



OLD TRICK, NEW APPROACH: CAN HYSTEROSCOPY REPLACE HYSTEROSALPHINGOGRAPHY AS A ROUTINE PROCEDURE IN RPL FOR UTERINE CAVITY ASSESSMENT?

Obstetrics & Gynaecology

Dr Sunaina Agarwal

Senior Resident,

Dr Shubhi Vishwakarma*

Senior Resident. *Corresponding Author

ABSTRACT

Objectives: Recurrent pregnancy loss is defined as ≥ 2 pregnancy losses. Hysteroscopy is considered the gold standard for evaluation of uterine cavity. We calculated the efficacy of HSG in relation to hysteroscopy in detecting uterine causes of RPL. **Methods:** 40 patients with history of ≥ 2 abortions underwent HSG followed by Hysteroscopy. Uterine septum, unicornuate, bicornuate uterus, hypoplasia was classified as congenital defects and polyps, synechia, fibroids, intrauterine adhesions were classified as acquired defects. **Results:** 73.68% were normal on HSG while 36.84% of these were normal on hysteroscopy. On HSG, synechia seen as diffuse filling defect in only 5.26% patients while 15.79% had on hysteroscopy. Adhesiolysis was successful in 5 patients while failed in one due to dense adhesions. Fibroid, polyp and unicornuate uterus were not diagnosed on HSG. However, fibroid was seen in 5.26%, polyp in 15.79% and unicornuate uterus in 5.26% patients with hysteroscope. Bicornuate uterus was diagnosed in 21.05% patients on HSG. All these were confirmed as septum in DHL. Sensitivity and specificity of HSG to detect uterine abnormality was 41.67% and 100% respectively while PPV and NPV was 100% and 50% respectively. Findings here suggest that though HSG detection of uterine abnormality is very likely to be correct but it cannot rule out the absence of pathology in a negative report, hence will very likely need the next best step of Hysteroscopy confirmation and therapeutic care. **Conclusion:** Follow-up of RPL is long and distressing. Since both HSG and hysteroscopy are similarly invasive, we recommend office hysteroscopy as a first line treatment for patients in RPL with uterine pathology which has an added advantage of being an office procedure.

KEYWORDS

RPL, Hysteroscopy, HSG, recurrent abortion.

INTRODUCTION

Recurrent pregnancy loss (RPL) has been defined as two or more than two pregnancy losses and nearly 1-2% women are affected (1). Efforts are constantly made to find the cause of this distressing heterogeneous problem. Extensive evaluation is able to detect cause in almost two third of the cases (2) but the rest still remains unexplained.

Anatomic uterine causes account for practically 10-15% occurrence of RPL (3). Uterine scrutiny is universally recommended in cases of RPL by major international reproductive medicine societies with modalities like 3D ultrasound, HSG, hysteroscopy or hysterosonography (4). There is statistically insignificant difference between the prevalence of uterine causes discovered on evaluation after two miscarriages and after ≥ 3 miscarriages (5). Therefore, it is not surprising that many advocate hysteroscopic evaluation of uterine cavity after two abortions (6).

Hysteroscopy is now considered the gold standard for evaluation of uterine cavity (7) since it offers both diagnostic as well as therapeutic management unlike HSG. With the advent of office hysteroscopy, patients can be assessed without the need and risks of general anaesthesia, expect faster recovery, enjoy cost effectiveness, allay anxiety related to OT procedure/hospital admissions and reserving the complicated cases for operation theatre (8). Hysteroscopy offers high accuracy approaching 98% (9) and has gained popularity in daily gynecological assessment.

Traditionally, TVS, HSG, SIS has been used to evaluate uterus for uterine pathologies. HSG has the advantage of radio graphically visualizing the tubal patency, tubal structure apart from uterine cavity, making it an indispensable tool in initial diagnostic work up of an infertile women. However, it lacks a therapeutic approach in relation to congenital and acquired defects of uterus associated with habitual abortions. Since a positive and mostly a negative HSG will eventually require a Hysteroscopy, we postulate that hysteroscopy might replace HSG as a first line treatment for patients in RPL with uterine pathology which now has the added advantage of being an office procedure.

