American Journal of Case Reports

ISSN 1941-5923
© Am J Case Rep, 2016; 17: 637-640
DOI: 10.12659/AJCR.898554

Received: 2016.03.17
Accepted: 2016.06.08
Published: 2016.09.02

Laparoscopic Management of Abdominal Pregnancy with Local Injection of Vasopressin Solution: A Case Report

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Conflict of interest: None declared

Patient: Female, 32
Final Diagnosis: Abdominal pregnancy
Symptoms: Severe abdominal pain
Medication: —
Clinical Procedure: Laparoscopic treatment
Specialty: Obstetrics and Gynecology

Objective: Unusual or unexpected effect of treatment

Background: Laparoscopic treatments of abdominal pregnancy have been reported; however, resection of an implanted gestational sac could lead to massive bleeding and treatment failure. Hemostasis of the resected stump is critical for the success of laparoscopic treatment.

Case Report: A 32-year-old woman presented to the emergency department with severe abdominal pain. We suspected a ruptured ectopic pregnancy and performed urgent diagnostic laparoscopy. The gestational sac was implanted in the posterior wall of the uterus near the left uterosacral ligament, and bleeding from the gestational sac was noticed. We injected 3 ml of diluted vasopressin solution (0.4 U/ml) directly into the gestational sac and into the posterior uterine wall around the gestational sac. Thereafter, we could resect the gestational product using an ultrasonically activated scalpel. Additional hemostasis in the resected stump was not required.

Conclusions: We believe that a local injection of a diluted vasopressin solution helps in maintaining the hemostasis after the laparoscopic resection of the implanted gestational sac in cases of abdominal pregnancy.

MeSH Keywords: Laparoscopy • Operative Blood Salvage • Pregnancy, Ectopic • Vasopressins

Full-text PDF: http://www.amjcaserep.com/abstract/index/idArt/898554

Background

Abdominal pregnancy is a rare type of ectopic pregnancy that implants in the peritoneal cavity but does not include tubal, ovarian, and intraligamentous pregnancies. The incidence of abdominal pregnancy is estimated at 9.2 per 1000 ectopic pregnancies [1]. The mortality rate of abdominal pregnancy is high. A recent systematic review reported a maternal death rate of 3.0% in early abdominal ectopic pregnancy [2]. Improvements of diagnosis have enabled the laparoscopic treatment of ectopic pregnancy in early gestation. Although abdominal pregnancy cases treated using laparoscopy have been recently reported [3–9], resection of an implanted gestational product could lead to massive bleeding and treatment failure. Therefore, hemostasis of the resected stump is critical for the success of laparoscopic treatment.

Case Report

A 32-year-old Japanese woman (gravida 3, para 1, miscarriages 2) presented to the emergency department with severe abdominal pain. She had no history of abdominal surgery, use of an intrauterine device, or any other chronic disease. She had an irregular menstrual cycle and did not remember the date of her last menstrual period. She presented with signs of shock (blood pressure: 93/67 mmHg; heart rate: 127 beats/min) and had severe abdominal tenderness without vaginal bleeding. Sonography revealed an empty uterus and free echogenic fluid around the liver. Her serum β-human chorionic gonadotropin level was 120.6 mIU/ml, and her blood hemoglobin level was 10.9 g/dl. We suspected a ruptured ectopic pregnancy.

Urgent diagnostic laparoscopy was performed under general anesthesia. Massive hemoperitoneum was observed. We aspirated 1530 ml of intraperitoneal blood and re-infused 570 ml of concentrated red blood cell solution using an autologous blood salvage device. The bilateral adnexa were intact. The gestational sac was implanted in the posterior wall of the uterus near the left uterosacral ligament, and bleeding from the gestational sac was noticed (Figure 1A). We injected 3 ml of a diluted vasopressin solution (0.4 U/ml) directly into the gestational sac (Figure 1B) and posterior uterine wall around the gestational sac. The bleeding of the gestational sac decreased. We could resect the gestational sac using an ultrasonically activated scalpel (Figure 1C). Additional hemostasis in the resected stump was not required (Figure 1D). The surgical time was 58 min. The patient's blood hemoglobin level was 8.8 g/dl just after surgery. Allogeneic blood transfusion was not required. The pathological examination revealed trophoblasts and chorionic villi. The postoperative course was uneventful, and the patient was discharged our hospital on the 4th postoperative day without any complications. Her serum β-human chorionic gonadotropin level had declined to <0.5 mIU/ml 14 days after surgery.

Discussion

We successfully managed a case of abdominal pregnancy laparoscopic treatment by using a local injection of a diluted vasopressin solution. Vasopressin is an endogenous antidiuretic hormone released by the posterior lobe of the pituitary gland. Because of its vasoconstrictive effect, local injection of a diluted vasopressin solution is widely used to control bleeding in gynecological surgery, particularly for myomectomy [10,11] and during salpingectomy for surgical treatment of tubal ectopic pregnancy [12,13]. The use of local injections of a diluted vasopressin solution in cervical or cesarean scar pregnancies has also been reported [14,15]. However, we found no reports regarding the use of a local injection of a diluted vasopressin solution for treating abdominal pregnancy.

We postulate two mechanical reasons for the efficacy of using a local injection of a diluted vasopressin solution in abdominal pregnancy. First is constriction of the feeding vessels and interruption of blood flow to the implanted gestational sac. Control of bleeding is the most important factor for successful laparoscopic treatment of abdominal pregnancy. However, the interruption of blood flow could lead to necrosis, and thus, may be inappropriate for an abdominal pregnancy involving the intestine. Second is hydrodissection of the implanted site, which facilitates relatively easy resection of the implanted gestational sac. In tubal ectopic pregnancy, hydrodissection enables precise removal of the ectopic pregnancy.

