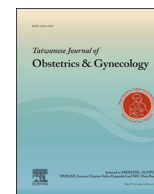


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Research Letter

Alternative management of a sizable cul-de-sac ectopic pregnancy

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A 31-year-old primigravid patient was referred with suspicion of ectopic pregnancy. The patient had irregular menstrual cycles and did not know the exact date of conception. The patient did not feel abdominal discomfort but had mild vaginal spotting that was persistent for 5 days. Transvaginal sonography revealed an empty uterus with no gestational sac. An intact ectopic mass measuring about 4.5 cm × 4 cm × 3 cm, however, was located in the right cul-de-sac and was surrounded by enormous blood vessels (Fig. 1).

The patient's serum β human chorionic gonadotropin (β -HCG) level was 40,100 mIU/mL. Contact bleeding of the mass was noted during the beginning of laparoscopy (Fig. 2A). As soon as packed red blood cells, fresh frozen plasma, and gelatin–thrombin matrix (Flo-seal; Baxter, Hayward, USA) became available, laparoscopic removal of the ectopic mass was performed. It was difficult to clearly identify the underlying structure, which was troubled with significant hemorrhaging owing to the deep implantation of trophoblasts.

During the application of Floseal for enhancing coagulation to the bleeding site, the blood quickly accumulated. Floseal was partly pushed away from the bleeding sites prior to the attempt of laparoscopic compression with Surgicel (Ethicon, Somerville, USA) (oxidized regenerated cellulose). After compression for 6 minutes, hemorrhage tapering was noted. During the repeated application of Floseal accompanied by additional laparoscopic compression, 1 mg of recombinant activated factor VII (Novoseven RT; Novo Nordisk, Gentofte, Denmark) was intravenously administered. The hemorrhaging eventually ceased (Fig. 2B). The estimated blood loss was 2000 mL. Follow-up sonography using color Doppler revealed residual trophoblastic flows (Fig. 3). On postoperative Day 3, the patient's serum β -HCG level was 4089 mIU/mL. The patient received 60 mg methotrexate, which was administered through the

uterine cervix. A repeated dose of methotrexate was administered 1 week later with a serum β -HCG level of 1223 mIU/mL. On post-operative Day 42, her serum β -HCG level was < 2 mIU/mL, and sonography showed that residual trophoblastic flows were no longer present. The patient had an uneventful recovery.

Abdominal pregnancy is rare; it accounts for only 1.3 % of all ectopic pregnancies [1]. Systemic methotrexate is well known to have a limited effect for the primary treatment of ectopic cases with a high serum β -HCG level (> 5000 mIU/ml) or a large lesion. Intralesional injection of methotrexate has been successfully used in a patient presenting with an unruptured abdominal wall pregnancy [2]. In the case presented above, primary treatment using either systemic or intralesional injection of methotrexate was not suitable because of a high serum β -HCG level and a large lesion. Additionally, the large lesion was surrounded by enormous blood vessels, which could result in active bleeding when punctured. Indeed, injections of methotrexate administered through the uterine cervix, to obtain high local concentrations, have been used to achieve a complete resolution of diffuse placenta increta [3].

A large cul-de-sac ectopic mass always creates catastrophic hemorrhaging during either spontaneous rupture or surgical evacuation [4,5]. It is difficult to clearly identify the active bleeding sites from embedded vessels during laparoscopic evacuation. The fear and risk of injury to the rectum and deep vessels usually result in incomplete laparoscopic evacuation and limit the use of bipolar electrocauterization or laparoscopic suturing to control the bleeding.

Floseal can form and stabilize blood clots at the bleeding sites within several minutes. Floseal has been used during salpingotomy of tubal ectopic pregnancy for intractable bleeding resistant to electrocoagulation [6]. Without coincident external compression to the hemorrhage points, active bleeding can impair the effect of Floseal. To save time for immediate compression through laparoscopy, Surgicel should be inserted into the abdominal cavity prior to the application of Floseal. Novoseven has been widely used, with an alternative dose, in cases of postpartum hemorrhage due to uterine atony, placenta accreta, or coagulopathy [7,8]. Floseal and Novoseven help facilitate clot formation from the outside and inside of the injured vessels.

