



Case Report

Hysteroscopic Methotrexate Injection Under Ultrasonographic Guidance for Interstitial Pregnancy

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ABSTRACT A 36-year-old woman presented with pelvic pain and vaginal blood loss and interstitial pregnancy (a single gestational sac located in the proximity of the right uterine horn, without visualization of an embryo and/or attachments inside) on 2- and 3-dimensional ultrasonographic examination. The patient was clinically stable. Her abdomen was soft with normal peristalsis; superficial and deep palpation were painless, as was decompression. With the patient under general anesthesia, an operative hysteroscopy was performed visually via ultrasound. A slow injection of methotrexate solution was pushed through the right cornual region inside the gestational sac and into the myometrial tissue tangentially at the 4 cardinal points. Twelve weeks later, the patient exhibited normal tubal patency via sonohysterography, as well as a viable pregnancy of 7 weeks' gestation. This minimally invasive approach is well tolerated and shows promise for the management of interstitial pregnancy, with no adverse effect on potential subsequent fertility. *Journal of Minimally Invasive Gynecology* (2016) ■, ■-■ © 2016 AAGL. All rights reserved.

Keywords: Conservative approach; Ectopic pregnancy; Fertility-sparing; Minimally invasive surgery

Interstitial localization of pregnancy occurs in 0.01% of all pregnancies and in 2% to 4% of ectopic pregnancies [1]. Ectopic pregnancy of the interstitial part of the Fallopian tubes is associated with higher rates of maternal morbidity and mortality [2]. On presentation, the interstitial portion of the Fallopian tubes is approximately 1 to 2 cm long and surrounded by myometrial tissue, which increases its distensibility and delays rupture until 7 to 16 weeks of gestation [3]. The progressive increase of vascularization can result in a catastrophic haemorrhage, a severe consequence of interstitial rupture [3].

Timor-Tritsch et al [4] established 3 criteria for diagnosis: an empty uterine cavity, gestational sac located at least 1 cm from the lateral aspect of the uterus and lateral to the endometrial cavity, and a thin layer (<5 mm) of myometrium sur-

rounding the gestational sac. Ackerman et al [5] described an interstitial line marginating the gestational sac from the superior endometrial canal and the cornual region.

Interstitial and angular pregnancy are differentiated diagnostically by the paucity of myometrium around the superolateral portion of the sac. The intrauterine angular pregnancy is surrounded on all sides by at least 5 mm of myometrium.

Interstitial pregnancy is difficult to manage. Surgical endoscopy has progressively replaced laparotomy, ranging from laparoscopic salpingectomy/salpingotomy to minimally invasive techniques [6–8]. Concerning medical treatment, the use of methotrexate may be effective in early asymptomatic stages of interstitial pregnancy. Successful outcomes of treatment with local methotrexate injection have been reported [9], concomitant with ultrasound [10,11] or endoscopic approaches [12].

The hysteroscopic approach has been described only rarely. To the best of our knowledge, only 1 case has been reported to date, in 1992 by Goldenberg et al [12], describing an interstitial pregnancy treated with local methotrexate during hysteroscopy [12]. We propose the management of an interstitial pregnancy with local methotrexate injection in the gestational sac and surrounding myometrial wall by a hysteroscopic approach.

The authors declare that they have no conflicts of interest.

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Submitted April 12, 2016. Accepted for publication July 13, 2016.

Available at www.sciencedirect.com and www.jmig.org

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<http://dx.doi.org/10.1016/j.jmig.2016.07.015>

Case Report

A 36-year-old white woman, at 7 weeks and 5 days gestation, presented with pelvic pain and vaginal blood loss to our endoscopy unit. Her obstetric history included regular menarche, a regular menstrual cycle, and a previous vaginal delivery at age 30 years.

Her present pregnancy arose spontaneously, and no previous abdominal surgery or major disease were reported. On physical examination, the patient was in good condition overall. Her abdomen was soft and painless to superficial and deep palpation and decompression, and normal peristalsis was noted. Pelvic examination did not reveal any anomalies, with an anteverted uterus and normal cervix. Both adnexal regions were painless and without noticeable masses. At 10 days before admission, her β -human chorionic gonadotropin (bhCG) value was 1997 mIU/mL, but was increased to 5055 mIU/mL on the first day of hospitalization. She had a hemoglobin value of 12.5 g/dL, hematocrit of 37.2%, and white blood cell count of 9370/ μ L.

