Gynecol Surg (2012) 9:457–460
DOI 10.1007/s10397-012-0729-5

CASE REPORT

Acute hemoperitoneum 6 weeks post-laparoscopic salpingectomy—a rare case of secondary peritoneal trophoblast implantation

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Received: 26 November 2011 / Accepted: 19 January 2012 / Published online: 11 February 2012

Introduction

Secondary peritoneal trophoblast implantation with bleeding can be a problematic diagnosis if there has been previous definitive surgical management of ectopic pregnancy. Although more often seen after conservative surgical management with salpingostomy, there are a few reported cases following salpingectomy, for which there is often no formal follow-up. Diagnosis can be challenging as there are no agreed definitions for postoperative beta human chorionic gonadotropin (βhCG) levels and no specific clinical findings. However, persistent trophoblastic tissue should be considered as a cause in a patient re-presenting with nonspecific abdominal pain after surgical management of ectopic pregnancy. Here, we report a case where a healthy young patient presented with significant hemoperitoneum 16 days after an uncomplicated laparoscopic salpingectomy.

Case

A 27-year-old primigravida woman presented with a history of 6 weeks amenorrhea, a positive urinary pregnancy test, and painless brown vaginal discharge. Transvaginal ultrasound scan (TVS) revealed an empty uterus, no adnexal masses, and no free fluid. Serial βhCG measurements at 48-h intervals showed greater than 60% rise (1,330 to 2,167 to 4,023 IU/L) consistent with an ongoing pregnancy. TVS on day 4 showed an empty uterus and a left adnexal mass containing gestational sac with yolk sac present, and the diagnosis of tubal ectopic pregnancy was made. The woman remained asymptomatic and stable, and after discussion, she opted for surgical management.

She underwent laparoscopy where a left-sided tubal ectopic pregnancy was noted with minimal hemoperitoneum. Laparoscopic left salpingectomy was performed with bipolar diathermy and laparoscopic scissors without event. The specimen was removed using a tissue retrieval bag. Inspection of the peritoneal cavity was otherwise unremarkable; the remainder of her pelvis and the contralateral fallopian tube appeared normal. The cavity was thoroughly irrigated and suctioned. Histopathology revealed a fallopian tube containing chorionic villi (Fig. 2a), confirming ectopic pregnancy. The woman was discharged home with standard advice to expect some vaginal bleeding but that there would be a steady improvement. She was instructed to report any concerns, fertility issues were discussed, and no follow-up was arranged.

Seventeen days later, the woman was readmitted via her rural accident and emergency department with a 48-h history of increasing lower abdominal pain. Urinalysis was normal, and her urinary pregnancy test was positive.

On admission, physical examination revealed a borderline tachycardia (95–105/min), lower abdominal tenderness, and cervical excitation. Serum βhCG was 319 IU/L. TVS revealed an empty uterus, no adnexal masses, and a 5-cm collection of cellular fluid with hyperechoic areas in the pelvis consistent with extensive hemoperitoneum and clot. The patient subsequently collapsed and was resuscitated on the ward. Following stabilization, an emergency laparoscopy was performed. A

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total of 1,000 ml hemoperitoneum of fresh blood and some organized clots were present in the peritoneal cavity. After an extensive washout, the source of bleeding was found to be a small but persistent bleeding lesion on the peritoneal surface of the right pelvic side wall lateral to the fallopian tube (Fig. 1). Full inspection of the uterus, remaining fallopian tube, ovaries, and peritoneal cavity was otherwise normal. Hemostasis was achieved using bipolar cautery. A peritoneal drain was left in situ for 24 h. Frozen section biopsy confirmed chorionic villi consistent with secondary peritoneal implantation (Fig. 2b). On postoperative day 1, the βhCG level fell to 149 IU/L. The patient was discharged home with outpatient follow-up arranged. A repeat serum βhCG 2 days later showed a rise to 293 IU/L, and the patient was readmitted for treatment with intramuscular methotrexate (50 mg/m^2). A slow but steady decline in βhCG followed and at 58 days after the original admission the serum βhCG was <1 IU/L (Fig. 3).

Discussion

Diagnosing persistent trophoblastic tissue can be difficult as clinical findings are nonspecific and because of the variable rate of βhCG decrease postoperatively. Studies have shown varying one-off levels as well as varying rates of fall following surgical management [1, 2]. There remains no clear evidence as to when and how often the postoperative βhCG measurements should be taken, if at all. Current practice is for no follow-up after salpingectomy for ectopic pregnancy as it is considered a definitive treatment. However, measures such as serial βhCG levels should be in place to identify persistent trophoblast following salpingostomy [3].

