



FERTILITY FACT SHEET

San Ramon / Orinda / San Jose

Ectopic Pregnancy: Surgical vs. Medical Therapy

Any pregnancy located outside of the uterine cavity is defined as an Ectopic Pregnancy (EP) which occur approximately in 1-2% of all pregnancies. More than 100,000 cases occur annually in the United States with the vast majority (99%) of EP's occurring in the fallopian tubes.¹ Ectopic pregnancies are dangerous and can be potentially life-threatening. The incidence of EP continues to increase due to the occurrence of sexually transmitted diseases, prior salpingitis (tubal infections), IUD use, pelvic adhesions, and other causes. The death rate from EP is about 0.3%². The most sensitive initial indicator of an early pregnancy is a blood test to measure the hormone HCG. Early indicators of a potential EP are a slower-than-expected rise in HCG levels early in pregnancy³. Bleeding and/or cramping may be another sign of a possible EP, but these can also occur with an early miscarriage or even in normal pregnancies.

A physician should consider every early pregnancy as a possible EP until proven otherwise. In most cases, the presence of an early intrauterine pregnancy verified by ultrasound will exclude the presence of an EP. The exception to this rule is in the case of [In Vitro Fertilization](#), or ovulation-induction with injectable FSH. In these assisted reproduction techniques, the presence of both an intrauterine pregnancy and EP (Heterotopic Pregnancy) occur more frequently. With good ultrasound equipment and an experienced ultrasonographer, a normal intrauterine pregnancy should be visible by the time a woman is 6 weeks from her last menstrual period (3 ½-4 weeks from conception date).

Medical Therapy Using Methotrexate

If undiagnosed or left untreated, an EP can eventually rupture, causing internal bleeding and in some cases death. The traditional treatment for EP has been surgical, either with an open incision (laparotomy) or by minimally-invasive laparoscopic surgery. In the past 15 years the nonsurgical (medical) treatment for EP has been developed. This medical treatment typically uses a single injection of a drug called methotrexate (MTX). There have been many studies and publications on the use of MTX for EP. The benefits of MTX are that it avoids surgery in over 85% of patients and has the same or higher cure-rate as with surgery⁴⁻⁷, is less costly⁸⁻¹², is not skill-dependent, and most patients prefer a medical approach¹³⁻¹⁴. Several investigators have demonstrated higher future fertility in patients treated with MTX than with surgery¹⁵⁻¹⁷. Other benefits of MTX include less cost, lower risk of tubal injury, and it can be used to treat persistent placental (trophoblastic) tissue which may remain following failed conservative surgical treatment for EP.

The earlier a patient's EP can be diagnosed, the higher the cure rate using MTX. HCG levels under 5,000 IU/L have a 92% cure rate, and if levels are <1000 IU/L there is a 98% cure¹⁸. There are, however, limitations to the use of MTX. MTX is indicated when: an ectopic is not ruptured, the tubal pregnancy (gestational) sac is less than 3.5 cm in diameter, a serum HCG level is less than 5,000 IU/L, and there are no medical contraindications such as severe abdominal pain, an abnormally low blood count, and abnormal liver or kidney function tests. Methotrexate therapy requires more patient follow-up than surgery.

Following a single MTX injection, it can take up to 4 weeks for an EP to resolve. In 15% of MTX therapy patients, the ectopic persists and requires surgical treatment. This is similar to the 15% of ectopics which persist following surgery and subsequently requires medical therapy with MTX. Some patients can also have significant side-effects from the use of MTX such as severe abdominal pain, risk of subsequent tubal rupture, dermatitis, pleuritis, stomatitis, and conjunctivitis.

Heterotopic Pregnancy

As mentioned above, the presence of both an intrauterine pregnancy and an ectopic pregnancy at the same time is termed a heterotopic pregnancy. Because most of these occur after ART procedures, an ultrasound exam of the woman's uterus should be done before surgery for removal of the ectopic pregnancy. This will result in a 67% term delivery rate of the normal intrauterine pregnancy¹⁹. MTX therapy cannot be used with heterotopic pregnancies as it will terminate both gestations.

Surgical Treatment

Surgical treatment of EP in the United States currently consists of open laparotomy (10%) and laparoscopy (90%). Surgery is almost always recommended if the EP is ruptured (bleeding), there are abnormal liver function or kidney tests, HCG levels are >10,000 IU/L, the diameter of the EP >3.5 cms, or if there is presence of fetal cardiac motion. Surgery is also preferred if patient follow-up will be difficult. The laparoscopic approach has become the Gold Standard for the treatment of EP. [Laparoscopy](#) is less invasive, can be performed in an ambulatory (out-patient) setting, leaves smaller scars, is less painful and allows for faster patient recovery. If needed, the woman's fallopian tube can be removed, the condition of her pelvis and her fallopian tube on the other side assessed and other care provided (such as removal of scar tissue or endometriosis). A surgical ("direct look") approach allows the physician to establish a prognosis or recommendation for future fertility. Surgery is also preferred if the woman does not desire future fertility (the tube(s) can be easily removed). Surgical treatment also will be required in approximately 15% of patients who do not have full resolution of their EP with MTX therapy^{5,9,20}. There have been several studies comparing success rates (cure) of MTX vs. surgery. Several conclude that there is a lower (<10%) failure rate with surgery^{8,11}. If the fallopian tube is completely removed (salpingectomy), then there is virtually no surgical failure rate of EP.

Another advantage of surgical treatment in patients who have undergone or who are considering going through an In Vitro Fertilization cycle, is that damaged fallopian tube(s) can be removed to both improve the prospects of a successful future IVF cycle, as well as to minimize or prevent a subsequent ectopic pregnancy from occurring.

Summary

Neither medical (MTX) or surgical treatment for EP is successful if the diagnosis is missed. Neither technique has absolute indications, and either approach has the same 15% failure rate. Less surgical skill is required for MTX treatment, and the patient avoids surgery and anesthesia. More post-treatment patient discomfort occurs with MTX treatment because of the prolonged time required for resolution of the pregnancy. Costs are probably less with MTX treatment and the choice of MTX or surgical treatment may ultimately depend both on the physician's training and desire of the patient.

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