METHODS

The prospective observational study was conducted in a tertiary care centre in Delhi. 40 females with history of RPL attending the obstetrics and gynaecology department in the post abortal phase were enrolled after due consent.

RPL in our study was taken ≥ 2 pregnancy losses before 24 weeks of gestation, previously confirmed at least either by serum or urine β HCG

irrespective of the losses being consecutive or not.

A comprehensive history followed by physical examination was noted. Any patient with chronic or uncontrolled medical condition affecting fertility was excluded from the study.

Hysterosalpingogram was done on day 10 of cycle with aqueous contrast media. Hysteroscopy was done using the Bettocchi 5mm rigid hysteroscope in post menstrual phase. Enrolled patients were followed up after two weeks in OPD and then after the next period.

Statistical analysis-The data was entered in MS excel spreadsheet. Analysis was done using statistical package for social sciences version 21.0 (SPSS 21.0). Percentages and numbers represented categorical variables. Mean $\pm$ SD represented continuous variables. P-value of <0.05 was considered statistically significant.

RESULTS

An aggregate of 40 patients were enrolled and investigated; in one patient hysteroscope couldn't be inserted and one lost to follow up. There results were calculated from the remaining 38 patients. Mean age of patients was 25.6 years and varied from 21 to 32 years. Majority patients belonged to lower middle class which was 71.05% (n=27); 18.42% (n=7) belonged to lower class, 7.89% (n=3) were upper middle and 2.63% (n=1) belonged to upper class.

The number of abortions ranged from 2 to 6. 60.53% (n= 23) had previous 2 abortions and remaining 39.47% (n= 15) had more than two abortions. Out of these 84.21% (n= 32) majority had first trimester abortions while remaining had second trimester abortions.

There was no statistically significant difference in incidence of uterine factors for abortions in women with two or more than two abortions.

Out of 38 patients, 73.68% (n= 28) had normal HSG findings while out of these only 36.84% (n=14) were found to be normal on hysteroscopy. Synechia was seen as diffuse filling defect in only 5.26% (n= 2) patients while 15.79% (n=6) had synechia on hysteroscopy. Intrauterine adhesiolysis was successful in 5 patients while failed in one due to excessive and dense adhesions.

Fibroid, polyp and unicornuate uterus were not diagnosed on HSG which were supposed to be seen as focal filling defects on radiographic film. However, fibroid was seen in 5.26% (n=2), polyp in 15.79% (n=6) and unicornuate uterus in 5.26% (n=2) patients with

hysteroscope. Appropriate resection was done for fibroid and polyp with hysteroscopy in the same sitting.

Bicornuate uterus was diagnosed in 21.05% (n=8) patients on HSG while all these were diagnosed as septum in DHL.

Table1: Comparison Of HSG With Hysteroscopy

Observation	HSG %(n)	Hysteroscopy %(n)	p-value
Normal	73.68% (28)	36.84% (14)	0.007*
Diffuse filling defect	5.26% (2)	15.79% (6)	
Polyp	0	15.79% (6)	
Fibroid	0	5.26% (2)	
Septum	0	21.05% (8)	
Unicornuate	0	5.26% (2)	
Bicornuate	21.05% (8)	0	
Total	100% (38)	100% (38)	

*p value <0.05

Hysteroscopy was taken as gold standard and HSG findings were compared with hysteroscopy. Sensitivity and specificity of HSG to detect uterine abnormality was 41.67% and 100% respectively while PPV and NPV was 100% and 50% respectively. Findings here suggest that though HSG detection of uterine abnormality is very likely to be correct but it cannot rule out the absence of pathology in a negative report, hence will very likely need the next best step or Hysteroscopy confirmation as well as therapeutic care.

Table 2: Correlation Of HSG And Hysteroscopy In Detecting Uterine Abnormalities

HSG	HYSTEROSCOPY		TOTAL N (%)	p-value
	ABNORMAL	NORMAL		
ABNORMAL	10 (26.32%)	0 (0%)	10 (26.32%)	0.047*
NORMAL	14 (36.84%)	14 (36.84%)	28 (73.68%)	
TOTAL	24 (63.16%)	14 (36.84%)	38 (100%)	

*p value <0.05

A statistically significant difference was established with a p-value of 0.007 (p value <0.05) indicating utility of hysteroscopy over HSG in diagnosing uterine causes of abortions.