Persistent trophoblastic tissue following surgical management of ectopic pregnancy can be defined as a rise, abnormal decline, or plateau of serum βhCG levels [4]. This occurs in up to 20% of ectopic pregnancies managed with laparoscopic salpingostomy [5]. It is much less common following salpingectomy and rarely described in the literature. The true incidence of this condition is difficult to estimate however as many cases may spontaneously resolve or are treated presumptively with methotrexate without a diagnosis being confirmed [6].

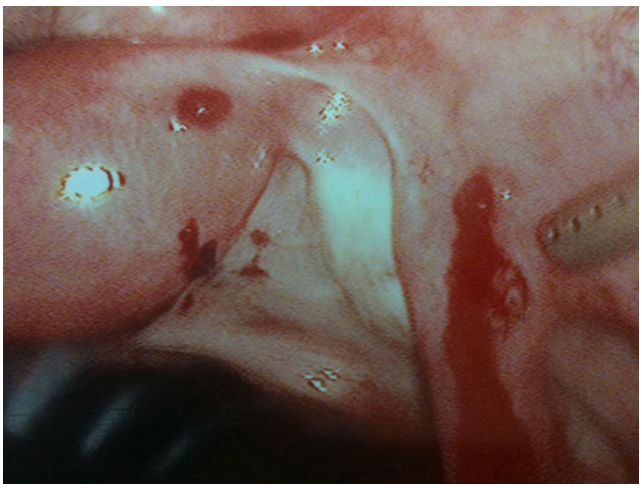

Fig. 1 Intraoperative photo of the bleeding lesion

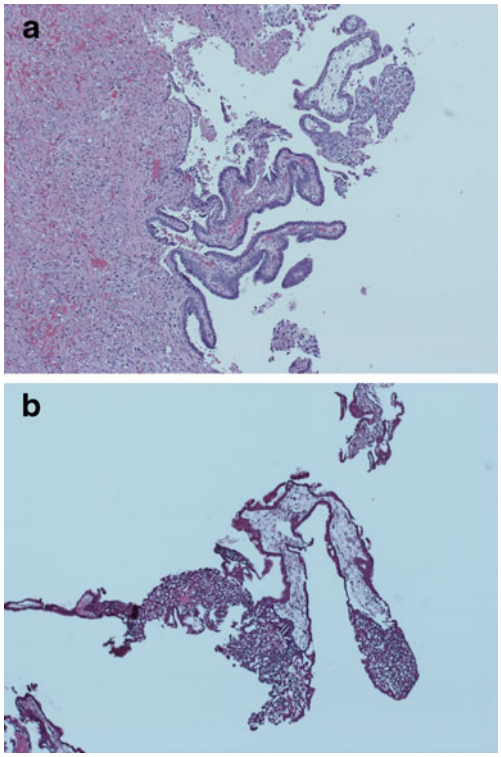

Fig. 2 **a** Chorionic villi within the fallopian tube confirming ectopic pregnancy at first presentation (H&E, ×100). **b** Frozen section histology of peritoneal biopsy at second presentation showing chorionic villi (H&E, ×100)

Eight other case reports of secondary trophoblast implantation following laparoscopic salpingectomy are identified in the literature since 1989 [7–10]. The period of time between salpingectomy and readmission varied between 7 and 51 days. Five of these were managed with laparotomy and excision; the remaining three were excised laparoscopically. None of these cases required further intervention. This is compared to 23 reported cases of secondary peritoneal implantation following salpingostomy between 1989 and 2011 [7, 10–15].

This rare complication is potentially life-threatening; however, it is not practical to follow-up every patient after surgical management of ectopic pregnancy. Identifying women at risk is challenging but could allow targeted postoperative monitoring. Steadily increasing βhCG prior to surgery may predict those at higher risk of persisting trophoblastic tissue, although there is no evidence for an absolute definition. Two studies have shown the significance of preoperative βhCG increasing at a rate of more than 40% per day [16] or when the preoperative level is greater than

