

## ECTOPIC PREGNANCY AS A COMPLICATION OF ASSISTED REPRODUCTIVE TECHNIQUES FOLLOWING BILATERAL SALPHINGECTOMIES

### *BİLATERAL SALPENJEKTOMİ SONRASI UYGULANAN YARDIMLA ÜREME TEKNİKLERİNİN BİR KOMPLİKASYONU OLARAK OLUŞAN EKTOPIK GEBELİK OLGUSU*

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#### ABSTRACT

Ectopic pregnancy continues to be one of the important reasons for maternal mortality. With the widespread and frequent use of Assisted Reproductive Techniques (ART), the frequency of abnormally located pregnancies also rises. In this article, we presented a case of an ectopic pregnancy occurring in the right tubal stump after an intracytoplasmic sperm injection – embryo transfer performed on a 39 year-old patient with secondary infertility and bilateral salphingectomy.

Although a bilateral salphingectomy was performed in IVF cycles for an early diagnosis in order to decrease maternal morbidity and mortality, an ectopic pregnancy in the stump should be definitely taken into consideration in cases where no intrauterine pregnancy is observed.

**Key Words:** Ectopic pregnancy; Bilateral salphingectomy; Assisted Reproductive Techniques (ART)

#### ÖZET

Ektopik gebelik halen maternal mortalitenin önemli nedenlerinden biri olmaya devam etmektedir. Yardımla Üreme Teknikleri (YÜT)' nin yaygın ve sık kullanılması ile birlikte anormal yerleşimli gebeliklerin sıklığı da artmaktadır. Bu yazıda 39 yaşında sekonder infertil ve bilateral salpenjektomili hastaya uygulanan intrasitoplazmik sperm enjeksiyonu - embryo transferi sonrası sağ tubal stump ta meydana gelen ektopik gebelik vakasını sunduk.

Maternal morbidite ve mortaliteyi azaltmak amacıyla erken tanı için İVF sikluslarında bilateral salpenjektomi yapılmış olsa da intrauterin gebelik izlenmediği durumlarda ayırıcı tanıda mutlaka stumpta ektopik gebelik düşünülmelidir.

**Anahtar Sözcükler:** Ektopik gebelik; Bilateral salpenjektomi; Yardımla üreme teknikleri(YÜT)

#### INTRODUCTION

Ectopic pregnancy is still one of the important causes of maternal mortality(1). With the widespread and frequent use of Assisted Reproductive Techniques (ART), the frequency of abnormally located pregnancies also rises (2). Though rare for patients with bilateral salphingectomy, there are reports of interstitial (3), ovarian (4), retroperitoneal (5) and subpancreatic (6) pregnancies.

A case of ectopic pregnancy, occurring in the tubal stump following the ART performed on the patient who

underwent bilateral salphingectomy in our hospital is presented here in light of relevant literature.

#### CASE

A 39-year old woman, had been married for 6 years, gravidity 3, parity 1, had previously one spontaneous pregnancy which resulted as a biochemical abortus. At the end of a year she did not conceive and she applied to our infertility outpatient clinic. After general examination she underwent routine infertility tests including ovarian reserve test, spermiogram and sperm morphology and hysterosalpingography(HSG). HSG revealed unilateral hydrosalpinx.

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In 2012, due to right tubal ectopic pregnancy and left hydrosalpinx, a laparoscopic bilateral salpingectomy was performed on the patient. The pathological findings revealed trophoblastic cells compatible with tubal pregnancy in the right tube and chronic salpingitis in the left tube.

After failure of the first attempt, she conceived after the second intracytoplasmic sperm injection-embryo transfer (ICSI-ET) in 2014, however pregnancy was terminated at 28 weeks of gestation as a result of spontaneous contractions and cervical dilatation. On the seventh day of delivery, infant died as a result of acute respiratory distress syndrome.

In 2015, a third ICSI-ET was performed and on the third day, two embryos were transferred. The following results were observed: on the 14th day of embryo transfer Beta hCG 72 IU/ml, 17. day 253 IU/ml, 19. day 633 IU/ml, 25. day 3879 IU/ml.

She admitted to our emergency service complaining of stomachache at the 28th day of embryo transfer. We obtained normal vital findings, beta hCG level 8543 IU/ml, 12 mm thickness of endometrium, no gestational sac in the uterine cavity, normal ovaries and mass including hyper-hypoechoic regions, with a size of 20x12 mm at the right adnexial site in the transvaginal-ultrasonography.

Results of our clinical examinations and tests indicated an ectopic pregnancy located on the right remnant tube and she underwent laparoscopic surgery. During surgical exploration an ectopic pregnancy on the right proximal stump was observed at a size of 20x20 mm. It was then resected and an endometrial curettage was performed.

Histopathological examination reported secretory phase in endometrial tissue and gestational material located in the right remnant tube.

### DISCUSSION

Ectopic pregnancy makes up 1,7%-2% of all pregnancies obtained through ART (7). In addition, there are some publications indicating that the rates of ectopic pregnancy through ART are higher than spontaneous pregnancies (8).

Even though ectopic pregnancy is often seen as a complication of ART, it is rarely observed in the proximal tubal stump among patients who underwent bilateral salpingectomy. Po-Chun et al reported its incidence as 0.4% (9).

The rates of pregnancy through ART in cases with hydrosalpinx is low, bilateral salpingectomy is frequently performed to increase pregnancy rates (10).

This approach leads to one extra surgical intervention in these patients just before ART(11).

