



Manual Compression Management for Internal Bleeding of Cul-De-Sac Ectopic Pregnancy

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Abdominal ectopic pregnancy is rare among all ectopic pregnancies and only few cases were treated with laparoscopic surgery. The most challenging management is adequate hemostasis after the removal of gestational material. We present a case of abdominal ectopic pregnancy with massive hemoperitoneum who was treated with laparoscopy and manual hemostasis during the surgery. After the removal of gestational material, persistent bleeding from the rough surface of rectal serosa was observed. Thermal coagulation was dilemmatic due to proximity to the rectum. Then, we used manual compression with one index finger in the rectum combined with gauze compression by laparoscopic instrument. The hemostasis was achieved successfully.

Key words: Ectopic, abdominal pregnancy, hemoperitoneum, surgery, laparoscopy, hemostasis

INTRODUCTION

Embryonic implantation outside the uterus caused ectopic pregnancy. The incidence of ectopic pregnancy is approximately 2% of all pregnancies. Tubal pregnancies constitute 97% of all ectopic pregnancies, and the most common implantation site is ampulla.¹ Abdominal ectopic pregnancy is a rare type of ectopic pregnancy. It accounts for <1% of all ectopic pregnancies.² Abdominal ectopic pregnancies occur when gestation implanted in wherever the peritoneal cavity excluding tubes, ovaries, and uterus. Ectopic pregnancy remains the leading cause of maternal death in the period of early pregnancy.³ Risk factors for ectopic pregnancy include prior tubal operation, tubal sterilization, and intrauterine device use.

Women with abdominal ectopic pregnancy are more difficult to diagnose and manage. Increased treatment with *in vitro* fertilization for infertile couples may cause multiple pregnancies and lead to abdominal ectopic pregnancy with heterotopic pregnancy.⁴ The intervention for ectopic pregnancy includes medical therapy with methotrexate (MTX) and surgical management. Indications for MTX treatment of ectopic pregnancy include stable hemodynamic status, well compliance

of the patient for posttreatment monitoring, serum concentration of human chorionic gonadotropin (HCG) <5000 IU/L, and absent fetal cardiac activity.⁵ The types of surgical treatments depend on the types of all ectopic pregnancies. Few randomized studies indicated in the contrast with laparotomy, laparoscopic treatment of ectopic pregnancy contributed to lower cost, shortened hospitalization and operative time, less blood loss, less analgesic agent infusion, and faster recovery.^{6,7} Laparoscopy-assisted surgery is now a mainstream of medical intervention for ectopic pregnancy. The most difficult challenge for the laparoscopic surgery in abdominal ectopic pregnancy is to hemostasis when massive internal bleeding developed.⁸ Persistent oozing after the removal of gestational material may occur, and thermal coagulation could be dilemmatic.

We present a case of abdominal ectopic pregnancy in the cul-de-sac with massive hemoperitoneum which was successfully managed under laparoscopy.

CASE REPORT

A 36-year-old female, gravida 1 para 1, presented with early pregnancy with intermittent vaginal bleeding and lower

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abdominal pain for few days. Her last menstrual period was about 7 weeks before this presentation. The transvaginal ultrasonography revealed absent intrauterine gestational sac and a homogenous hypoechoic mass about 3.85×2.73 cm over left adnexa. There is a suspicious fetal pole in the hypoechoic mass with length about 13.8 mm without fetal heart beating. Laboratory study revealed elevated serum concentration of HCG up to 19327 U/mL. Thus, ectopic pregnancy in the cul-de-sac was highly suspected. The laparoscopy was then performed, and we noted ectopic pregnancy with massive blood and blood clots in the abdominal cavity (about 800 ml) and fetal pole in the cul-de-sac attached to rectal serosa [Figures 1 and 2]. We removed the gestational material with blunt dissection. However, persistent bleeding from the rough surface of rectal serosa after the removal of gestational material was observed. Thermal coagulation for hemostasis was such a dilemma due to proximity to the rectum. At last, we used manual compression with index finger in the rectal lumen combined with gauze compression by laparoscopic instruments. The hemostasis achieved successfully. Total blood loss including internal bleeding was about 1000 ml. After achieving hemostasis, we thoroughly checked omentum, intestine, and genital organs (uterus, bilateral ovaries, and both fallopian tubes), and all of them were intact without damage or active bleeding. According to our findings, primary gestational sac implanted into the serosa of rectum was impressed. The permanent pathology confirmed ectopic pregnancy but could not identify its primary implantation site because clear surgical cutting was absent. The patient was uneventful during her hospitalization. The following HCG diminished to normal range.

DISCUSSION

Abdominal ectopic pregnancy accounts for 1% of all ectopic pregnancies and could be divided into primary or

secondary, according to sites of implantation and pathogenesis presented by Studdiford in 1942.⁹ The criteria for primary abdominal ectopic pregnancy include normal fallopian tubes with no evidence of recent or remote trauma, the absence of any uteroperitoneal fistula, and the presence of a pregnancy related exclusively to the peritoneal surface and early enough to eliminate the possibility of secondary implantation after a primary nidation within the tube.⁹ In 1968, Friedrich and Rankin presented modified diagnostic criteria including: (1) Implantation only in peritoneal territory and histologic gestational age should be younger than 12 weeks; (2) intact ovaries and tubes; and (3) absent evidence of uteroperitoneal fistula.¹⁰ Most of abdominal ectopic pregnancy is secondary type which is secondary implantation in the peritoneal cavity following tubal abortion, tubal rupture, or uterine rupture.¹

