Introduction

Postpartum tubal sterilization is an increasingly common method of contraception worldwide. Although pregnancy after sterilization is uncommon, it can occur and may be ectopic (1). A retrospective survey study showed that there can be a delay in diagnosis of ectopic pregnancy because of the history of previous sterilization (2). We present a case of nausea and vomiting resulting from a ruptured ectopic pregnancy after postpartum tubal sterilization. We will focus on the delayed diagnosis with mimicking clinical features and reviewed the literature for the risk of ectopic pregnancy after tubal sterilization.

Case Report

A 31-year-old female, gravida 3, para 2, spontaneous abortus 1, was admitted as an emergency with nausea, vomiting and epigastralgia 3 hours postprandially. She had undergone laparoscopic fallopian tubal ligation 5 years previously. According to her statement, 2 weeks prior to admission she had experienced vaginal bleeding for 3 days and believed it to be related to menstruation. She emphasized her perception that the discomfort was related to eating dinner. Physical examination revealed voluntary muscle guarding over the epigastric region without rebound pain by palpation, a pulse rate of 86 beats/min and blood pressure of 118/78 mmHg. Bowel sound was
hyperactive. Abdominal film showed fecal material in the abdomen with the presence of a surgical clip confirmed in the left pelvis (Fig. 1). The initial impression was acute gastritis and supportive treatment with intramuscular Buscopan® injection was provided. Two hours after this medication, her discomfort had not resolved and the abdominal pain was more severe than at her Emergency Department (ED) admission. The pain and nausea were exacerbated by movement. Rebound pain developed in the left lower quarter. Her vital signs appeared unstable in the ED, with pulse rate of 126 beats/min and blood pressure of 76/58 mmHg.

Further examination revealed white blood cell count and hemoglobin levels of 28,140/mm³ and 8.4g/dl, respectively. Abdominal ultrasound showed ascites. Computed tomography (CT) of the abdomen (Fig. 2) revealed massive fluid collection over the left aspect of the pelvic cavity and beneath the hepatic capsule in pre-contrast scans. Post-contrast scan provided delineation of the low-density lesion within the pelvic cavity and the uterus was seen. Metallic material in the pelvic cavity was considered to be evidence of previous surgical clips. The urine pregnancy test of beta-human chorionic gonadotropin (beta-hCG) was positive. Thus, the diagnosis was revised to ruptured ectopic pregnancy and gynecological consultation was organized.

Exploratory laparotomy was performed through a Pfannenstiel incision. Two liters of blood was removed from the peritoneal cavity. A left fallopian tube pregnancy was noted, with the rupture site 3 cm distal to the left cornua. Previous ligation of the left fallopian tube with surgical clip was identified but recanalization had occurred spontaneously. Left salpingectomy was performed. Histopathology confirmed a ruptured ectopic gestation. The patient’s postoperative course was uneventful and she was discharged 5 days after the operation.

Fig. 1 Plain abdominal film revealing bowel loop distention with fecal material in the abdomen and surgical clip appeared on the left side (arrow).
Discussion

Initially, the patient’s symptoms had been masked by nausea and vomiting. The diagnosis of ectopic pregnancy was delayed because of mimicking, the history of previous sterilization and the woman’s mistaken assumption with respect to the vaginal spotting that had occurred 2 weeks prior to presentation. Also, we did not check her urine pregnancy test initially. As plain abdominal radiographs are insensitive and nonspecific for acute abdominal pain, CT and ultrasonography, which are more accurate, should be used instead in patients suspected of having these illnesses where diagnostic imaging is required\(^3\). In our case, abdominal CT scans revealed low-density ascites sharply demarcated from adjacent normal tissue. Supplemental contrast-enhanced scan usually provide better delineation of the extent of hematoma. The hematoma may be layered or parfait-like in appearance due to the different maturation rates of blood products after sequential bleedings.