On 2-dimensional transvaginal ultrasound, the endometrium did not appear uniform, with a maximum thickness of 13 mm and no sign of the gestational sac. A single gestational sac, 12 \times 11 mm in diameter, was seen in the proximity of the right uterine horn. No fluid was noted in the pouch of Douglas.

Diagnosis of an interstitial pregnancy was based on ultrasound criteria proposed by Timor-Tritsh et al [4]. A 3-

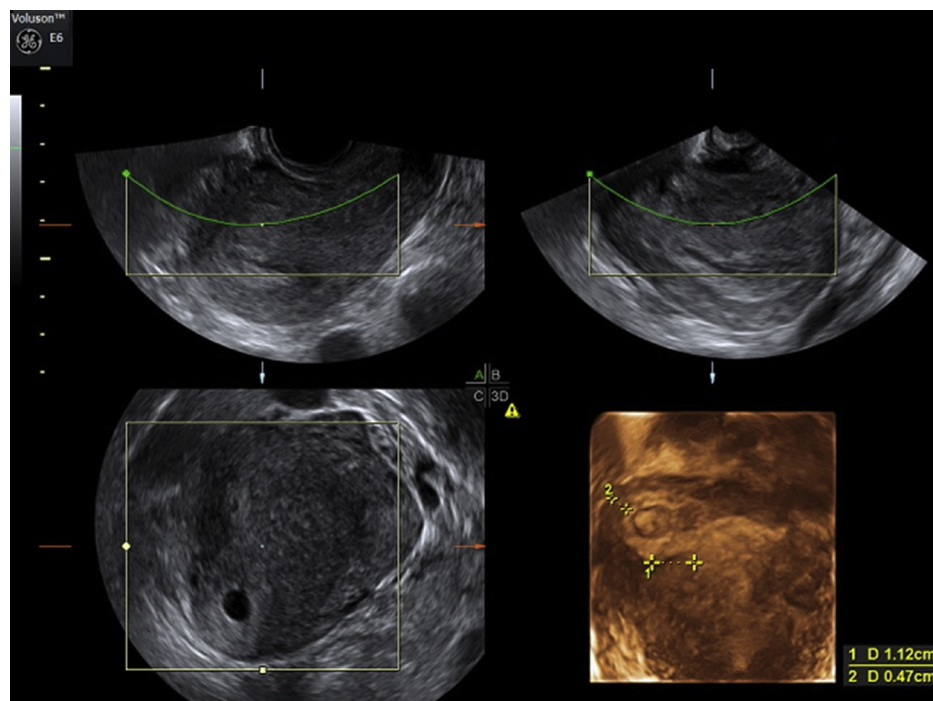
dimensional coronal volume reconstruction of the uterus performed with a Voluson E6 Pro ultrasound machine (GE Healthcare, Milan, Italy) using a multifrequency volume endovaginal probe established the interstitial portion of the right fallopian tube as the location of the gestational sac (Fig. 1).

After counseling regarding the procedure for local injection of methotrexate via hysteroscopy and the significant associated risks, including the risk to fertility, the patient provided written informed consent for the procedure. Under general anesthesia, operative hysteroscopy was performed using a 2.9-mm Hopkins II Forward-Oblique Telescope 30° endoscope (Karl Storz, Tuttlingen, Germany) with a 4.3-mm inner sheath and 5 FR instruments and a 5-mm continuous-flow operating outer sheath. Distension was implemented with isotonic saline solution. The uterine cavity appeared regular, as did the left tubal ostium, with widespread endometrial decidualization and pseudopolypoid growth. The recess of the right fallopian tube appeared distorted, with reduced depth and loss of the funnel-shaped physiological aspect of the tubal ostium (Fig. 2A). This finding was compatible with the ultrasound diagnosis. During the procedure, an intraoperative transabdominal ultrasound control was performed.

Under visual and ultrasound control, a disposable needle (Deflux metal needle, 3.7 FR \times 23 G tip \times 350 mm; Oceana Therapeutics, Edison, NJ) was inserted through the

Fig. 1

2D and 3D ultrasonography showing the empty uterine cavity, a gestational sac located exterior to the uterus, and a thin (<5 mm) layer of myometrium surrounding the gestational sac.



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