Based on the review of five reported cases which were proposed as primary abdominal ectopic pregnancy, Berghella and Wolf presented all the published omental pregnancies would be secondary, and they may result from tubal or ovarian pregnancy abortions.¹¹ Watrowski *et al.* presented the first case of ectopic pregnancy which fulfilled both primary and secondary criteria of abdominal ectopic pregnancy.² Diagnosis of the reported case with primary omental ectopic pregnancy was made according to clinical findings with omental involvement and permanent pathological examination. Pathological study of the specimen may reveal multiple chorionic villi and decidua growing into omentum. Meanwhile, Watrowski *et al.* diagnosed secondary implantation at the cul-de-sac after they removed the ectopic pregnancy which required peritonectomy due to neovascularization-induced diffuse bleeding. They concluded secondary abdominal ectopic pregnancy can result not only from a primary tubal location but also from any other primary ectopic location.²

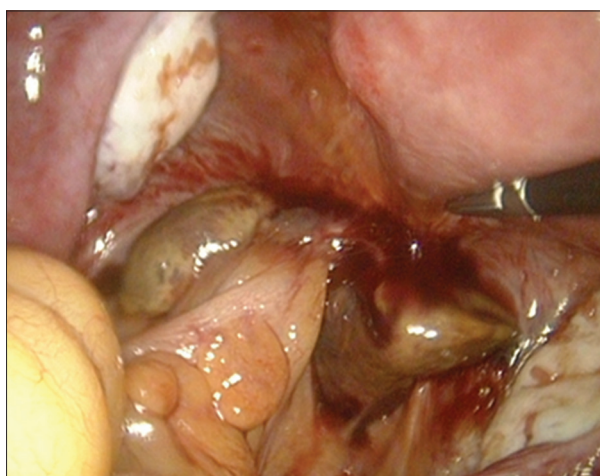


Figure 1: Ectopic pregnancy located between rectum and posterior vaginal wall

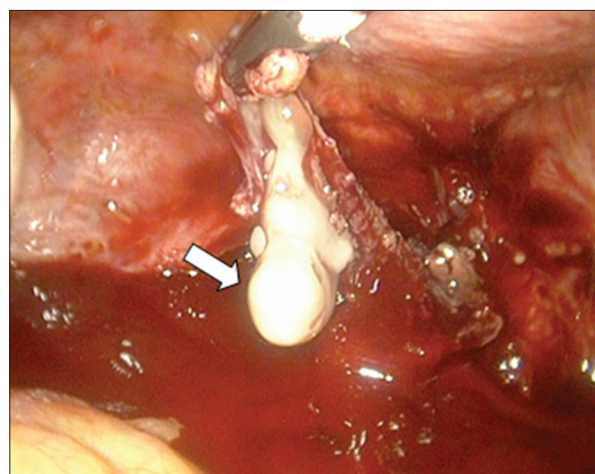


Figure 2: After removal of the gestational product, bleeding around the peritoneum and rectal serosa was noted. The white arrow indicated the embryo

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The most common abdominal implantation site is 55% in the posterior cul-de-sac followed by 27% in the mesosalpinx, 9% in the omentum, and 9% between the anterior uterine wall and the bladder.¹² In a systemic review of literatures about early abdominal ectopic pregnancy from 1965 to 2009,¹³ Poole *et al.* calculated maternal mortality rate up to 5.1/1000 pregnancies, which was 7.7 times higher than tubal ectopic pregnancies and 90 times higher than intrauterine pregnancy due to difficult diagnosis. In this review, most of the patients with ectopic pregnancy implanted in pouches surrounding the uterus were treated with exploratory laparotomy, and few patients (12 of 55) were treated with laparoscopy. Eight patients underwent medical treatment as either primary or adjuvant therapy followed by surgery, and three patients with ectopic pregnancy located in the pouch of Douglas were successfully treated with MTX.¹³ Nevertheless, surgical intervention was more frequent than medical treatment in our review of literatures. This phenomenon could ascribe to the occurrence of intra-abdominal bleeding in many patients at their presentation.

Our challenge is to identify abdominal ectopic pregnancy earlier enough before bleeding happens. Laparoscopy is less invasive and easier postoperative care and recovery than exploratory laparotomy. The most challenging limitation of laparoscopy in abdominal pregnancy is the disability to adequate hemostasis intraoperatively. Nowadays, several medical hemostatic matrixes have been developed. Watrowski reported gelatin-thrombin matrix applied in the laparoscopic operation for tubal ectopic pregnancy could be effective in hemostasis.¹⁴ Instead, we applied this novel manual compression skill to achieve complete hemostasis due to dilemmatic electronic welding proximity to the rectum. We applied surgical gauze to compress the oozing site by laparoscopic instrument, and one index finger located in the rectal lumen for assistant support. This skill applied in laparoscopy for abdominal ectopic pregnancy with massive hemoperitoneum may be the first case in our review of literatures.

Abdominal ectopic pregnancies are truly rare but life-threatening complications of pregnancy if misdiagnosis. Early and accurate diagnosis with serum concentration of HCG and transvaginal ultrasounds could reduce the mortality rate and consequent complications. There are several methods for the treatment of abdominal ectopic pregnancy including medical and surgical intervention but lack of strong predictors for prediction of successful medical treatment.¹³ Generalized evaluations of individuals before treatment decision are necessary.

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Conflicts of interest

There are no conflicts of interest.

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