

# Value of Computed Tomography Hysterosalpingography in Infertile Patients

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Article information	Abstract
<p><b>Keywords:</b> (HSG) <i>Hysterosalpingography</i> (3D-MDCT-HSG) <i>Three dimensional multi-detector computed tomography hysterosalpingography.</i></p>	<p><b>Abstract</b> - Infertility is a common health problem requiring imaging to delineate the anatomical causes in women. Computed tomography hysterosalpingography (3D-MDCT-HSG) offers an easy workup for uterine, tubal and peritoneal factors.</p> <p>The purpose of this study was to evaluate the role of 3D-MDCT-HSG in infertile women with the objectives to present the spectrum of uterine, tubal and peritoneal findings and to assess the diagnostic accuracy of it.</p> <p>A study was conducted on <b>50</b> infertile women with non-diagnostic HSG from February 2022 to January 2023. Sixty four slice MDCT acquired the scan by contrast instillation into uterine cavity.</p> <p>The result shows that 3D-MDCT-HSG can detect various factors responsible for female infertility especially tubal and uterine; in cases where HSG fails to clearly delineate the pathology.</p>

## I. INTRODUCTION

Infertility is a great health and financial burden for the society. World over, every one in six couple is infertile [1]. Both functional and anatomical causes may be responsible for the majority of cases.

The anatomical causes include uterine, fallopian tube and peritoneal factors each affecting one third of cases. Therefore, an accurate imaging of the patho-anatomy of female reproductive tract is required to detect the specific morphological factor responsible for female infertility [2].

The imaging includes transabdominal sonography (TAS) and trans-vaginal sonography (TVS) hysterosalpingography (HSG), and Magnetic Resonance Imaging (MRI).

At present, no modality is free from limitations and hence multiple techniques are utilized for evaluation of entire female reproductive tract [2-4].

Selection of modality is often confusing, and use of multiple techniques increases cost and time of the diagnosis. Therefore, there is a need for an imaging modality which can evaluate all the three morphological factors of infertility in a single setting and with reasonable diagnostic accuracy.

Traditionally hysterosalpingography (HSG) is the basic radiological modality utilized for evaluation of the uterine (endometrial cavity), tubal and peritoneal factors. Hysteroscopy though invasive is the gold standard investigation. Hysteroscopy provides direct visualization of the uterine cavity and is easily performed in an out-patient setting while, laparoscopy directly visualizes fallopian tubes, assesses patency by chromotubation and the peritoneum by direct inspection [4].

Three dimensional multi-detectors computed tomography hysterosalpingography (3D-MDCT-HSG) is a new modality involving imaging of contrast filled uterine and tubal lumen and the peritoneal spill using a MDCT. As CT has greater sensitivity for contrast it better visualizes the contrast filled tubes. 3D-MDCT-HSG provides a comprehensive evaluation of entire reproductive tract in a single setting.

**1. Material and Methodology:**

50 infertile women cases with non-diagnostic HSG were evaluated from February 2022 to January 2023 referred to department of Radiology in Almasarra Clinic, by using 3D-MDCT-HSG.

3D-MDCT-HSG was acquired during (seventh to tenth day of the menstrual cycle) using a 64 slice (Siemens, Germany). Axial sections of 1 mm thickness and 64x0.6 mm collimation and reconstruction interval of 0.4 mm were obtained with 120 kV and 200 mAs. 20 mg of hyoscine butylbromide was administered intramuscularly 20 min prior to CT examination. The patients lay in a supine position and Foley’s bulb was inflated in the cervical canal. 15 ml of diluted non-ionic contrast was instilled through Foley’s at 0.3 ml/s using a pressure injector and scanning done after 35 s. Patients were observed for 30 min post-CT for any complication, then Images were reviewed and the diagnosis made.

