

Title: Outpatient endometrial aspiration: an alternative to methotrexate for pregnancy of unknown location

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Abstract

Objective: To evaluate the utility of an endometrial sampling protocol for the diagnosis of pregnancies of unknown location following in vitro fertilization.

Study Design: A retrospective cohort study of 14,505 autologous fresh and frozen in vitro fertilization cycles from 10/2007 to 9/2015 was performed; 110 patients were diagnosed with pregnancy of unknown location, defined as a positive human chorionic gonadotropin (hCG) without ultrasound evidence of intrauterine or ectopic pregnancy, and an abnormal hCG trend (<53% rise or <15% fall in two days). These patients underwent outpatient endometrial sampling with Karman cannula aspiration. Patients with hCG decline $\geq 15\%$ within 24 hours of sampling and/or villi detected on pathologic analysis were diagnosed with failing intrauterine pregnancy and had weekly hCG measurements thereafter. Those with hCG declines <15% and no villi identified were diagnosed with ectopic pregnancy and treated with intramuscular methotrexate (50 mg/m²) or laparoscopy.

Results: Across 8 years of follow-up, among women with pregnancy of unknown location, failed intrauterine pregnancy was diagnosed in 46 patients (42%) and ectopic pregnancy in 64 patients (58%). Clinical variables including fresh or frozen embryo transfer, day of embryo transfer, serum hCG at the time of sampling, endometrial

thickness, and presence of an adnexal mass were not significantly different between patients with failed intrauterine pregnancy or ectopic pregnancy. In patients with failed intrauterine pregnancy, 100% demonstrated adequate post-sampling hCG declines, while villi were identified in just 46% (n=21). Patients with failed intrauterine pregnancy had significantly shorter time to resolution (negative serum hCG) after sampling compared to patients with ectopic pregnancy (12.6 vs 26.3 days, p-value<0.001).

Conclusion: Using this safe and effective protocol of endometrial aspiration with Karman cannula, a large proportion of women with pregnancy of unknown location are spared methotrexate, with a shorter time to pregnancy resolution than those receiving methotrexate.