

Recurrent Ectopic Pregnancy in the Remnant Fallopian Tube Following Ipsilateral Partial Salpingectomy

Eijiro Hayata¹, Takehiko Tsuchiya¹, Toshimitsu Maemura¹, Yukiko Katagiri¹,
Tomonori Hasegawa², Mineto Morita¹

¹Department of Obstetrics and Gynecology, Toho University Omori Medical Center, Tokyo, Japan

²Department of Social Medicine, Toho University School of Medicine, Tokyo, Japan

Email: e_hayata@hotmail.com

Received 8 June 2015; accepted 11 July 2015; published 15 July 2015

Copyright © 2015 by authors and Scientific Research Publishing Inc.

This work is licensed under the Creative Commons Attribution International License (CC BY).

<http://creativecommons.org/licenses/by/4.0/>



Open Access

Abstract

A 39-year-old female with a history of partial salpingectomy for tubal pregnancy was diagnosed as having recurrent ectopic pregnancy in the distal portion of the fallopian tube remnant, which was successfully treated by laparoscopic surgery. The patient was multigravida (9 pregnancies) and uniparous. She had undergone right partial salpingectomy by laparotomy for right isthmic ectopic pregnancy at the age of 31 years. At 6 weeks of the current pregnancy, she was referred to our hospital for suspected ectopic pregnancy. The gestational sac was not observed in the uterus, and a mass was observed in the right adnexal region by transvaginal ultrasonography. Emergency laparoscopic surgery revealed the pregnancy site in the ampulla of the remnant portion of the right fallopian tube; therefore, this portion was resected. Because the proximal portion of the fallopian tube remnant was completely occluded, we concluded that this was a case of ectopic pregnancy resulting from the intraperitoneal migration of a fertilized ovum. With current developments in assisted reproductive technologies, reanastomosis of the fallopian tube is rarely performed. While partial salpingectomy is less likely to contribute to the preservation of fertility, it increases the risk of recurrent ectopic pregnancy. A single-stage total salpingectomy on the affected side should be the first choice of treatment when fallopian tube preservation surgery is not selected.

Keywords

Ectopic Pregnancy, Laparoscopy, Fallopian Tube Remnant

1. Introduction

Recent advances in ultrasound testing equipment have made it possible to identify, to some extent, the implanta-

tion site in ectopic pregnancies. This diagnosis involves using the corpus luteum as an indicator and confirming a white ring near the adnexa of the uterus appendages on the same side. In recent years, ectopic pregnancies have become more common because of tubal obstruction due to sexually transmitted diseases, such as chlamydia, as well as advances in assisted reproductive technology. There has also been an increase in reports on ectopic pregnancies in rare locations. In this study, we report the case of a patient who had undergone partial salpingectomy for tubal pregnancy, after which ectopic pregnancy in the ipsilateral fallopian tube remnant was definitively diagnosed by laparoscopy and subsequently treated.

2. Case Report

The patient was a 39-year-old female, multigravida (9 pregnancies), and uniparous (1 spontaneous delivery, 1 induced abortion, 1 ectopic pregnancy, and 6 spontaneous abortions).

Medical history: At the age of 31 years, the patient underwent partial salpingectomy by laparotomy for right isthmic ectopic pregnancy at another hospital.

Family history: Not significant.

History of present illness: After natural conception, the patient visited her previous doctor for examination because of a positive over-the-counter pregnancy test 4 weeks and 5 days after her last menstrual period. Serum human chorionic gonadotropin (hCG) level was 1000 IU/L, and transvaginal ultrasonography revealed no intrauterine gestational sac. At 5 weeks and 5 days, she was examined again and referred to our hospital with suspected ectopic pregnancy, and another transvaginal ultrasonography revealed no intrauterine gestational sac. The initial examination at our hospital revealed that her serum hCG level increased to 7167 IU/L, but transvaginal ultrasonography was unable to confirm a gestational sac or mass in the uterus or either of its adnexa. At 6 weeks and 2 days gestation, her serum hCG increased to 8646 IU/L and a mass was observed in the right adnexa. Therefore, the patient underwent emergency hospitalization that day for a suspected right tubal pregnancy.