DISCUSSION

Recurrent pregnancy loss has always been a matter of concern for both, the couple seeking parenthood and the treating clinician. The role of anatomic uterine causes has been highlighted in quite a few literatures (10, 11). Reproductive outcomes with congenital mullerian defects are more substandard and difficult to treat than acquired uterine pathology (12). Hysteroscopic management is preferred choice in mullerian defects (13). In our study acquired defects were more common than the congenital mullerian defects.

HSG is routinely used unless the cause evident along with all blood investigations to evaluate a case of RPL. Hysteroscopy is only used in unexplained cases or if any abnormality is detected on HSG. Both approach the uterine cavity in ways different from each other; offer advantage and disadvantage over each other.

Out of 38 patients, 4 were reported to have bicornuate uterus on HSG which were later labeled as septate on DHL. This was in concordance with comparative studies between USG and HSG which stated that HSG does not reliably differentiate between septate and bicornuate uterus (14, 15, 16). HSG here was not able to detect any case of unicornuate anomaly consistent with study which stated that blocked or non-communicating rudimentary horn will not appear on film (10). Hysteroscopy alone also however, does not allow assessment of external uterine contour and therefore cannot firmly differentiate between different uterine anomalies. Laparoscopy here remains gold standard.

The most common acquired pathology in our study was intra uterine adhesions (IUA) and polyps. The finding was in line with comparative study between HSG and hysteroscopy (16). There was no specific pattern for detection of IUA since it was detected in 2 out of 6 patients with synechiae present on hysteroscopy. This was comparative to the study by Camuzcuoglu H et al (16). As hysteroscopy was done in post abortion phase, adhesions formed between the raw surfaces of the curetted endometrium were flimsy and were easily adhesiolysed. Patient with dense adhesions had history of multiple curettes in previous losses. Adhesiolysis helps restore the normal menstrual

regularity with previous history of either amenorrhea or hypomenorrhea (17).

6 patients had findings of polyp and 2 were detected with fibroid. 5 patients had endometrial polyp with size between 3 to 4 cm and the remaining 1 had multiple polyps between the sizes of 2-3 cm; polypectomy was done. Polyps may act as a foreign material hampering implantation or inducing inflammatory changes in the endometrium. One fibroid detected was sub mucosal and other was intramural. However both were hysteroscopically resected. Fibroids distort the endometrial cavity and hampers vascularity thereby interfering with implantation and placentation. None of these findings were detected on HSG.

Our study was in line with diagnostic accuracy of HSG with hysteroscopy i.e. low sensitivity and NPV and high specificity and PPV (18, 19).

HSG and hysteroscopy are both invasive however, the later gives advantage of concurrent treatment in cases of polyp, adhesions, fibroids or uterine septum. Nevertheless, further large prospective observational studies are needed to find out the fertility impact of such interventions done in the aspect of improving the reproductive outcome of patients with RPL especially in acquired anomalies of uterus.

CONCLUSIONS

Follow-up of RPL is long and distressing. Consequently, most patients with RPL have an intrauterine defect detected by hysteroscopy which is safe, effective, necessary and successful procedure; HSG remains inadequate to diagnose this condition by itself. Since both are similarly invasive, we recommend it as a routine procedure instead of HSG. Office Hysteroscopy should be promoted in India.

REFERENCES:

