

To Evaluate and Explain the Occurrence of Recurrent Ectopic Pregnancy after Ipsilateral Salpingectomy, Using the Ultrasound

Ashraf Talaat Youssef*

Department of Radiology, Faculty of Medicine, Fayoum University, Faiyum, Egypt

Abstract

The current case report evaluated a female patient with a history of right salpingectomy subsequent to right tubal ectopic pregnancy that was presented with amenorrhea followed by vaginal bleeding and lower abdominal severe pain. The transvaginal ultrasound examination revealed the presence of ipsilateral right interstitial ectopic pregnancy. The patient was subjected to cornual wedge resection and uterine repair. The pathology report of the excised specimen revealed decidua, chorionic villi, and blood. Recurrent interstitial ectopic pregnancy after previous ipsilateral tubal ectopic pregnancy managed with salpingectomy is very rare, with only a few cases described in the literature. The current study was to evaluate and explain the occurrence of recurrent ectopic pregnancy after ipsilateral salpingectomy using the ultrasound.

Keywords: Recurrent ectopic pregnancy, salpingectomy, transvaginal ultrasound, uterine contractions

INTRODUCTION

Ectopic pregnancy was defined as the implantation of pregnancy outside the uterine cavity of an estimated incidence of 0.0125. About 95% of ectopic pregnancy cases were detected involving the Fallopian tubes. Other sites of ectopic pregnancy seen include the intramural portion of the Fallopian tubes (interstitial ectopic pregnancy), the ovaries, the cervix, and the peritoneal cavity.^[1]

Interstitial ectopic pregnancy represents 2%–4% of all cases of ectopic gestation with an estimated mortality rate around 2.0%–2.5% and represents 20% of all deaths from an ectopic pregnancy; it may contribute to life-threatening intraperitoneal hemorrhage subsequent to uterine rupture and the rich blood supply by the anastomosis between the uterine and ovarian arteries.^[2]

Interstitial pregnancy can be managed with medical therapy or surgical treatment.

Medical therapy includes intramuscular or intra-amniotic injection of methotrexate with an estimated failure rate about 35%.

Medical therapy in spite of more safe carries the risks of rupture uterus and the side effect of Methotrexate. The patient will require continuous monitoring during medical treatment.

The surgical management includes cornual wedge resection, which carries risks of subsequent uterine rupture due to weak uterine scar, which can be minimized by adequate suturing and the limited use of electrocautry.^[3]

Interstitial ectopic pregnancy can be diagnosed with transvaginal ultrasound which shows no intrauterine sac with the eccentric location of conception at the angle of the uterus with thin surrounding myometrial mantle which does not exceed 5 mm in thickness associated with elevated serum human chorionic gonadotropin levels.^[4]

Recurrent interstitial ectopic pregnancy after previous ipsilateral tubal ectopic pregnancy is very rare, with only a few cases described in the literature.^[5]

Address for correspondence: Dr. Ashraf Talaat Youssef,
Department of Radiology, Faculty of Medicine, Fayoum University,
Faiyum, Egypt.
E-mail: ashraftalaat1@yahoo.com

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The current case report represents a rare instance of recurrent interstitial tubal ectopic pregnancy after ipsilateral tubal ectopic pregnancy managed with a salpingectomy.

CASE REPORT

A 31-year-old female, gravida 2 para 1, was referred to a private ultrasound clinic to perform transvaginal ultrasound examination and was complaining of amenorrhea for about 6 weeks, lower abdominal pain, and mild vaginal bleeding; the patient serum pregnancy test was positive and she was hemodynamically stable; and serum hemoglobin level was 13g/dl and her systemic blood pressure was 130/85. She had a history of right salpingectomy since 2 years subsequent to disturbed right tubal ectopic pregnancy. She had performed hysterosalpingography since 3 months to assess the patency of the left tube [Figure 1] and received ovulation induction therapy during the next two cycles until she got pregnant.

Five years ago, she delivered vaginally a full-term female fetus. Transvaginal ultrasound examination was performed using endovaginal ultrasound multifrequency (5–12Mhz) probe, Sonoace X8 ultrasound machine (Medison, Korea) had revealed the presence of an ectopic gestational sac observed at the right uterine cornu with thin overlying myometrium and was associated with small right ovary cyst [Figure 2a and b], the endometrium was thick and echogenic, and there was no associated myometrium mass or free fluid in Douglas’ pouch.

The patient was referred to the hospital after getting the report of the transvaginal ultrasound examination and was subjected to cornual wedge resection and uterine repair.

The pathology report of the excised specimen revealed decidua, chorionic villi, and blood.

DISCUSSION

Recurrent ectopic pregnancy and heterotopic pregnancy were reported after ipsilateral salpingectomy and bilateral salpingectomy.^[6]

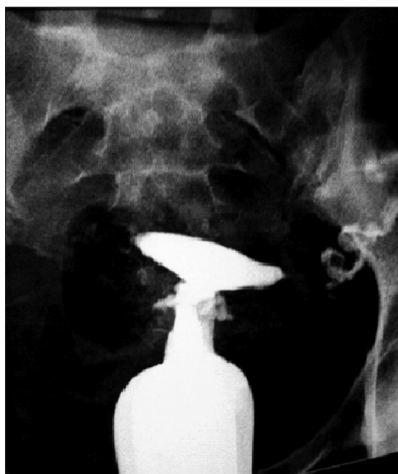


Figure 1: Hysterosalpingography examination revealed nonopacified right Fallopian tube (right salpingectomy) with opacified nondilated left tube

There were three developed theories that did not adequately explain the mechanism of recurrent ectopic pregnancy after ipsilateral salpingectomy, and the mechanism remained unclear.