Clinical course: Typical symptoms of ectopic pregnancy were not observed, but ectopic pregnancy was strongly suspected from the patient's medical history, along with imaging and testing findings. Because the patient had a history of right salpingectomy, right tubal pregnancy was considered unlikely. However, because imaging findings revealed a hemorrhage-like mass in the right adnexa, it was determined that direct intraperitoneal observation was required for accurate diagnosis of the pregnancy site. On the same day, after receiving the patient's informed consent, emergency laparoscopic surgery was performed to observe the intraperitoneal area.

Surgery findings: No abnormal findings were observed in either ovary or left fallopian tube. The corpus luteum was observed in the left ovary. The right isthmus of the fallopian tube had been removed in a previous surgery, but a mass was observed in the remaining right ampulla of the uterine tube (**Figure 1**). Filmy adhesion was observed around the left and right uterine adnexa. Injection of a dilute solution of indigo carmine confirmed

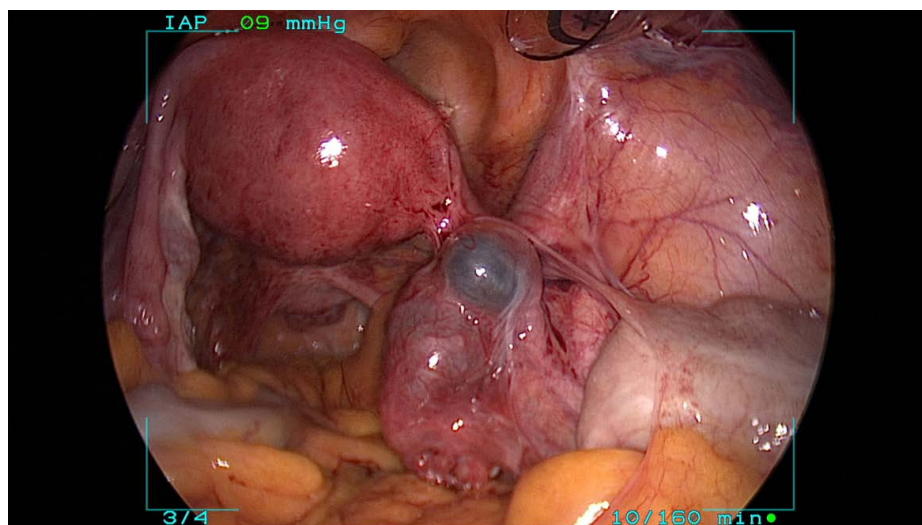


Figure 1. Right isthmus was not present; mass was observed in the ampulla of the remnant portion of the right fallopian tube.

the permeability of the left fallopian tube, but the fallopian tube remnant was completely occluded. Total salpingectomy of the right fallopian tube remnant was performed. The surgery time was 43 min, and the hemorrhage volume was 30 mL. No complications occurred, and the patient was discharged five days after surgery.

3. Discussion

3.1. Diagnosis of Ectopic Pregnancy and Mechanism of Onset

Ectopic pregnancy is often difficult to diagnose. With some cases exhibiting no symptoms and other cases suffering hemorrhagic shock, a diverse range of clinical findings is observed. Approximately 50% cases of ectopic pregnancy are believed to exhibit the classic three symptoms: anemia, abdominal pain, and genital bleeding [1]. The present case did not exhibit any of the above three symptoms, but ectopic pregnancy was suspected because of the presence of hCG in the blood and the inability to confirm an intrauterine gestational sac. In atypical cases such as this, it is important to acquire information regarding risk factors from the patient's medical history, including previous ectopic pregnancy, fallopian tube surgery, and infertility treatment. If a gestational sac or mass cannot be observed inside or outside the uterus and there are no signs of intraperitoneal bleeding, a wait-and-see approach is recommended, with hCG levels tested and transvaginal ultrasonography performed every 2 or 3 days. If serum hCG level is 2000 mIU/mL or greater, the patient is diagnosed as having ectopic pregnancy, with almost complete certainty. If hCG levels are tested a few days later and observed to have risen, ectopic pregnancy is extremely likely. When hCG levels do not drop, the case should be treated as an ectopic pregnancy. In the present case, hCG testing and transvaginal ultrasound were conducted three times over 10 days, leading to a strongly suspected ectopic pregnancy. However, we were unable to identify the pregnancy location.

