

# International Federation of Fertility Societies

## Global Standards of Infertility Care

### Standard 7.

#### Assessment of tubal patency

#### Recommendations for Practice

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| Name                  | Tubal patency assessment   |
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#### Introduction:

The goal of IFFS Guidelines are to provide policy- and decision-makers and the clinical and scientific community with a set of recommendations that can be used as a basis for developing or revising institutional or national guidelines on selected practice recommendations for infertility practice.

The document addresses minimal standards of practice but does not provide rigid guidelines but rather gives recommendations that provide the basis for rationalizing the provision of infertility services in view of the most up-to-date information available.

Because country situations and programme environments vary so greatly, it is inappropriate to set firm international guidelines on infertility practice. However, it is expected that institutional and national programmes will use these guidance documents for updating or developing their own infertility guidelines in the light of their national health policies, needs, priorities and resources. The intent is to help improve access to, quality of, and safety of infertility and assisted conception services. These improvements must be made within the context of users' informed choice and medical

safety. Adaptation is not always an easy task and is best done by those well-acquainted with prevailing health conditions, behaviours, and cultures.

### **Rationale:**

Damage to the fallopian tubes is a common cause of infertility. Tubal damage or dysfunction may result from a variety of causes but the most common is ascending pelvic inflammatory disease resulting from sexually transmitted infections (STD's). The prevalence of tubal damage is increasing due to a worldwide increase in STD's<sup>1,2</sup>. Assessment of tubal function forms an important part of the initial assessment of fertility in order to assess the most appropriate treatment<sup>3,4</sup>. Methods with least risk to the patient, maximum sensitivity and specificity and cost effectiveness are preferred.

**Tubal disease** accounts for approximately 20% of infertility. Other than iatrogenic tubal occlusion, sexually transmitted infection (STI) is the most common cause. There are significant global variations in the epidemiology of STI. In North America, Europe and Latin America Chlamydia is the most common STI<sup>5,6</sup> whereas in India lack of availability of universal diagnostic tests leads to reliance on clinical diagnosis<sup>7</sup>. Pelvic tuberculosis is a relatively common cause of tubal infertility in South Asia and Sub Saharan Africa but diagnosis is problematic because of the low sensitivity of Acid Fast Bacilli staining, mycobacterium culture and histology. Polymer Chain Reaction (PCR) TB specific testing increases detection although its sensitivity remains low and expense limits availability<sup>8,9,10</sup>.

In Europe, North America and Latin America, because of its high prevalence antibody testing to Chlamydia (CAT) is a helpful screening test and can predict reproductive outcome even in the presence of patent fallopian tubes<sup>11,12,13</sup>. Hysterosalpingogram (HSG) and Hysterosalpingo Contrast Sonography (HyCoSy) are universally applicable, cost effective diagnostic tests for tubal disease with high and comparable sensitivities and specificities<sup>14</sup>. HSG has the disadvantage of necessitating radiological equipment whereas HyCoSy requires expertise in pelvic ultrasound, can be performed in the gynaecological environment and avoids the use of ionising radiation.

Hysterosalpingography (HSG) is the traditional or standard method for evaluating tubal patency and may offer some therapeutic benefit; it can document proximal and distal tubal occlusion, demonstrate salpingitis isthmica nodosa, reveal tubal architectural detail of potential prognosis value, and may suggest the presence of fimbrial phimosis or peritubal adhesions when escape from contrast is delayed or becomes loculated, respectively and can identify which tube is damaged.

Hysterosalpingo Contrast Sonography (HyCoSy) with Saline Infusion Sonography (SIS), is a test to determine tubal patency using fluid and ultrasound. Although tubal patency can be observed by the appearance of fluid in the cul-de-sac with the saline infusion, the test does not differentiate between unilateral or bilateral patency<sup>15</sup>.

Recently, several studies show that using 3D/4D ultrasound associated with doppler and foam results in a useful methodology that can be used to establish a diagnostic strategy with high accuracy but minimum invasiveness and limited use of contrast agents and sophisticated technology<sup>16,17,18,19</sup>.

