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Original Research Article

Role of Three Dimensional Sonosalpingography for the Assessment of Tubal Patency in Women with Infertility

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Abstract: Infertility is the most common health concern in present world. Various methods and invasive procedures are available. The aim of our study is to determine the role of 3D sonohysterosalpingography in the assessment of tubal patency in infertile women. 3Dsonohysterosalpingography is non invasive and free of radiation exposure .In our study 50 infertile women with normal T.V.S underwent 3D sonohysterosalpingography before laparoscopy then 3DSSG and Laparoscopy results were compared. Sonohysterosalpingography had a sensitivity of 97%, specificity of 87.5% and diagnostic accuracy of 96%. So 3D sonosalpingography is valuable as practically noninvasive method for evaluating tubal patency.
Keywords: 3D Dimensional sonohysterosalpingography, laparoscopy, tubal patency, infertility

INTRODUCTION

Infertility is defined by W.H.O as inability to conceive after 12 month or more of regular unprotected intercourse by a couple in reproductive age groups[1]. Structural abnormalities of the uterus and tubal patency may adversely affect reproductive outcomes by interfering with implantation and with ovum and sperm transportation thus causing infertility[2]. Causes of infertility include-Male factors- 30 to 40%, Tubal factors: 30 to 40%, and Ovulatory dysfunction: 20 to 40%.

Current imaging techniques for evaluating the uterus, uterine cavity, ovaries and fallopian tubes include transvaginal ultrasound, hysterosalpingography laparoscopy, hysteroscopy.

Hysterosalpingography involves exposure to radiation (low doses) and contrast media (which might cause an allergic reaction)[3]. HSG is contraindicated in women with known adverse reaction to contrast media. Laparoscopy can take longer to perform than open surgery. The longer time under anesthesia may increase the risk of complications. Sometimes complications do not appear right away but occur a few days to a few weeks after surgery.

Transvaginal ultrasound is increasingly being used as a first line of investigation, however reports of the diagnostic accuracy of transvaginal ultrasound is conflicting[4]. Three dimensional ultrasound is a new imaging technique with ability to register the 3 planes that are not visible in 2D-ultrasound.Three dimensional sonography when combined with sonohysterosalpingography provides detailed information regarding internal and external contours of the uterus, without the need for radiation, contrast material or surgical intervention for diagnosis. In the present era with increasing prevalence of infertility and advancement in technology, evaluation for the cause of infertility has become a bit simpler. The need is for diagnostic modality that is highly accurate as well as least invasive. This study is just a step forward in this series.

MATERIAL AND METHODS

It was a hospital based prospective ,descriptive study conducted on 50 infertile women in the department of obstetrics and gynaecology, S.M.S medical college, Jaipur between July 2015 to May 2016.

We included 50 infertile women with normal pelvic bimanual examination and normal T.V.S . Informed consent was taken from all candidates. Three dimensional sonohysterosalpingography was performed

before laparoscopy and tubal patency was assessed and results were compared.

A single operator using three dimensional ultrasound system with 5MHZ transvaginal transducer between days 5 and 10 of menstrual cycle, with women placed in lithotomy position , a sterile vaginal speculum was inserted and the cervix was cleaned with antiseptic solution. A foleys catheter size no 8 was placed just above the internal os and balloon was inflated with 1 to 2 ml of saline solution. The transducer was gently introduced into the uterus while uterine distention was monitored. Fluid was pushed with high pressure in an attempt to look for flow in the tubes which can be appreciated by the turbulence of fluid. The patients were then subjected to laparoscopy, the following day. All laparoscopies were performed by the same operator to avoid interobserver variations.

Statistical analysis

All the data was entered in excel sheet and analysed statistically using SPSS version, primer of biostatistics.

Sensitivity=True positives/(true positives + false negatives)
Specificity=True negatives/ true negatives +false positives)
PPV=True positives/ (true positives + false positives)
NPV=True negatives/ (true negatives +false negatives)

RESULTS

Patientsprofile: 50 patients were included in the study assuming 92% sensitivity of 3-dimensional sonohysterosalpingography. Sample size was calculated at 80% study power, alpha error of 0.5.

The mean age of cases was 27.59 years and the mean duration of infertility was 4.33 years.

Out of 31 cases of primary infertility, 3 dimensional sonosalpingography revealed bilateral tubal patency in 28 (90.32%) cases and blockage either unilateral or bilateral in 3 (9.68%) cases.