To the best of our knowledge, this is the first report regarding the successful management of a large cul-de-sac ectopic pregnancy

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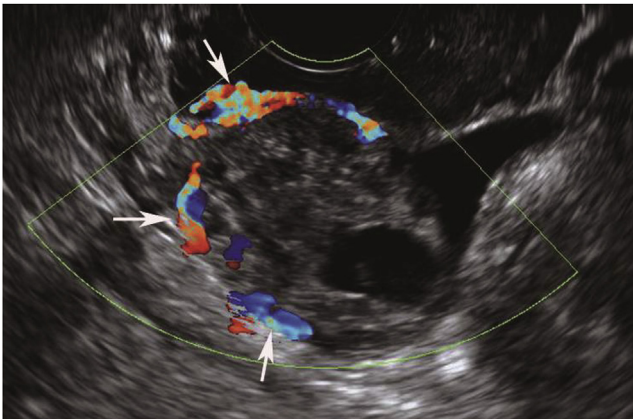


Fig. 1. Transvaginal sonography reveals a cul-de-sac ectopic pregnancy surrounded by enormous blood vessels (arrows).

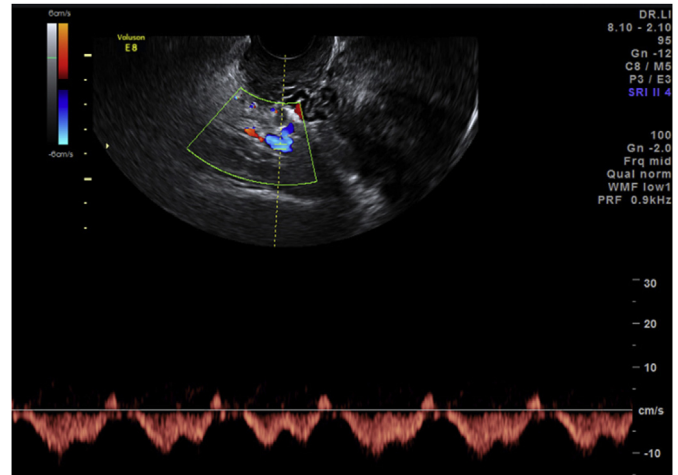


Fig. 3. Sonography using color Doppler reveals residual trophoblastic flows with a bizarre pattern.

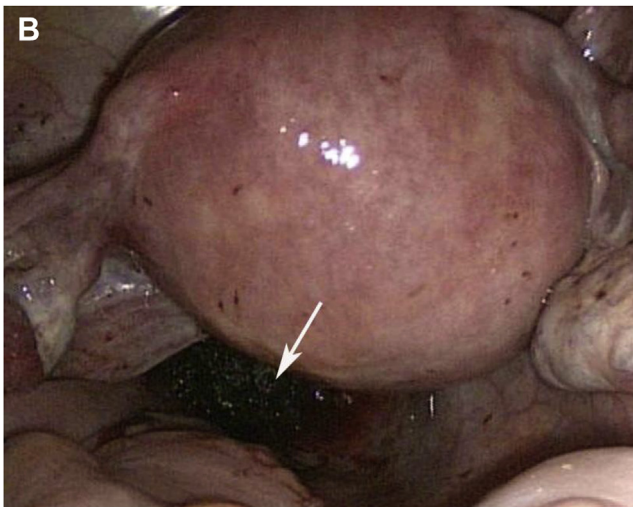
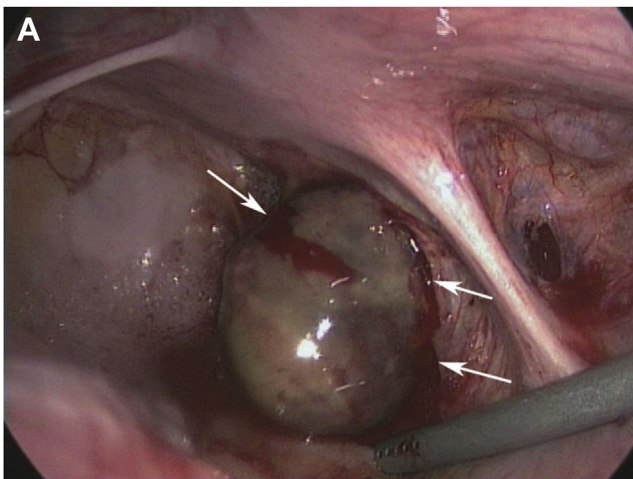


Fig. 2. (A) Contact bleeding (arrows) of the large cul-de-sac ectopic mass is noted prior to laparoscopic evacuation. (B) During laparoscopic evacuation of the ectopic mass, the bleeding ceases after the application of Floseal, Novoseven, and laparoscopic compression using Surgicel (arrow).

associated with troublesome hemorrhage by laparoscopic evacuation in combination with the use of Floseal, Novo-seven, laparoscopic compression using Surgicel, and postoperative methotrexate treatment.

Conflicts of interest

The authors have no conflicts of interest relevant to this article.

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