- Eshre Guideline Group on RPL, Bender Atik, R., Christiansen, O. B., Elson, J., Kolte, A. M., Lewis, S., ... & Goddijn, M. (2018). ESHRE guideline: recurrent pregnancy loss. *Human reproduction open*, 2018(2), hoy004.
- Daya, S., & Stephenson, M. D. (1996). Frequency of factors associated with habitual abortion in 197 couples. *Fertility and sterility*, 66(1), 24-29.
- Ford, H. B., & Schust, D. J. (2009). Recurrent pregnancy loss: etiology, diagnosis, and therapy. *Reviews in obstetrics and gynecology*, 2(2), 76.
- Youssef, A., Vermeulen, N., Lashley, E. L. O., Goddijn, M., & van der Hoorn, M. L. P. (2019). Comparison and appraisal of (inter) national recurrent pregnancy loss guidelines. *Reproductive biomedicine online*, 39(3), 497-503.
- van Dijk, M. M., Kolte, A. M., Limpens, J., Kirk, E., Quenby, S., van Wely, M., & Goddijn, M. (2020). Recurrent pregnancy loss: diagnostic workup after two or three pregnancy losses? A systematic review of the literature and meta-analysis. *Human reproduction update*, 26(3), 356-367.
- Weiss, A., Shalev, E., & Romano, S. (2005). Hysteroscopy may be justified after two miscarriages. *Human reproduction*, 20(9), 2628-2631.
- Di Spiezio Sardo, A., Di Carlo, C., Minozzi, S., Spinelli, M., Pistotti, V., Alviggi, C., ... & Bifulco, G. (2016). Efficacy of hysteroscopy in improving reproductive outcomes of infertile couples: a systematic review and meta-analysis. *Human reproduction update*, 22(4), 479-496.
- Salazar, C. A., & Isaacson, K. B. (2018). Office operative hysteroscopy: an update. *Journal of minimally invasive gynecology*, 25(2), 199-208.
- Loffer, F. D. (1989). Hysteroscopy with selective endometrial sampling compared with D&C for abnormal uterine bleeding: the value of a negative hysteroscopic view. *Obstetrics and gynecology*, 73(1), 16-20.
- Propst, A. M., & Hill III, J. A. (2000). Anatomic factors associated with recurrent pregnancy loss. In *Seminars in reproductive medicine* (Vol. 18, No. 04, pp. 341-350). Copyright© 2000 by Thieme Medical Publishers, Inc., 333 Seventh Avenue, New York, NY 10001, USA. Tel.: +1 (212) 584-4662.
- Wold, A. S. D., Pham, N., & Arici, A. (2006, February). Anatomic factors in recurrent pregnancy loss. In *Seminars in reproductive medicine* (Vol. 24, No. 01, pp. 025-032). Copyright© 2006 by Thieme Medical Publishers, Inc., 333 Seventh Avenue, New York, NY 10001, USA..
- Valli, E., Zupi, E., Marconi, D., Vaquero, E., Giovannini, P., Lazzarin, N., & Romanini, C. (2001). Hysteroscopic findings in 344 women with recurrent spontaneous abortion. *The Journal of the American Association of Gynecologic Laparoscopists*, 8(3), 398-401.
- Graebe, R. A. (1988). Hysteroscopic management of mullerian fusion defects. *Obstetrics and Gynecology Clinics of North America*, 15(1), 91-98.
- Braun, P., Grau, F. V., Pons, R. M., & Enguix, D. P. (2005). Is hysterosalpingography able to diagnose all uterine malformations correctly?: A retrospective study. *European journal of radiology*, 53(2), 274-279.
- Troiano, R. N., & McCarthy, S. M. (2004). Mullerian duct anomalies: imaging and clinical issues. *Radiology*, 233(1), 19-34.
- Camuzcuoglu, H., Yildirim, Y., Sadik, S., Kurt, S., & Tinar, S. (2005). Comparison of the accuracy of hysteroscopy and hysterosalpingography in evaluation of the uterine cavity in patients with recurrent pregnancy loss. *Gynecological Surgery*, 2(3), 159-163.
- Valle, R. F., & Sciarra, J. J. (1988). Intrauterine adhesions: hysteroscopic diagnosis, classification, treatment, and reproductive outcome. *American journal of obstetrics and gynecology*, 158(6), 1459-1470.
- Guimarães Filho, H. A., Mattar, R., Pires, C. R., Araujo Júnior, E., Moron, A. F., & Nardozza, L. M. (2006). Comparison of hysterosalpingography, hysterosonography and hysteroscopy in evaluation of the uterine cavity in patients with recurrent pregnancy losses. *Archives of Gynecology and Obstetrics*, 274(5), 284-288.
- Soares, S. R., dos Reis, M. B. B., & Camargos, A. F. (2000). Diagnostic accuracy of sonohysteroscopy, transvaginal sonography, and hysterosalpingography in patients with uterine cavity diseases. *Fertility and sterility*, 73(2), 406-411.