-95.
4. Kim AH, Mckay H, Keltz MD, Nelson HP, Adamson GD. Sonohysterographic screening before in vitro fertilization. *Fertil Steril* 1998; 69:841-4.
5. Van Rossel J, Warnsketer K, Exalto N. Sonohysterographic investigation of the uterus during artificial uterine cavity distension. *J Clin Ultrasound* 1987; 15:439-50.
6. Wolman I, Jaffa A. Hysterosonography/ saline infusion vaginal sonography of the uterus. In: Allahbadia G, ed. *Transvaginal sonography in infertility*. 1sted, Mumbai, ROTUNDA Medical Technologies Pvt Ltd.1998; 173-80.
7. Atlas C, Aksoy E, Akarsu C, Yakin K, Aksoy S, Haryan M. Evaluation of intrauterine abnormalities in infertile patients by sonohysterography. *Hum Reprod* 1997; 12: 487-90.
8. Maj J Debnath, Lt Col L Satija, Lt Col RK Sharma, Maj V Rastogi. *TRansvaginal saline infusion sonohysterography: Initial results*. *MJAFI* 2000; 57: 135-139.

