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Ectopic pregnancy confirming the transperitoneal transport of gametes/embryos – a case report

Ciąża ektopowa potwierdzająca przezotrzewnowy transport gamet/zarodków – opis przypadku

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Abstract

To present a rare case of spontaneous ectopic pregnancy in a non-communicating heterotopic fallopian tube associated with unicornuate uterus without a rudimentary horn.

Case report. Setting: Tertiary referral obstetrics and gynecology center. Patient: A 36-year-old woman in her fourth pregnancy (para 1, abortus 2) presented at 5th gestational week with severe abdominal pain and circulatory instability. Intervention: Heterotopic fallopian tube removal by laparotomy.

Investigation of the origin of the spontaneous heterotopic fallopian tube pregnancy and exploration of the gross structural development of the urinary system.

Spontaneous ectopic pregnancy in a non-communicating heterotopic fallopian tube coexisting with corpus luteum in the contralateral ovary supports the hypothesis of transperitoneal migration of gametes or embryos.

Key words: **ectopic pregnancy** / **heterotopic fallopian tube** / **unicornuate uterus**

Streszczenie:

Prezentacja rzadkiego przypadku spontanicznej ciąży ektopowej w nie komunikującym się heterotopowym jajowodzie współistniejącym z jednorożną macicą bez szczątkowego rogu.

Kobieta w 36 roku życia, w 5 tygodniu czwartej ciąży (po 1 porodzie i 2 poronieniach) z objawami silnego bólu brzucha i niestabilności krążeniowej. Interwencja: Usunięcie heterotopowego jajowodu drogą laparotomii.

Zbadanie pochodzenia spontanicznej ciąży w heterotopowym jajowodzie oraz badanie makroskopowe rozwoju struktur układu moczowego.

Spontaniczna ciąża ektopowa w niekomunikującym się heterotopowym jajowodzie współistniejąca z ciałkiem żółtym w przeciwległym jajniku podtrzymuje hipotezę przezotrzewnowej wędrówki gamet lub zarodków.

Słowa kluczowe: **ciąża ektopowa** / **jajowód heterotopowy** / **macica jednorożna** /

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Introduction

Ectopic pregnancy is one of the leading causes of pregnancy-related death during the first trimester and even nowadays it can present a diagnostic challenge [1, 2].

Fallopian tube pregnancy constitutes 95-97% of all ectopic pregnancies [3-5]. The most common site of tubal pregnancy is the ampulla (55%) and the isthmus (20-25%), and seldomly, the infundibulum and fimbria (17%). Interstitial implantation accounts for 2-4% of all tubal pregnancies [3].

The etiologic factors most frequently involved include: tubal disease or previous surgery, congenital uterine or tubal abnormalities and presence of an intrauterine contraceptive device [6]. Ectopic pregnancy in a non-communicating heterotopic fallopian tube coexisting with unicornuate uterus is very rare [7-11]. It may constitute a proof for transperitoneal transport of gametes or embryos [6-13].

Case report

A 36-year-old woman in her fourth pregnancy (para 1, abortus 2) presented at 5th gestational week with severe abdominal pain. On admission, the patient was in distress, afebrile and pale. Blood pressure was 90/50mmHg, and heart rate was 120 beats per minute.

On physical examination, the abdomen was tender on palpation and most painful in the right lower quadrant. No blood was seen in the vaginal vault. Bimanual examination revealed a right adnexal mass and painful pouch. A transvaginal ultrasound scan showed thick, luteinized endometrium without a pregnancy sac and a complex right adnexal mass. A significant collection of free peritoneal fluid was also confirmed. The serum beta chorionic gonadotrophin was 818.5IU/l. Blood count showed anemia (hematocrit 30.4%, hemoglobin 9.6g/dl, red blood cells 3.39 x 10^6/µl, white blood cells 11.9 x 10^3/µl, platelets 236 x 10^3/µl). Intravenous hydration and laparotomy were commenced immediately. Surgery revealed a hemoperitoneum. An heterotopic, well developed right tube and ovary were attached to the peritoneum close to the pelvic brim and were separate from the uterus. The right tube was distended and bleeding. (Figure 1).

A right salpingectomy was performed. A left unicornuate uterus was found with a normal tube and ovary with a corpus luteum. The normal anatomy of both kidneys and ureters was identified and this was further confirmed on subsequent abdominal ultrasound scan. Histological examination of the removed mass revealed fragments of syncytiotrophoblast. The patient recovered normally after the surgery and was discharged from the clinic on the fifth day after the operation.

