

## **Pregnancies of unknown location after in vitro fertilization: A minimally invasive management protocol**

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**Objective:** To describe the outcomes of a standardized protocol for the assessment of asymptomatic patients with pregnancies of unknown location (PUL) following IVF-embryo transfer (ET).

**Design:** Retrospective cohort study

**Materials and Methods:** All IVF±ICSI cycles using autologous oocytes with fresh and cryothaw day 3 or day 5 ET between 1/2005 and 12/2011 at our center were reviewed (n=3607). Asymptomatic patients with serum  $\beta$ -hCG  $\geq$  6 mIU/mL and no intra- or extra- uterine pregnancy on ultrasound were diagnosed with PUL (n=251). Of these, patients with abnormal  $\beta$ -hCG trends (rise  $<$ 53% or decline  $<$ 15% over 2 days) underwent endometrial sampling with Karman cannula aspiration (n=45). Patients with no chorionic villi identified on pathology and inadequate post-sampling decline in  $\beta$ -hCG ( $<$ 15%) received IM methotrexate (MTX, 50 mg/m<sup>2</sup>) for presumed ectopic pregnancy. The primary outcome measure was the proportion of PUL with confirmed failed IUP who avoided MTX by this intervention. Statistical analysis performed with SPSS version 21.

**Results:** A total of 31 (69%) patients were diagnosed with non-viable IUP by pathology and/or an adequate drop in post-sampling  $\beta$ -hCG titer. Ten of these had adequate post-sampling serum hCG declines with negative pathology. The remaining 14 patients (31%) were diagnosed with presumed ectopic by persistent post-sampling  $\beta$ -hCG and negative pathology, and were treated with MTX; one (2.2%) later required laparoscopy for ruptured ectopic pregnancy. No complications of endometrial sampling with Karman cannula were reported.

**Conclusion:** In asymptomatic patients with PUL and abnormal  $\beta$ -hCG trends following IVF-ET, endometrial sampling using a Karman cannula in the outpatient setting is convenient, safe and effective. Two-thirds of these patients may avoid unnecessary MTX. While further, prospective studies are needed, this study demonstrates the feasibility and utility of our protocol.