Table–1: Distribution of Cases According to Interpretation of Tubal Findings in 3-Dimensional Sonosalpingography

Type of Infertility	Total (n)	B/L Patent (%)	Blocked U/L/B/L (%)
Primary	31	28 (90.32%)	3 (9.68%)
Secondary	19	14 (73.70%)	5 (26.32%)
Total	50	42(84.00%)	8(16.00%

χ2=1.346 d.f.=1 P<0.246 NS

Table–2: Distribution of Cases According to Interpretation of Tubal Findings by Laparoscopy

Type of Infertility	Total (n)	B/L Patent (%)	Blocked (U/L or B/L) (%)
Primary	31	27 (87.09%)	4 (12.90%)
Secondary	19	15 (78.94%)	4 (21.05%)
Total	50	42(84.00%)	8(16.00%

χ2=0.497 d.f.=1 P<0.48 NS

Table–3: Tubal Findings on 3-Dimensional Sonosalpingography and Laparoscopy

Tubal Passage	3-Dimensional Sonosalpingography	Laparoscopy
Unilateral or Bilateral Patency	47	46
Bilateral Occlusion	3	4
Total Patients	**50**	**50**

Comparison between 3-dimensional sonosalpingography and laparoscopy was revealed, 3-dimensional sono salpingography showed bilateral patency in 47cases, out of which laparoscopy showed patency in 46cases. Blockage was seen in 3 cases with three dimensional sonosalpingography ,out of which laparoscopy showed blockage in 4 cases.

While comparing the results of SSG and laparoscopy ,we found that the sensitivity of SSG is 97.5% and 87.5% specificity and diagnostic accuracy is 96%. Sonosalpingography was always confirmed by subsequent conventional laparoscopy. The sensitivity of laparoscopy is slightly less 94.6% and specificity 84%.

Table-4: Evaluation of Value of 3-Dimensional Sonosalpingography in Assessment of Tubal Patency

Results	%
Sensitivity	97.60
Specificity	87.50
Positive Predictive Value	97.60
Negative Predictive Value	87.50
Accuracy	96.00

DISCUSSION

The present study evaluated the diagnostic performance of 3-dimensional sono hystero salpingography in detecting tubal patency in infertile women with normal findings at transvaginal ultrasound. In our study, comparison between 3- dimensional sono hystero salpingography and laparoscopic chromopertubation, showed an overall concordance rate of 96%. The sensitivity, specificity, PPV, NPV of 3-dimensional sono hystero salpingography in detecting tubal patency was 97.6%, 87.5%, 97.6%, 87.5% respectively with an accuracy of 96%. This study is similar to study conducted by Hoffmann L *et al* [5] investigated the value of saline salpingography using transvaginal ultrasound as screening test of tubal patency in 113 women, comparing results to those at laparoscopy. The findings of both correlated with an overall concordance of 82.5%[5].

Chan CC *et al.* [6] studied the comparison of 3-dimensional hysterosalpingo-contrast sonography and diagnostic laparoscopy in the assessment of tubal patency. The concordance rate between the 2 methods was 91% with sensitivity of 100% and specificity of 67%. .

CONCLUSION

3-dimensional sonosalpingography is a practicaleasily accessible acceptable, non-invasive ,cost-effective and efficient tool to assess women with infertility. This should be used as initial test to assess tubal patency.

REFERENCES

1. Vayena E, Rowe PJ, Griffin PD. Current practices and controversies in assisted reproduction. Geneva: World Health Organization. 2002 Jun:15-21.
2. Speroff L, Fritz MA, editors. Clinical gynecologic endocrinology and infertility. lippincott Williams & wilkins; 2005. 8th edition, chapter 27, 1156-1158.
3. Goldberg JM. Chapter Hysterosalpingography. Clinical Reproductive Medicine and Surgery. 2007:429.
4. Warshak CR, Eskander R, Hull AD, Scioscia AL, Mattrey RF, Benirschke K, Resnik R. Accuracy of ultrasonography and magnetic resonance imaging in the diagnosis of placenta accreta. Obstetrics & Gynecology. 2006 Sep 1;108(3, Part 1):573-81.

5. Hoffman L, Chan K, Smith B, Okolo S. The value of saline salpingosonography as a surrogate test of tubal patency in low-resource settings. International journal of fertility and women's medicine. 2004 Dec;50(3):135-9.
6. Chan CC, Ng EH, Tang OS, Chan KK, Ho PC. Comparison of three-dimensional hysterosalpingo-contrast-sonography and diagnostic laparoscopy with chromopertubation in the assessment of tubal patency for the investigation of subfertility. Acta obstetricia et gynecologica Scandinavica. 2005 Sep 1;84(9):909-13.