

**TREATMENT OF UNRUPTURED INTERSTITIAL PREGNANCY WITH SINGLE DOSE  
LAPAROSCOPIC METHOTREXATE INJECTION: CASE REPORT****Intissar BENZINA<sup>1\*</sup>, Sarah Talib<sup>1</sup>, Aziz SLAOU<sup>1</sup>, Yassine Edahri<sup>2</sup>, Najia ZERAIDI<sup>2</sup>, Aziz BAYDADA<sup>2</sup> and  
Aicha KHARBACH<sup>1</sup>**<sup>1</sup>Gynecology-Obstetrics and Endocrinology Department, Maternity Souissi, University Hospital Center IBN  
SINA, University Mohammed V, Rabat, Morocco.<sup>2</sup>Gynecology-Obstetrics and Endoscopy Department, Maternity Souissi, University Hospital Center IBN  
SINA, University Mohammed V, Rabat, Morocco.**\*Corresponding Author: Intissar BENZINA**Gynecology-Obstetrics and Endocrinology Department, Maternity Souissi, University Hospital Center IBN SINA, University Mohammed V,  
Rabat, Morocco.

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**ABSTARCT****Background:** Interstitial pregnancy is an uncommon form of ectopic pregnancy. Diagnosis and treatment are challenging and constitute a medical emergency. Resection by laparotomy is the preferred method of treatment, although early diagnosis aided by ultrasound or laparoscopy may help to contribute towards effective conservative management; this includes in situ Methotrexate injection.**Case presentation:** We report an uncommon case of interstitial pregnancy that was successfully treated with a single dose of 100 mg methotrexate injected into the mass with subsequent ultrasound and serum beta human chorionic gonadotropin monitoring.**Conclusion:** Interstitial pregnancy is an ectopic pregnancy with high hemorrhagic risk, requiring early diagnosis which could lead to conservative treatment reducing the potential consequences on fertility.**KEYWORDS:** Interstitial pregnancy, Conservative treatment, Methotrexate.**BACKGROUND**

Interstitial pregnancy is an uncommon ectopic pregnancy, where implantation of the blastocyst occurs in the intramural portion of the Fallopian tube.<sup>[1]</sup> It has an unpredictable course with the risk of cataclysmic hemorrhage due to uterine rupture in the absence of early diagnosis and management.<sup>[2]</sup>

Several treatments are proposed, both medical and surgical. The classic treatment being radical with salpingectomy and corneal resection; however, this may adversely affect subsequent pregnancies with the possibility of uterine rupture.<sup>[3]</sup> Medical treatment with methotrexate seems to be an interesting therapeutic alternative when possible, with generally satisfactory results.<sup>[1,2]</sup>

In this report, we describe a case of enraptured interstitial pregnancy successfully treated with a single-dose of local methotrexate with subsequent ultrasound and serum beta human chorionic gonadotropin monitoring. By this case report, we aim to evaluate the outcomes and safety

of conservative management of interstitial pregnancy with direct MTX injection into the gestational sac.

**CASE REPORT**

We hereby report the uncommon case of a 29-year-old woman, nulliparous, with a history of curettage for induced miscarriage at age 18 and left ectopic pregnancy treated by laparoscopic salpingectomy 2 years ago. She was admitted to the emergency unit with acute abdominal pain and low abundance vaginal bleeding after an amenorrhoeic period of 6 weeks. Clinical examination revealed hypogastric sensitivity and stable hemodynamic state.

The initial serum human chorionic gonadotropin level was found to be 81,000 mIU/ml. The progesterone level was 7.8 ng / ml. Pelvic ultrasound revealed the presence of a round mass containing an embryo with positive heart beat located in the interstitial portion of right fallopian tube; and no free fluid in the pouch of Douglas. **(Figure1)**



**Figure 1: Preoperative ultrasound examination of the patient revealing an eccentrically located gestational sac with an empty uterine cavity.**

A decision for a laparoscopic evaluation was made, and revealed an unruptured interstitial pregnancy on the right side. Given the absence of the left fallopian tube and the nulliparity, we were tempted to do a conservative treatment to preserve subsequent infertility. A single dose of 100 mg methotrexate was then injected directly into the mass. (Figure 2)



**Figure 2: Local injection of Methotrexate under laparoscopic guidance.**

The patient was discharged from hospital on the same day with an uneventful post-operative course. The evolution was marked by the progressive decrease of the levels of  $\beta$ -hCG until being undetectable by the 35th post-operative day.