For cases in which ectopic pregnancy is strongly clinically suspected, but the pregnancy site cannot be identified with ultrasound, laparoscopic surgery is an effective method of combining both diagnosis and treatment. In the present case, laparoscopic surgery findings allowed us to diagnose pregnancy in the right fallopian tube remnant. However, this case was an extremely atypical case and the mechanism of onset seemed to be complex:

- 1) The right fallopian tube was divided at the isthmus, and indigo carmine testing indicated complete occlusion;
- 2) In contrast, the left fallopian tube appeared normal, with chromotubation indicating permeability; and
- 3) The corpus luteum was observed in the left ovary.

As shown in **Figure 2**, the above intraperitoneal findings suggested that an ovum from the left ovary had been fertilized in the left fallopian tube, after which the fertilized egg migrated into the abdominal cavity, and implanted in the right fallopian tube ampulla.

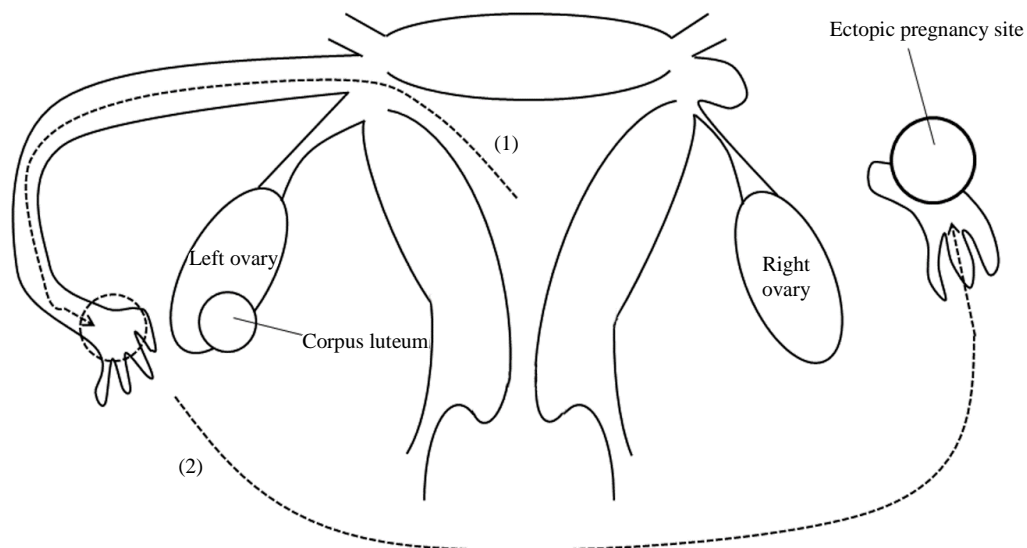


Figure 2. Mechanism of onset of ectopic pregnancy in the present case. (1) Ovum from left ovary was fertilized by the sperm that passed through the left fallopian tube. (2) The fertilized egg migrated into intraperitoneal cavity and implanted in the remnant portion of the right fallopian tube.

As in the present case, it is extremely rare for an ectopic pregnancy to occur in the fallopian tube remnant after partial salpingectomy. Based on a literature search (search of PubMed with key words “ectopic pregnancy,” “salpingectomy,” and “remnant tube,” we observed 5 English articles from 2000 to 2012) and found only 2 similar case reports [2] [3]. For each of these cases, the mechanism of onset appeared to have been intraperitoneal migration of the gamete. Nahum *et al.* reported on gamete intraperitoneal migration rates in non-communicating bicornuate uterus pregnancy cases [4]. They found that sperm intraperitoneal migration occurred in approximately 50% of all pregnancies and estimated that ovum intraperitoneal migration occurred in approximately 40% pregnancies. This suggested that gamete intraperitoneal migration is an extremely normal phenomenon. According to the same report [4], gamete intraperitoneal migration is one cause of recurrent ectopic pregnancy, and when the opposite fallopian tube exhibits normal findings, it is recommended to remove the affected fallopian tube to prevent recurrent ectopic pregnancy.