Laparoscopy is a procedure that can identify and correct tubal factors such as fimbrial phimosis, or peritubal adhesions, which may not be identified by HSG.

Laparoscopy with chromopertubation using dilute solution of Methylene blue or Indigo carmine is an invasive test for the assessment of tubal patency. This procedure has the advantage of identifying tubal phimosis and peritubal adhesions in addition to identifying other pelvic disorders such as endometriosis. Laparoscopy has the intrinsic risks of abdominal surgery and should only be performed by doctors certified to undertake this technique. This technique has the advantage that it can be combined with therapeutic procedures and planning should take into account this possibility.

Other advanced techniques for the assessment of tubal function are not recommended in routine practice and should only be considered in a research context. They include Fertiloscopy which involves endoscopy through the posterior vaginal fornix together with dye test. The technique has the potential advantage of avoiding general anaesthesia but its accuracy of diagnosis and safety of the procedure requires further evaluation. Microendoscopy of the fallopian tubes by transuterine falloposcopy provides direct visualization of the mucosa of their entire length. This is a more discriminatory test of

tubal pathology but requires sophisticated instruments and significant expertise. Radio-nuclide hysterosalpingography with technetium-99 is an accurate method for functional study of fallopian tube patency using low radiation dose. This has the advantages and disadvantages of HSG with the additional problems posed by radio-isotope management.

**Practice guidance:**

**a) Non-invasive tests**

- I. Serology:** Chlamydia serology for testing (CAT) Chlamydia antibodies should be considered as a screening test particularly in areas of high prevalence of Chlamydia. Its use should take account of the specificity of the test methodology.
  
- II. Molecular Biology:** Tuberculous Polymerized Chain Reaction (TB PCR) from endometrial biopsy, endocervical secretions and fluid from pelvic peritoneal cavity should be considered in areas with high prevalence of TB as its use may increase the likelihood and speed of detection.

**b) Invasive tests**

It is recommended that before invasive tests of tubal patency are undertaken the patient should be screened for STD's/STI's and/or given prophylactic antibiotics for prevention of Chlamydia and Gonococcus. In addition operators should ensure that there is no possibility of a pregnancy immediately prior to undertaking the test, preferably by detection of urinary or serum  $\beta$ hCG.

- I. Hysterosalpingography (HSG)** is recommended as a first line test for fallopian tubes patency and assessment of the uterine cavity. The procedure should be performed by an operator with appropriate training

and knowledge including an understanding of its radiological hazards and appropriate gynaecological expertise.

- II. Hysterosalpingo Contrast Sonography (HyCoSy)** is recommended as an alternative to HSG for detection to tubal patency. The procedure can be performed as an outpatient by an operator suitably trained in pelvic ultrasound. The test does not differentiate between unilateral or bilateral patency. The use of 3D and 4D ultrasounds using foam improve significantly the possibility to see and diagnose tubal pathologies.
- III. Laparoscopy with dye tubation** should be considered in the following circumstances:
  - a. When pelvic disease is suspected, pelvic pain or abnormal ultrasound.
  - b. When there is a positive HSG / HyCoSy suggesting tubal disease.
  - c. In individuals with unexplained infertility who are unable to pursue IVF (only in young women with good ovarian reserve and without severe male factor associated).

Laparoscopy is most clearly indicated for those individuals with symptoms or risk factors for peritoneal disease, or an abnormal HSG or ultrasonography who do not required ART (for example; it is not indicated for couples with severe male factor infertility , in women with advanced reproductive age, in low ovarian reserve cases and for the routine evaluation).

## **Recommendations:**

1. Basic Evaluation may include Chlamydia Antibody Testing and Tuberculous Polymerized chain reaction (TBPCR) in endemic areas (TB) with high prevalence
2. Hysterosalpingography (HSG) or Hysterosalpingo Contrast Sonography (HyCoSy) are recommended as these are less invasive, cost effective and can be performed as an outpatient procedure without anaesthesia.
3. Women who are thought to have gynaecological co-morbidities should be offered laparoscopy with assessment of tubal patency (taking into account women's age, ovarian reserve and semen analysis). Planning for therapeutic procedures simultaneously is advised.

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