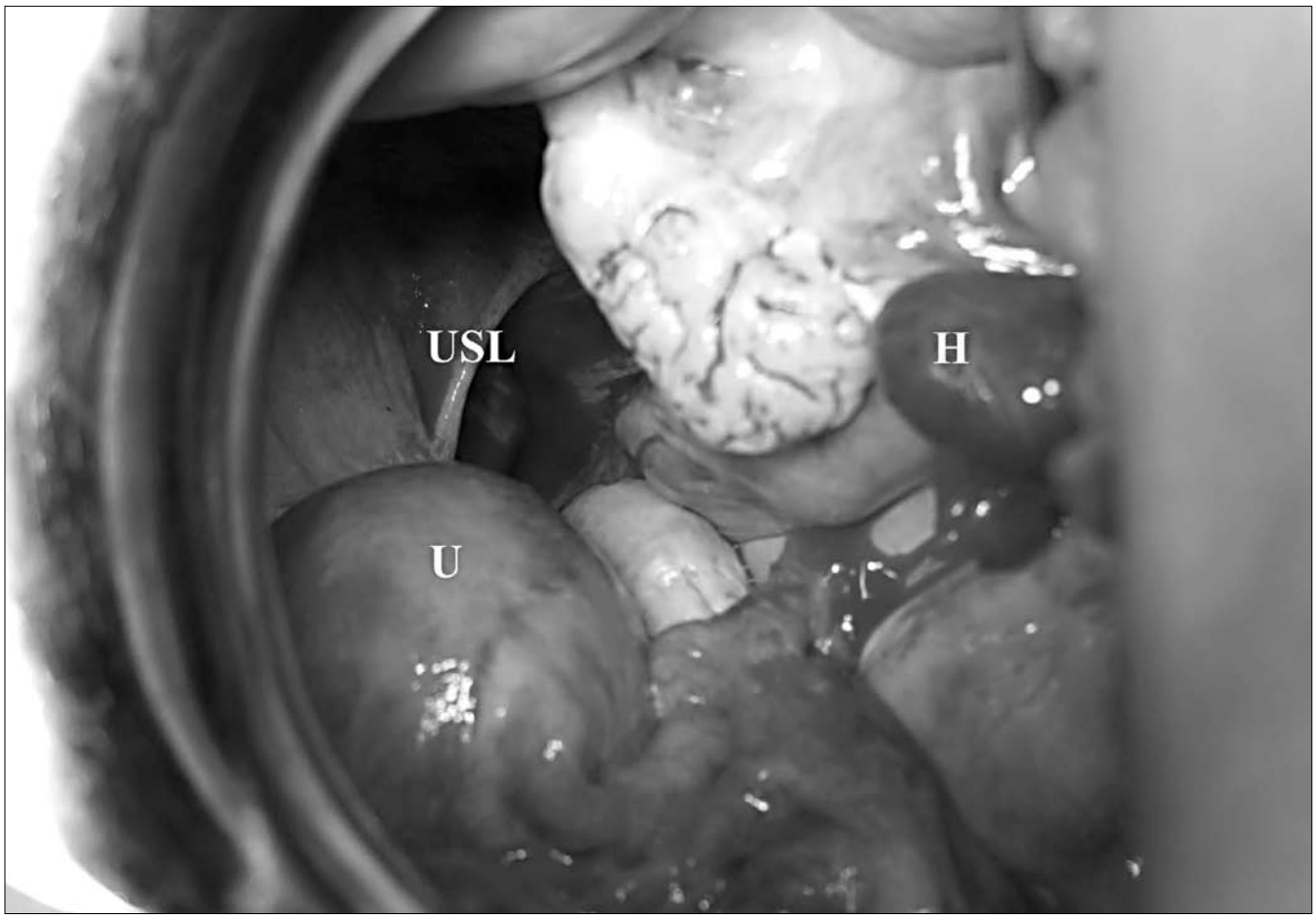

Figure 1. Intraoperative view showing right hematosalpinx (H), left unicornuate uterus without rudimentary horn (U) and right utero-sacral ligament (USL)..

Discussion

The absence of a tubal connection with the unicornuate uterus and the presence of a corpus luteum in the contralateral ovary may serve as an evidence for the phenomena of transperitoneal sperm, oocyte or embryo migration [7, 9, 12].

The exact mechanism leading to embryo implantation and the development of pregnancy in such a localization is unknown. Beyth et al. [14] demonstrated in a rabbit model that a direct contact between the fimbria and the ovary is not necessary for ovum reception. However, if the ovum pickup by the fimbria fails, and the ovum is released into the cul-de-sac, then it has approximately equal access to either fallopian tube [12]. A corpus luteum in the contralateral ovary itself is found in about 16% of extrauterine pregnancies [7]. As hypothesized by Walters et al. [12] after the normal oocyte release and pickup it might be returned to the peritoneal cavity due to dysfunctional transport in the fallopian tube. Subsequently, it may be collected by the contralateral tube. To date, only a few case reports of ectopics in non-communicating tubes are available. These include patients with ruptured pregnancy in an ectopic tube [15], pregnancy in a distal portion of the tube which was not connected to the uterus [16], pregnancy in an undescended tube [17] and unruptured pregnancy in a heterotopic tube isolated from a unicornuate uterus [9]. The presented case is classified as subgroup II-B according to Buttram and Gibbons classification of müllerian duct anomalies [18].

The incidence of müllerian duct anomalies varies between 0.1% and 3.2% and the isolated anomalies of the fallopian tubes are among the least frequent [9, 19]. It remains unknown whether chemotactic or other factors are involved in the transport of gametes or embryo in certain direction across the peritoneal cavity to reach the contralateral and heterotopic tube [7].

Thus, in such circumstances the heterotopic fallopian tube should be removed in order to eliminate the competition between the tubes for the transmigrating gametes or embryos hence reducing the potential risk of another ectopic pregnancy and its life-threatening complications [8, 13, 20, 21].

Conclusion

Spontaneous pregnancy in a non-communicating heterotopic fallopian tube coexisting with corpus luteum in the contralateral ovary supports the hypothesis of transperitoneal sperm and oocyte migration.

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