

# Introduction

Infertility is failure of couples to conceive after one year of unprotected intercourse. It is classified as primary and secondary, the primary is confined to those who have never conceived and secondary who have conceived in the past. Infertility of female causes represents about 40% of infertility causes. Female infertility may be of general causes as thyroid problems or of local causes which are our interest (**Neiberget al., 1992**).

The application of Transvaginal Sonography (TVS) in assessment and evaluation of infertility has expanded widely. In fact, it is the first step investigation of choice for evaluation of infertile female because it is safe, quick, and non invasive and gives a precise picture of pelvic anatomy (**Soares et al., 2000**).

The main points of ultrasound in the diagnosis of infertility are as follows:

- Demonstration of uterine morphology and any present pathology e.g. fibroid, mullerian anomalies as bicornuate uterus.
- Ovarian assessment by showing growing follicles (measurement of their numbers and sizes) and detection of pathology as PCO.
- Demonstration of intrafollicular structures (Cumulus oöphorus, Corpus luteum).
- Demonstration of cyclic uterine endometrial changes (**Neiberg et al., 1992**).

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Normally tubes are not visualized with ultrasound imaging unless there is fluid within the pouch of Douglas or hydrosalpinx is present. Sonographic visualization of the fallopian tubes is possible through saline infusion sonohysterosalpingography (**Soares et al., 2000**).

***Three dimensional ultrasound*** represents the best tool in evaluating the uterine cavity and the endometrium; it can differ between bicornuate uterus and septate uterus. It also offers a very good image of the adnexal morphology and their relationship (**Donal et al., 2000 and Kurjak and Kupesic, 2003**).

***Color Doppler*** also plays an important role in diagnosis of infertility as it can evaluate uterine and ovarian blood flow (**Fleischer, 1992**).

Ultrasound is so helpful in treatment of infertility as it monitors follicles growing during ovarian stimulation, also it guides the needle used for follicular aspiration in In Vitro Fertilization (IVF) and in embryo transfer. It can diagnose complications of treatment as hyperstimulation syndrome (**Chudleigh and Thilaganathan, 2004**).