Imaging of Infertility in Women

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Infertility is defined as the failure to conceive after one year during which no contraception is used. It is estimated to occur in 10 – 15% of couples. The prevalence of infertility has increased in recent decades due to the increase in sexually transmitted infections that result in pelvic inflammatory disease and to the increasing tendency to delay child bearing.

Any infertility evaluation should begin with a complete history and physical examination of both partners.

Male factors e.g. oligospermia, contribute in 20-50% of cases.

There may be multiple contributory causes:-

Endometrial/uterine

Congenital anomalies such as unicornuate, bicornuate and septate uteri are associated with spontaneous abortions. These are usually shown with hysterosalpingography (HSG), where contrast is introduced into the uterine cavity via a catheter placed in the cervical canal.

Intrauterine synechiae are caused by infection or trauma, such as D&C in the recently pregnant uterus. They can partly or completely obliterate the endometrial cavity and hinder sperm migration and embryo implantation. They are shown at HSG as serpiginous filling defects within the endometrial cavity.

Uterine leiomyomas may impair the patency of the reproductive tract but are rarely the primary cause of infertility. They are well shown with pelvic ultrasound but magnetic resonance imaging (MRI) is increasingly used, especially if surgery is contemplated.

Uterine tube

Pelvic infection and endometriosis can lead to tubal damage and occlusion, interfering with the normal transport of the ovum to the endometrial cavity. This is a contributory cause in 25-40% of infertility cases.

HSG provides information about internal tube architecture and tubal patency. With tubal obstruction there is dilatation of the ampullary portions of the tubes (hydrosalpinx) without spillage.

Peritoneal cavity

Pelvic adhesions and adnexal masses may result from infection or endometriosis and interfere with tubal motility and the relationship of the ovary to the uterine tube.

Diagnostic laparoscopy remains the gold standard for assessment of adnexal adhesions and endometriosis.

Pelvic ultrasound can demonstrate endometriomas as complex adnexal or cul-de-sac masses. These can also be shown with MRI.

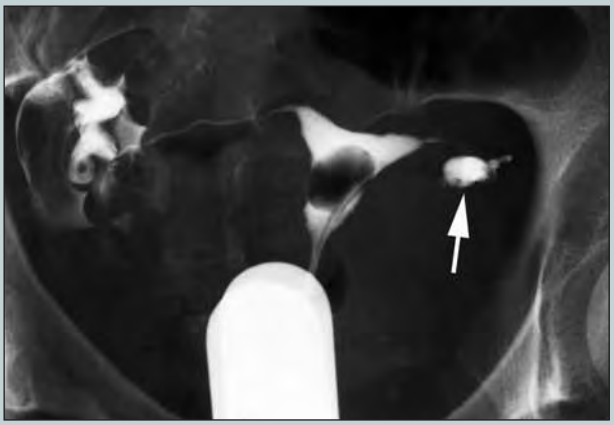
Ovulatory factors

Pelvic ultrasound demonstrates the normal follicular development, ovulation and formation of a functional corpus luteum, that is needed for adequate reproductive function. It also demonstrates the uterine endometrial reaction to follicle growth. This is particularly important with IVF.

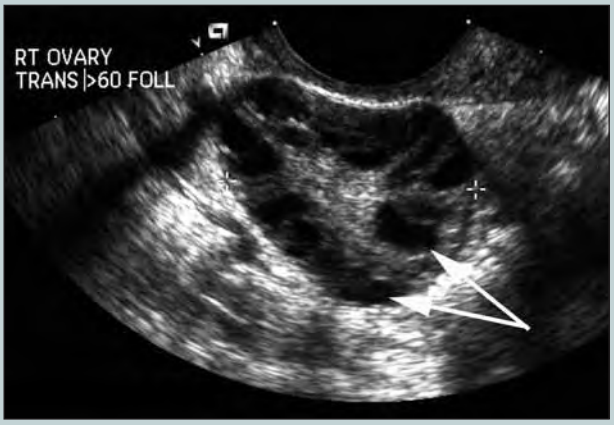
Polycystic ovaries are also seen with pelvic ultrasound.

Conclusion

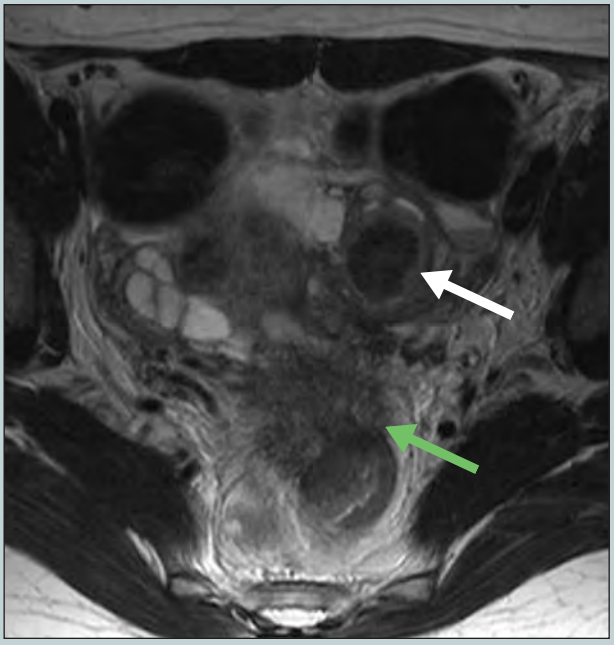
Imaging plays an important part in the comprehensive evaluation of the underlying cause or causes of infertility to enable the formulation of the most appropriate therapeutic plan.



Hysterosalpingogram showing tubal occlusion (arrow).



Ultrasound scan showing multiple subscapular cysts in PCOS (arrows)



Axial T2 weighted image through pelvis demonstrating endometriotic scar in cul de sac (green arrow), involving rectum, and endometrioma in left ovary (white arrow)