Vasopressin solution was diluted at various levels for use in gynecological surgery (0.02–1 U/ml) [10,12,14,16–18]. The maximum safe dose of locally injected vasopressin solution in uterus is unknown. In our clinical experience, we have safely used a maximum dose of 50-ml diluted vasopressin solution (0.4 U/ml) in myomectomy. Hypertension, coronary artery spasm, and pulmonary edema are cited as potential adverse effects of vasopressin injection. Care is required to avoid injecting the diluted vasopressin solution directly into blood vessels and to check vital signs repeatedly. In the present case, we did not encounter these adverse effects.

Conclusions

We experienced a case of successful laparoscopic treatment of abdominal pregnancy using a local injection of a vasopressin solution. We believe that a local injection of a diluted vasopressin solution helps in maintaining the hemostasis after the laparoscopic resection of the implanted gestational sac in abdominal pregnancy.

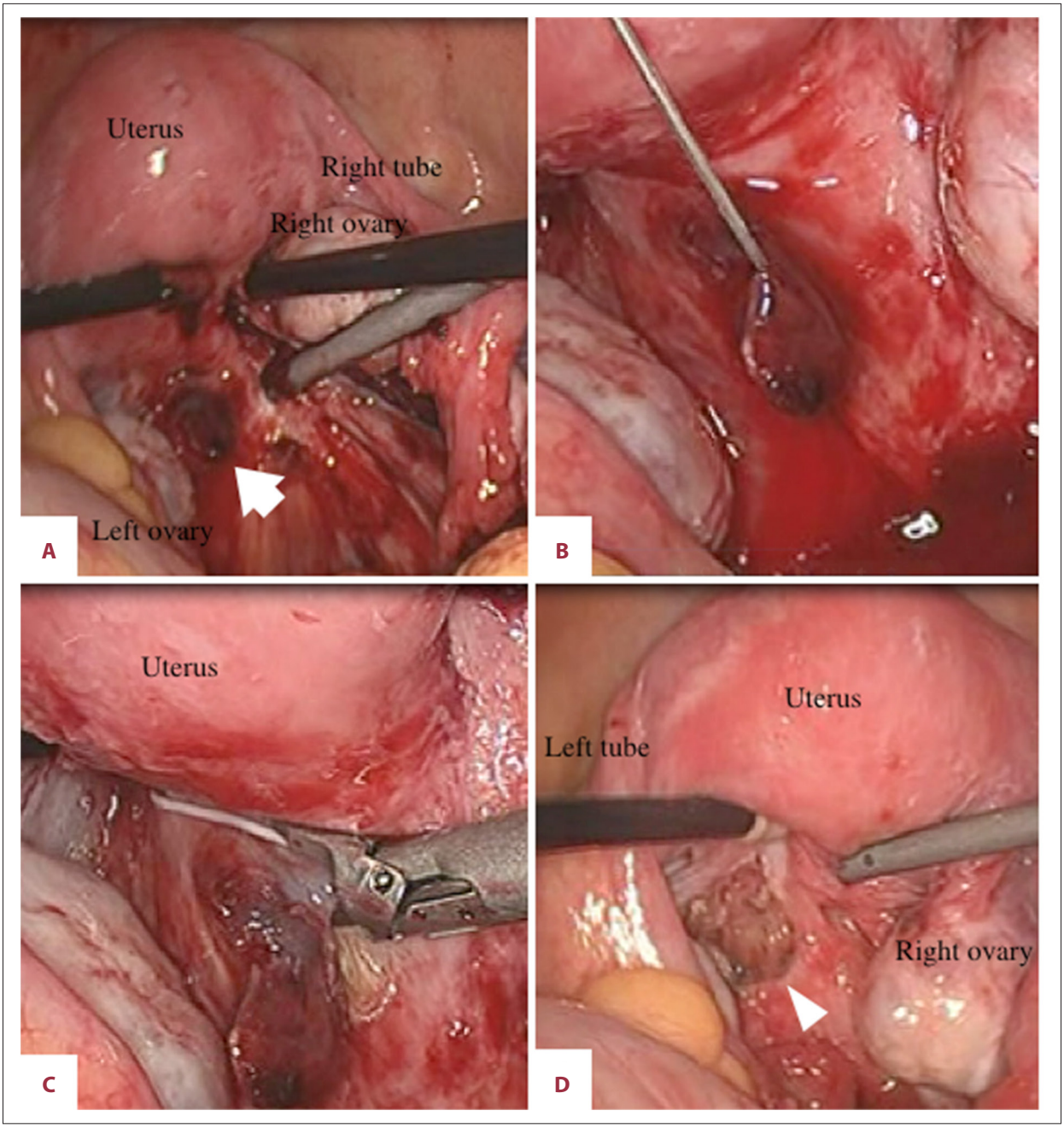

Figure 1. Laparoscopic views. (**A**) The gestational sac was implanted in the posterior wall of the uterus near the left uterosacral ligament, and bleeding from the gestational sac was noticed (white arrow). (**B**) A diluted vasopressin solution was injected into the gestational sac. (**C**) The gestational sac was resected with an ultrasonically activated scalpel. (**D**) The resected stump (white arrowhead) was hemostatic.

Acknowledgements

We thank the staff at Shonan Kamakura General Hospital for their assistance. We would also thank Enago (*www.enago.jp*) for the English language review.

Statement

All authors declare they have no conflicts of interest.

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