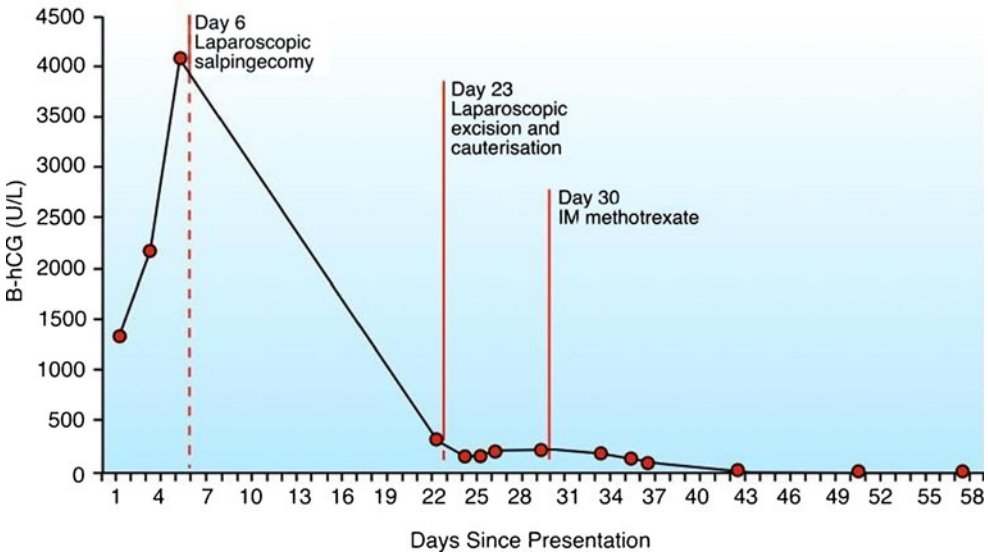

Fig. 2 Serum βhCG levels at first presentation showed a greater than 60% increase at 48-h intervals. It decreased following salpingectomy, but was still raised at the second presentation on day 23. The level then initially fell, but started to rise again. It finally fell to less than 1 IU/L 58 days from the first presentation following methotrexate administration on day 30

3,000 IU/L [17]. The presence of tubal hemorrhage or rupture at the time of surgery may also increase the risk of peritoneal trophoblastic implantation [16] as trophoblast may already have been expelled into the peritoneal cavity. However, a recent study has proposed that even where there has been tubal rupture, suspected spillage of trophoblastic tissue, or significant hemoperitoneum at the time of laparoscopy, routine follow-up is not necessary [18].

There are several suggestions made in the literature of how to decrease the risk of persisting trophoblastic tissue at the time of laparoscopy [17]. The ectopic pregnancy should be carefully removed using an appropriate tissue retrieval bag. All blood and clots should be removed with extensive irrigation of the peritoneal cavity, and the cavity should be inspected fully before closure. The degree and length of time spent in the Trendelenburg position should be kept to a minimum to lower the chance of products being distributed through the peritoneal cavity. A study has previously shown that postoperative methotrexate administration following salpingostomy led to a significant reduction in subsequent persistent trophoblastic tissue rates from 14.5% in a control group to 1.9% of those treated with prophylactic methotrexate [19]. However, methotrexate itself is not a benign intervention and a routine regime as such is difficult to recommend.

There is ongoing debate and research into the most appropriate surgical management of ectopic pregnancy [20]. Laparoscopy offers significant benefits over laparotomy including reduced intraoperative blood loss, faster postoperative recovery, lower subsequent ectopic rates, and increased rates of future intrauterine pregnancy [21–23]. Laparoscopy is recommended for the management of ectopic pregnancy where the patient is hemodynamically stable [20], including in the presence of hemoperitoneum. Some retrospective case studies have shown a small increase in future intrauterine pregnancy rates following salpingostomy [24–27], though there is no difference seen between open or laparoscopic salpingostomy [20]. Laparoscopic salpingostomy is associated with a higher persistent trophoblast rate than open salpingostomy, which is significantly more expensive [20]. Laparoscopic salpingectomy is the current recommended procedure if the contralateral fallopian tube is normal [3]; however, each case should be considered individually.

The case reported here had minimal risk factors, and all precautions were taken to minimize the risk of persistent trophoblastic tissue. It is still unclear how many women have persistent trophoblastic implants in this situation as only those that have significant bleeds come to the attention of medical services. In retrospect, review of the initial pathology specimen showed the presence of chorionic villi at the fimbrial end of the fallopian tube. Although findings at laparoscopy did not suggest trophoblastic spillage, it may be that there had been spillage of trophoblastic cells prior to salpingectomy. Histopathology has an important role in confirming ectopic pregnancy. Microscopic examination of trophoblast at the fimbrial end of such specimens could potentially help identify women at risk of secondary peritoneal trophoblast implantation but would not select for the subset of women who would subsequently bleed. Potential factors which may be considered to putting a woman at increased risk of morbidity due to persistent trophoblastic tissue implantation require further study and definition.

Conclusion

This case of secondary peritoneal trophoblast implantation following a straightforward salpingectomy highlights the need to be vigilant in clinical practice should a woman represent with vague lower abdominal pain in the

postoperative period following ectopic pregnancy. It also highlights the question of whether follow-up is required after initial surgery in all cases, or a selected group of patients with identified risk factors.

Conflict of interest The authors declare that they have no conflicts of interest.

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