## DISCUSSION

Interstitial pregnancies are an extremely rare entity representing less than 1% of ectopic pregnancies.<sup>[4]</sup> It is defined by the implantation of the blastocyst in the myometrial portion of the fallopian tube which is a channel of 0.7 mm wide and about 1 to 2 cm long, whose

muscular wall is more extensible, allowing sometimes the development of pregnancy relatively late, up to 16 WG.<sup>[5]</sup> The main risk of this localization is uterine rupture with cataclysmic hemorrhage due to the rich vascular pattern of the interstitial portion of the fallopian tube supplied by ovarian and uterine arteries.<sup>[1,2]</sup>

Risk factors include pelvic inflammatory disease, previous pelvic surgery, previous history of ectopic pregnancy, previous salpingectomy, previous tubal sterilization, uterine anomalies and a history of sexually transmitted infections.<sup>[4]</sup> In our case, the patient had previous contralateral salpingectomy for a ruptured ectopic pregnancy.

Clinically, it manifests before the onset of rupture, by the association of amenorrhea, pelvic pain, metrorrhagia and a positive pregnancy test. These signs are those of any ectopic pregnancy or spontaneous abortion.<sup>[3]</sup> This lack of specificity of the clinical signs shows the advantage of imaging. Ultrasound allows diagnosis by visualizing an eccentric embryo sac and an empty uterine cavity. According to Luo and al,<sup>[5]</sup> there are three ultrasound forms of interstitial pregnancy: the cystic form, the nodular form and the ruptured form. In our case it is an embryonic cystic form.

Traditional treatment for interstitial pregnancy consisted of cornual wedge resection or hysterectomy via laparotomy. However, this kind of surgery was considerably invasive and associated with high morbidity and negative effects on fertility.<sup>[6]</sup> More recently, the use of conservative laparoscopic treatment by local injection of MTX is increasingly more privileged, reducing the potential consequences on morbidity and subsequent fertility.<sup>[6,7]</sup> It is a simple and reproducible technique.

In Lau et al.'s review of the literature,<sup>[6]</sup> a total of 17 patients treated in situ MTX and 16 patients treated intramuscularly, found 86% success in the case of injection in situ against 80% in the case of a systemic injection. One of the arguments for the local administration of methotrexate has been its favorable side-effect profile. However, this has been based on comparisons with multiple systemic dose regimes.<sup>[7]</sup>

Fisch et al.<sup>[8]</sup> tried to define criteria allowing on one hand, to avoid rupture of the ectopic pregnancy under medical treatment, on the other hand, to predict a therapeutic success; and concluded that a thickness of myometrium of 5 mm around the ectopic mass seems to eliminate the risk of an imminent rupture and thus allow medical treatment. However, there is no consensus regarding the level of hCG or the presence of cardiac activity.

Given the absence of the left fallopian tube and nulliparity in the current case presentation, and suggestive radiographic evidence of an early interstitial ectopic pregnancy, conservative laparoscopic treatment

was the preferred approach to prevent subsequent infertility. Monitoring must be clinical and paraclinical (biology and ultrasound). BHCG initially decreases quite quickly, but complete negativation may take two months. Similarly, the normalization of ultrasound images can take a long time: the diameter of the gestational sac slowly decreases for weeks or even months.<sup>[9,10]</sup> If biological decrease is not objectified or if the size of the sac increases under treatment, a rupture is to be feared, having to consider a new dose of MTX or a surgical alternative.<sup>[11]</sup> As for the obstetric prognosis, it is marked by the risk of uterine rupture, thus, most authors recommend a caesarean section before the start of labor during subsequent pregnancy. Therefore, it can be assumed that even in the case of medical treatment, doubt remains as to the quality of the corneal myometrium.<sup>[9-11]</sup>

## CONCLUSION

Interstitial pregnancy is an uncommon entity that is distinguished from other types of ectopic pregnancies by its greater risk of hemorrhage. It is still a challenging condition to diagnose and treat; early diagnosis may help to choose the proper management. The standard treatment remains surgical; however, medical treatment can also be offered as a first line in selected cases, outside the context of rupture, by in situ injection of Methotrexate, to preserve fertility.

## ABBREVIATIONS

**MTX:** Methotrexate

**b-hCG:** Beta human chorionic gonadotropin

**WG:** Weeks of gestation

## DECLARATIONS

### Guarantor of Submission

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## Availability of data and materials

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## Competing interests

The authors declare that they have no competing interests.

## Consent for publication

Written informed consent was obtained from the patient for publication of this case report and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

## Ethics approval and consent to participate

Ethics approval has been obtained to proceed with the current study. Written informed consent was obtained from the patient for participation in this publication.

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