Tubal Disease and Infertility

Tubal disease is among the most common causes of infertility and is the primary diagnosis in approximately 25% of female infertility cases. The fallopian tubes are very delicate structures that are responsible for picking up the egg and providing the site for fertilization of the egg as well as early embryo development and transport to the uterine cavity. The cells lining the tube produce secretions that nourish the egg and embryo. The tubes may be damaged by infections or other pelvic conditions. A prior history of pelvic inflammatory disease (PID), tubal surgery, ectopic pregnancy, ruptured appendix, ovarian surgery or septic abortion strongly suggests the possibility of tubal disease. PID is clearly the major cause of tubal factor infertility and ectopic pregnancies. The number and severity of pelvic infections increase the risk of tubal damage. The risk of ectopic pregnancy is also greatly increased after pelvic infections. However, some women who are found to have pelvic adhesions and/or tubal disease have no known prior history of pelvic infection. These “silent" infections are most often caused by Chlamydia.

Tubal factor infertility is due to any anatomic abnormality that prevents the union of sperm and egg. Proximal tubal occlusion prevents sperm from reaching the distal portion of the fallopian tube where fertilization normally occurs. Distal tubal adhesions or occlusion prevent egg pickup from the adjacent ovary. Distal tubal disease can range from mild (fimbrial adhesions) to severe(complete occlusion). If blockage occurs only at the distal end, then the secretions of the fallopian tube will not be able to drain out of the end of the tube. The resulting accumulation of fluid in the tube (hydrosalpinx) has a very negative affect on fertility, even when couples utilize in vitro fertilization (IVF) for treatment.

Diagnostic Evaluation

The diagnostic evaluation of tubal patency in infertile women can be accomplished by performing laparoscopy, a hysterosalpingogram (HSG), or a saline sonohystogram. Each procedure has advantages and disadvantages.

Laparoscopy :

Of the diagnostic tests, laparoscopy allows for the most comprehensive evaluation of tubal factors such as tubal patency as well as peritubal adhesions and endometriosis. Chromopertubation, the injection of a dilute blue dye through an intrauterine cannula permits the clear evaluation of tubal patency. The major advantage to laparoscopy is the ability to treat some of the mild diseases, such as early endometriosis and/or peritubal adhesions, at the time of the diagnosis. However, laparoscopy is more invasive, costs more, requires general anesthesia, and has the standard complication risks of accidental injury to blood vessels, bowel, and bladder.

Hysterosalpingogram (HSG):

HSG utilizes iodinated contrast media and fluoroscopy in order to image the uterine cavity and assess the internal architecture of the fallopian tubes. An HSG can be performed in just a few minutes, is much less costly than laparoscopy, but may be quite uncomfortable for many women. Premedication for pain often helps considerably.

Cervical cultures for GC and Chlamydia should be performed prior to an HSG. Infectious complications resulting from an HSG are uncommon but prophylactic antibiotic treatment utilizing doxycycline 100 mg twice daily for 3 to 5 days is a good idea especially when tubal disease is suspected.

Injection of the contrast media may cause tubal spasm in the cornual region that may be misinterpreted as proximal tubal occlusion. In fact when an HSG reveals proximal obstruction there is a good probability (greater than 50%) that the tube is in fact open based on laparoscopic follow-up.

Saline Sonohystogram (SIS):

SIS is similar to an HSG, but uses ultrasound and sterile saline. It is simple to perform in the office and is associated with only mild cramping. Mixing a small amount of air with the saline improves the visualization of the fallopian tubes. SIS is more sensitive than HSG for detection of intrauterine pathology, such as polyps or submucous fibroids.

Treatment Options

Essentially, with tubal factor infertility, treatment options are reconstructive surgery or IVF. Over the last decade, for most conditions, IVF success rates have steadily increased to now exceed those that can be achieved with surgery. In addition, ectopic pregnancy rates are considerably higher after tubal surgery compared to IVF. Consequently, IVF has become the treatment of choice for much or most tubal factor infertility, especially for couples with other fertility factors (ie age or male factor).

However surgery remains a valid option under certain circumstances.

Personal reasons:
Couples with ethical or religious objections or financial issues that preclude IVF.

Tubal ligation reversal:
The most common reasons for requesting tubal reversal include new partners, changes in family planning desires, or loss of a child. For women who want to conceive again, microsurgical tubal reanastomosis remains a legitimate option under certain circumstances. The prognosis for a successful pregnancy after microsurgical tubal reversal relates to her age, type and location of the tubal ligation and the final length of the repaired fallopian tube. It is crucial to evaluate for any male factor infertility in the partner. Younger women (< 35 y/o) who have had tubal ligation performed with rings and clips and have no other fertility factors, including male factor, have the best prognosis. Laparoscopic tubal reanastomosis is also an option in order to avoid laparotomy , but there are only a few highly skilled reproductive surgeons experienced in this technique.

Tubal disease:

Distal tubal occlusive disease can range from filmy fimbrial adhesions to complete obstruction with hydrosalpinges. HSG is very accurate when there is complete distal tubal obstruction , but cannot always reliably detect lesser degrees of disease when patency is seen. The results achieved by experienced microsurgeons using traditional microsurgical techniques or laparoscopic methods have been similar, but generally poor. In younger women with mild distal tubal occlusive disease (adhesions),

laparoscopic surgery may be viewed as an alternative to IVF, but when the disease is severe (hydrosalpinges) or when pregnancy does not occur after the first postoperative year, IVF is the appropriate choice. For older women over 35 with any degree of distal tubal disease, IVF is the best option.

Proximal tubal disease may be treated successfully by hysteroscopic cannulation, but it is important to rule out distal disease involving the same tube. Surgical repair of a tube damaged by proximal and distal disease should not be attempted. Remember, however that when HSG reveals proximal tubal obstruction, there is a good probability (greater than 50%) that the tube is in fact open based on laparoscopic follow-up.

*Hydrosalpinx Removal before IVF * * **

Numerous studies strongly suggest that hydrosalpinges can adversely impact IVF pregnancy outcomes by as much as 30-50%. Comprehensive meta-analyses have concluded that IVF success rates in women with hydrosalpinges are significantly reduced, compared to IVF outcomes in women after salpingectomy or women without hydrosalpinges. Therefore, salpingectomy or tubal ligation should be considered for all women with hydrosalpinges before undergoing IVF. Several theories have been proposed to explain the adverse effects of the hydrosalpinges on IVF pregnancy outcomes, including mechanical interference of the tubal fluid with implantation as well as possible toxic effects on the embryos or endometrium.

Conclusions:

Steady advances in assisted reproductive technologies (ART) have improved IVF outcomes to where they now approach or exceed those achieved with tubal reconstructive surgery. Tubal surgery remains a legitimate treatment option for young women (< 35 y/o) seeking pregnancy after a previous tubal sterilization, or for those with mild distal tubal disease and for women with apparent proximal tubal occlusion. *Under virtually all other circumstances IVF is the best choice.*

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