Although rare, unintentional pregnancy following sterilization does occur, approximately 50% of these cases are the result of undetected luteal phase pregnancies present at the time of sterilization. Other reasons for unintended pregnancy after female tubal sterilization include: (1) mistaking the round ligament or infundibulopelvic ligament for the fallopian tube intrasurgically; (2) spontaneous tube reunion, especially where tubal tissue damage is modest; (3) development of a fistula at the cauterized or occluded end of the tube; and, (4) slippage/failure of mechanical seal such as clip or band\(^3\).

In the collaborative report of Peterson et al. the 10-year cumulative probability of ectopic pregnancy for all methods of tubal sterilization was 7.3 per 1000 procedures in the United States\(^1\). The probability of ectopic pregnancy differs according to the sterilization method, with the rate of postpartum salpingectomy lowest at 1.5 per 1000 procedure. McCausland reviewed ectopic pregnancy following laparoscopic tubal coagulation failures, noting that 12.3% of pregnancies that occurred after nonlaparoscopic tubal ligation were ectopic, and compared with 51% after tubal electrocoagulation\(^4\).
The mechanism of true spontaneous sterilization failure may be recanalization of the fallopian tubes or fistula formation\(^6^,7\). Brenner concluded that ectopic pregnancy occurs with greater frequency following sterilization because of the reduced diameter of the recanalized oviduct post surgery\(^8\). Thus, sperm can traverse this lumen but subsequent migration of the much larger fertilized ovum is blocked. The results of this study indicate that as tubal occlusion procedures for sterilization are performed more frequently, their recanalization will become an increasingly important etiological factor in ectopic pregnancy. By contrast, however, DeStefano et al. reported that tubal sterilization did not contribute to the increasing incidence of ectopic pregnancy\(^9\). These authors concluded that the risk for ectopic pregnancy after tubal sterilization was lower relative to other methods of contraception or its absence\(^10^,11\).

The traditional treatment of ectopic pregnancy is laparotomy and salpingectomy. Most authors would agree that if laparoscopy is needed for diagnosis, a surgical approach is appropriate. For ruptured ectopic pregnancy, laparotomy is the best choice for the hemodynamically unstable patient.

Comprehensive education of the patient, particularly in regard to the residual pregnancy risk associated with various sterilization procedures, is required. A history of tubal sterilization does not exclude ectopic pregnancy, even many years after the procedure. The urine pregnancy test is a very important survey study for all female patients in ED. If pregnancy is detected, ectopic pregnancy remains in the differential diagnosis until it can be either confirmed or excluded with conviction. Ectopic pregnancy should be considered in all females of childbearing age who present with abdominal or pelvic complaints, or with unexplained signs or symptoms of hypovolemia. Physician and patient awareness with respect to the risk of extrauterine and intrauterine gestation specific to the various methods of sterilization is necessary to maintain vigilance or this unusual, yet potentially serious event.

**References**

遲延診斷輸卵管結紮後的子宮外孕病例報告

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雖然接受輸卵管結紮，但仍可能會發生致子宮外孕。本文報告一位31歲已婚婦女，過去曾經受孕3次，姦娠2次和自然流产1次，急診就醫原因是晚餐後發生噁心嘔吐。據病人自述，其月經週期正常和五年前已接受輸卵管結紮手術，且兩月前亦有月經來潮。急診室初步診斷為急症胃炎，並予抗胃腸痙攣

針劑藥物治療，但症狀未見緩解，在留院觀察治療2小時後出現低血容量休克；進一步檢查，其尿液孕

娃反應呈現陽性，修訂診斷為子宮外孕合併急性出血，安排急診婦產科。緊急剖腹手術探查，從腹腔清

出近2公升血塊，確認左側輸卵管子宮外孕合併破裂，經接受左側輸卵管切除，病情穩定，術後5天出

院。本例遲延診斷子宮外孕，歸納是受臨床病徵和病人結紮絕育病史的誤導。

關鍵詞：急症腹痛，併發症，絕育，子宮外孕