The first theory proposed the passage of an ovum on the damaged side to the recanalized and regenerated tubal remnants. The second theory proposed the passage of sperm from the healthy tube to fertilize the ovum along the damaged side.

The third theory proposed the passage of the fertilized ovum from the uterine cavity to implant in the damaged side.^[1,7,8]

To the author's opinion which was based on previous studies that assessed the presence and the pattern of uterine contractions under physiological and pathological conditions using the transvaginal ultrasound and the consequences of uterine contractions on the results of *in vitro* fertilization (IVF) and embryo transfer. The studies had revealed that uterine contractions increases in number through the time of follicular phase of cycle to reach 3–5/min prior to ovulation under the effect of serum estrogen mainly in the form of retrograde pattern toward the fundus and to a little extent in antegrade pattern toward the cervix and other patterns like antagonistic and propagated patterns were also observed.

The junctional uterine zone (inner myometrial zone) is responsible for the production of these contractions. The uterine contractions were markedly reduced during the mid-secretory phase under the effect of elevated serum progesterone level (relaxing effect of progesterone)) to facilitate the process of implantation.^[9,10]

The uterine contractions were passively transferred to the fertilized ovum, causing its motion as recorded during the IVF and embryo transfer at the time of implantation.

The author’s explanation of the mechanism by which recurrent ectopic occurs after ipsilateral salpingectomy proposed the presence of abnormal vigorous uterine contractions at the time of implantation which can lead to expel the fertilized ovum to implant in the intramural or the isthmic portion of the tubal remnant after salpingectomy through a retrograde pattern of contractions. Furthermore, in a similar way, the antegrade pattern of contractions can result in cervical ectopic pregnancy or pregnancy miscarriage.

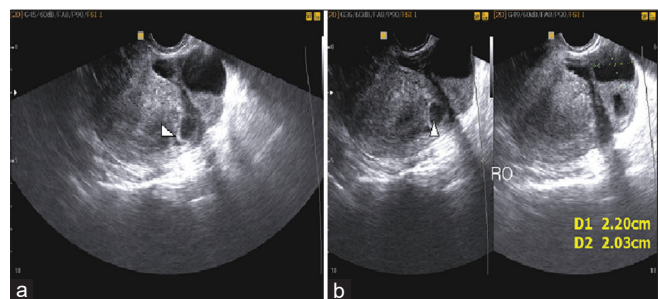


Figure 2: (a and b) Transvaginal ultrasound showing ectopic gestational sac (arrow head) observed at the right uterine cornu with thin overlying myometrium and was associated with small right ovary cyst

The above-mentioned mechanism can also be used to explain the occurrence of ectopic pregnancy with the presence of healthy Fallopian tubes and after IVF.

Factors that may lead to abnormal vigorous uterine contractions during the implantation period are not studied yet; however, a relationship with ovarian hyperstimulation during the use of parenteral gonadotropin to stimulate the ovaries exists.^[9]

Most of the cases suffered from recurrent ectopic after ipsilateral tubal surgery were subjected to partial salpingectomy, tubal milking, and bilateral tubal surgery as observed by a literature review. Hence, the management of tubal ectopic pregnancy with partial salpingectomy is riskier for the recurrence of ectopic pregnancy than total salpingectomy; however, patients managed with total salpingectomy will be in still risk for the development of interstitial ectopic pregnancy as the intramural portion of Fallopian tube was not removed in total salpingectomy.^[11]

Other factors that may lead to the development of recurrent interstitial ectopic pregnancy are hydrosalpinx, endometriosis, and uterine fibroids, so patients risky for recurrent interstitial ectopic and had interstitial ectopic pregnancy are better managed with cornual resection as the intramural portion of the tube will be excised.^[3] However, patients with previous tubal ectopic pregnancy and were risky for the development of ipsilateral interstitial ectopic pregnancy, to the author's opinion are better managed with total salpingectomy followed by interventional blockage of uterotubal ostium and intramural portion of the tube. The blockage could be achieved via hysteroscopic or fluoroscopic guidance with metallic coil-like Essure used for female sterilization or through the use of a permanent tubal plug.^[12-14]

CONCLUSION

Unawareness for the possible recurrence of tubal ectopic pregnancy after ipsilateral salpingectomy subsequent to tubal ectopic pregnancy or after ipsilateral tubal surgery may lead to delayed diagnosis and increased risk of complications which could be life-threatening.

A better understanding of the mechanism by which the recurrence of ectopic pregnancy occurs and the risk factors that lead to its recurrence will help to reach the optimum way of management and the methods of prevention.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given her consent for her images and other clinical information to be reported in the journal. The patient understands that name and initials will not be published and due efforts will be made to conceal her identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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