**2. Results:**

The study consisted of 50 female patients, age ranged from 20 to 43 years. 27 (54%) had primary and 23 (46%)

patients had secondary infertility conducted at Radiology department in **ALMASARRA CLINIC**, and the results were as following:

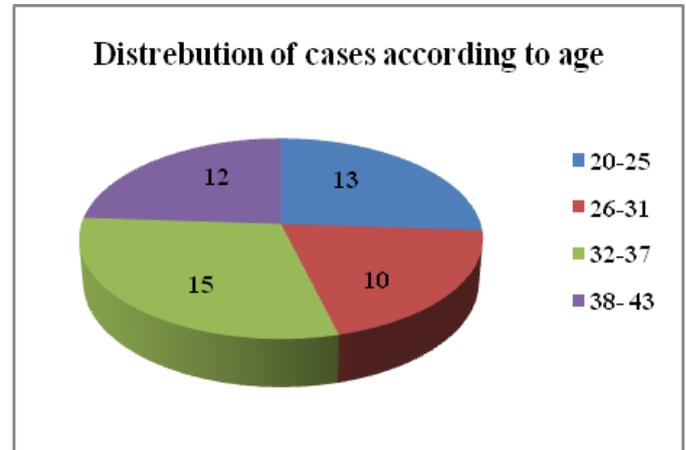


Fig (1) show distribution of cases according to sex

It is clear that most age interval attend the exam is 32-37 with 15 cases , 20-25 with 13 cases , 38-43 with 12 cases and 26-31 with 10 cases.

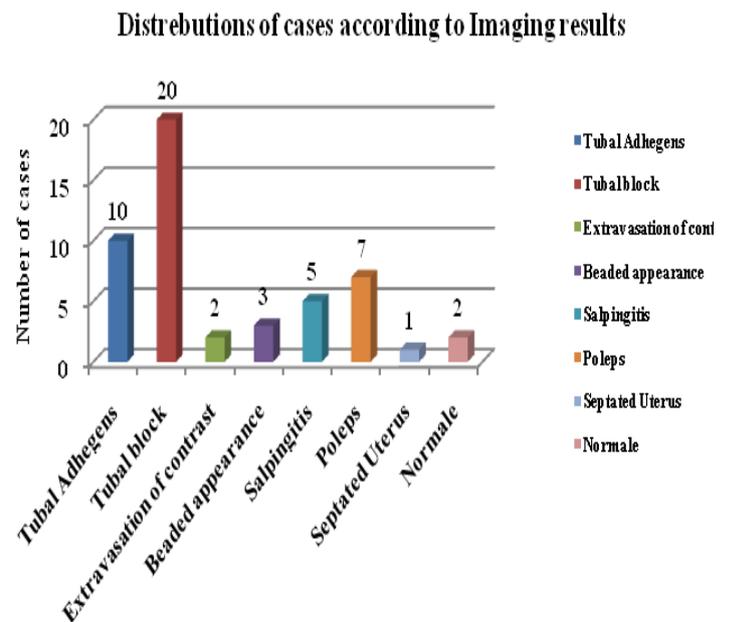


Fig (2) show distribution of cases according to finding

The above figure show that from 50 cases that take this procedure, the results were as following, 2 cases were normal, 7 were having uterine polebs, one case was having septated uterus, 2 were having Extravasations of contrast, 3 shows Beaded appearance, 5 were having

Salpingitis, **10** were having Tubal adhesion, and **20** were having Tubal block, **12** of them the block was on the right Tube, and **8** of them the block were on the left tube.

#### **4. Discussion:**

**50** patients selected on the basis of non-contributory HSG underwent MDCT-HSG which demonstrated definite imaging findings and provided an MDCT-HSG diagnosis in all of them.

Female factors responsible for infertility can occur in isolation or in various combinations.

The sensitivity, specificity, positive predictive value and negative predictive value for uterine factors was 16%, respectively, for tubal factors 76%, respectively and for peritoneal factors 0%, respectively, giving a reasonably good diagnostic performance for the uterine and the tubal factors.

#### **5. Conclusions:**

The study of **50** cases show that 3D-MDCT-HSG allows complete morphological assessment of the anatomy of female reproductive tract and assessment of all the three factors of infertility due to an anatomic cause. It has a good performance in detecting uterine and tubal factors of infertility but its use in peritoneal factors is limited. This is an extremely useful modality rendering a low radiation dose and showing promising initial results, also in patients with non-diagnostic HSG.

#### **6. Acknowledge**

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