3.2. Selection of Treatment Methods, Particularly Surgical Procedure

Treatment for ectopic pregnancy must be comprehensively determined taking into account the patient’s general condition, desire to bear children, ultrasound findings, serum hCG levels, and changes in hCG levels. Surgery and pharmacotherapy with methotrexate (MTX) are commonly selected treatments worldwide. However, surgery is the first choice of treatment in Japan because surgical procedures are widely used, safe, and fast, and MTX treatment is not reimbursed by national health insurance. Laparoscopic surgery is rapidly becoming a popular choice because it can make definitive diagnosis possible with intraperitoneal observation, allows a smooth transition from observation to treatment in the same procedure in most cases, and is less invasive than laparotomy. Randomized controlled trials comparing laparotomy with laparoscopic surgery for ectopic pregnancies were systematically reviewed in the 2007 Cochrane review [5]. Compared with laparotomy, laparoscopic surgery offered shorter surgery time (73 min. vs. 88 min.), caused less perioperative hemorrhage (79 mL vs. 195 mL), had shorter hospitalization period (1 - 2 days vs. 3 - 5 days), and a shorter recovery time (11 days vs. 24 days).

Typical surgical procedures for tubal pregnancies, such as the present case, are salpingostomy, a conservative surgery, and salpingectomy. Regarding pregnancy prognosis, it has been reported that salpingostomy was less likely to increase the intrauterine pregnancy rate than salpingectomy, while it significantly increased the recurrent ectopic pregnancy [5]. It has also been reported that in tubal pregnancies, where the opposing fallopian tube shows normal findings, laparoscopic salpingectomy does not lower the incidence of postoperative intrauterine pregnancy, but lowers risks of continuing ectopic pregnancy and recurrent ectopic pregnancy [6]. Therefore, our main aim is to select laparoscopic salpingectomy for tubal pregnancies.

There are two types of salpingectomy: total salpingectomy, which involves completely removing the affected fallopian tube, and partial salpingectomy, which involves only removing the site of the ectopic pregnancy. Not enough evidence exists to establish which of the two procedures is superior. In the past, partial salpingectomy was selected in some cases because fallopian trauma was limited to the pregnancy site, and reanastomosis could be performed in the future, if required. However, because recurrent ectopic pregnancy can occur in the fallopian tube remnant, fallopian function is not restored in several cases, despite fallopian reanastomosis. In addition, assisted reproductive technologies such as in vitro fertilization and embryo transfer have advanced in Japan; therefore, fallopian reanastomosis is currently rarely conducted, and partial salpingectomy is unlikely to contribute to fertility preservation.

4. Conclusion

When organ-preserving surgery of the fallopian tubes is not selected, we believe that one-stage total salpingectomy of the affected tube should be the first choice, along with a swift response regarding a desire to bear subsequent children.

References

- [1] Stovall, T.G. (2011) Early Pregnancy Loss and Ectopic Pregnancy. In: Berek, J.S., Ed., *Novak’s Gynecology*, 15th Edition, Lippincott Williams & Wilkins, Philadelphia.
- [2] Zuzarte, R. and Khong, C.C. (2005) Recurrent Ectopic Pregnancy Following Ipsilateral Partial Salpingectomy. *Singapore Medical Journal*, **46**, 476-478.

- [3] Rizos, A., Eyong, E. and Yassin, A. (2003) Recurrent Ectopic Pregnancy at the Ipsilateral Fallopian Tube Following Laparoscopic Partial Salpingectomy with Endo-Loop Ligation. *Journal of Obstetrics Gynaecology*, **23**, 678-679. <http://dx.doi.org/10.1080/01443610310001609524>
- [4] Nahum, G.G., Stanislaw, H. and McMahon, C. (2004) Preventing Ectopic Pregnancies: How Often Does Transperitoneal Transmigration of Sperm Occur in Effecting Human Pregnancy? *BJOG*, **111**, 706-714. <http://dx.doi.org/10.1111/j.1471-0528.2004.00162.x>
- [5] Hajenius, P.J., Mol, F. and Mol, B.W. (2007) Interventions for Tubal Ectopic Pregnancy. *Cochrane Database of Systematic Reviews*, **24**, Article ID: CD000324. <http://dx.doi.org/10.1002/14651858.cd000324.pub2>
- [6] Dubuisson, J.B., Morice, P. and Chapron, C. (1996) Salpingectomy—The Laparoscopic Surgical Choice for Ectopic Pregnancy. *Human Reproduction*, **11**, 1199. <http://dx.doi.org/10.1093/oxfordjournals.humrep.a019355>