The mechanism of post-ART ectopic pregnancies can originate from the direct transfer of embryo to the tube or migration of the embryo from the endometrial cavity to the tube. The embryo transfer technique (deep fundal transfer), use of a transfer medium with a high volume, multiple embryo transfer, frozen embryo transfer, artificial insemination can all increase the possibility of ectopic pregnancies (8). As in our case, two embryos

were easily transferred into the fundus by a soft-catheter under the guidance of ultrasonography.

Despite bilateral salpingectomy, the nature of ectopic pregnancies are yet not exactly known; moreover, appropriate methods and surgical techniques that can decrease the risk of ectopic pregnancies, such as the correct and proper cauterization of the tubal stump, needs further investigation (3).

Researchers have not yet demonstrated whether it is possible to prevent this kind of ectopic pregnancy or not. If a complete tubal resection is performed during the first salpingectomy, an ectopic pregnancy on the isthmic part of the remnant tube would be theoretically blocked. However, there are some reports of a spontaneous formation of interstitial/cornual pregnancy following the ipsilateral salpingectomy (12,13). Therefore, even if the tube is completely resected, it can be difficult to prevent the development of ectopic pregnancy in the remnant tube after the ipsilateral salpingectomy (9).

Agarwal et al reported cases of cornual pregnancy in seven patients who underwent a salpingectomy before IVF-ET (14). Po-Chun et al reported six cases of tubal stump pregnancy, four of which occurred after ART (9). The use of ART has led to a considerable increase in tubal stump pregnancies. Against the risk of rupture in the early phase, a rigorous transvaginal ultrasonographic evaluation should be made especially for patients who undergo a salpingectomy, whose B-hcg values are lower than normal or do not exhibit a regular increase (9).

It should be kept in mind that the previous surgery of bilateral salpingectomy can be associated with a missed diagnosis of ectopic pregnancy which may result in a life threatening intraabdominal bleeding (15).

Our case report shows that despite history of bilateral salpingectomy, an ectopic pregnancy can be encountered after ART and present with life threatening results. Clinicians should always be suspicious for the rare conditions to save life.

### REFERENCES

1. Khan KS, Wojdyla D, Say L, Gulmenzoglu AM, van Look PF. WHO analysis of causes of maternal death: a systematic review. *Lancet* 2006;367:1066-74.
2. Tal S, Einat PS, Eylon L, Ofer F, Adrian E. Unusual case of recurrent heterotopic pregnancy after bilateral salpingectomy and literature review. *RBM Online* 2013;26:59-61.
3. Elisabetta G, Lavinia Q, Anna R, Gabriella C, Federica P, Massimo C. Interstitial Pregnancy after In Vitro Fertilization and Embryo Transfer Following Bilateral Salpingectomy: Report of Two Cases and Literature Review. *Royan Institute Internat J Fertil Steril* 2012;6(2):131-4.
4. Feit H, Leibovitz Z, Kerner R, Keidar R, Sagiv R, Ovarian pregnancy following IVF, in a woman after bilateral salpingectomy. A case report and review of the literature, *The Journal of Minimally Invasive Gynecology* (2015) doi: 10.1016/j.jmig.2015.01.018.

5. Iwama H, Tsutsumi S, Igarashi H, Takahashi K, Nakahara K, Kurachi H. A case of retroperitoneal ectopic pregnancy following IVF-ET in a patient with previous bilateral salpingectomy. *Am J Perinat* 2008;25(1):33-6.
6. W. P. Dmowski, N. Rana, J. Ding, and W. T. Wu. Retroperitoneal Subpancreatic Ectopic Pregnancy Following In Vitro Fertilization in a Patient with Previous Bilateral Salpingectomy: How Did It Get There? *J Assist Reprod and Genetics* 2002;19(2):90-3.
7. Assisted reproductive technology in the United States: 2001 results generated from the American Society for Reproductive Medicine/Society for Assisted Reproductive Technology registry Society for Assisted Reproductive Technology and the American Society for Reproductive Medicine. *Fertil Steril* 2007;87:1253-66.
8. Marcus SF, Brinsden P. Analysis of incidence and risk factors associated with ectopic pregnancy following in-vitro fertilization and embryo transfer. *Hum Reprod* 1995;10:190–203.
9. Po-Chun K, Ching-Chung L, Tsia-Shu L, Hong-Yuan H. Six cases of tubal stump pregnancy: complication of assisted reproductive technology? *Fertil Steril* 2011;95:2432,e1-e4.
10. Karen ES, Lisa B, James PT, Sergio O, Suheil JM. Salpingectomy improves the pregnancy rate in in-vitro fertilization patients with hydrosalpinx. *Human Reproduction* 1996;11:523-5.
11. Mandakini P, Aparna M, Reshma H. Hydrosalpinx functional surgery or salpingectomy? The importance of Hydrosalpinx fluid in assisted reproductive technologies. *J Gyn Endos Surg* 2009;1:12-6.
12. Takeda, S. Manabe, T. Mitsui, H. Nakamura Spontaneous ectopic pregnancy occurring in the isthmic portion of the remnant tube after ipsilateral adnexectomy: report of two cases. *J Obstet Gynaecol Res* 2006;32:190–4.
13. Bernardini, M. Valenzano, G. Foglia Spontaneous interstitial pregnancy on a tubal stump after unilateral adnectomy followed by transvaginal colour Doppler ultrasound *Hum Reprod* 1998;13:1723–6.
14. S.K. Agarwal, A.L. Wisot, G. Garzo, D.R. Meldrum Cornual pregnancies in patients with prior salpingectomy undergoing in vitro fertilization and embryo transfer. *Fertil Steril* 1996;65:659–60.
15. Claudi A, Hansen CS, Nørgaard LN. Life-threatening extrauterine pregnancy after in vitro fertilization and bilateral salpingectomy. *Ugeskr Laeger*. 2015;177/2A:112-3.