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Successful management of heterotopic cornual pregnancy with laparoscopic cornual resection

Myung Joo Kim [a,1], Yong Wook Jung [b,1], Jae-Ho Cha [b], Hyun Ha Seok [a], Ji Eun Han [a], Seok Ju Seong [b], You Shin Kim [a,*]

[a] Department of Obstetrics and Gynecology, Fertility Center of CHA Gangnam Medical Center, College of Medicine, CHA University, Seoul, Republic of Korea
[b] Department of Obstetrics and Gynecology, CHA Gangnam Medical Center, College of Medicine, CHA University, Seoul, Republic of Korea

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ABSTRACT

Objective: To examine the feasibility of laparoscopic cornual resection for the treatment of heterotopic cornual pregnancy.
Study design: Women who underwent laparoscopic cornual resection for heterotopic cornual pregnancy at our hospital between January 2003 and March 2015 were retrospectively analyzed. We evaluated significant parameters such as operative complications and postoperative pregnancy outcomes of concomitant pregnancy.
Results: Thirteen patients with heterotopic cornual pregnancy were included in the study. All were pregnant through assisted reproductive technology, and the diagnosis was made at a median of 6 + 6 weeks (range 5 + 4–10 + 0). They were successfully treated with laparoscopic cornual resection and admitted for a median of 4 days (range, 2–7) postoperatively. The median operative time was 65 min (range, 35–145 min) and estimated blood loss was 200 mL (range, 10–3000 mL). There was a spontaneous abortion at 7 + 6 gestational weeks in a patient who received bilateral cornual resection. Seven patients delivered babies at term and 3 at preterm. All 10 women delivered without any maternal or neonatal complications. Two were lost to follow-up.
Conclusions: Laparoscopic cornual resection is a feasible primary approach for the management of heterotopic cornual pregnancy.

Introduction

Heterotopic pregnancy is defined as the coexistence of an intrauterine pregnancy and an extrauterine pregnancy. Heterotopic pregnancy occurs at various sites, and may present as bilateral tubal pregnancy, abdominal and intrauterine pregnancy, twin tubal and intrauterine pregnancy, and simultaneous intrauterine and cornual pregnancies [1]. The reported incidence of heterotopic pregnancy in a spontaneous cycle is 1 in 30,000 [2]. However, with increasing use of assisted reproductive technology (ART) procedures such as in vitro fertilization (IVF) and embryo transfer (ET), the incidence of heterotopic pregnancy has increased to 1 in 100 pregnancies with ART [3]. Cornual pregnancy occurs when the embryo implants in the intramural portion of the Fallopian tube. It is rare, accounting for around 2% of ectopic pregnancies [4]. The incidence of heterotopic cornual pregnancy after an IVF cycle is not known. However, the calculated incidence from data based on the 1995 reproductive health report is estimated to be as high as 1:3600 IVF pregnancies [1].

There are several options for the treatment of heterotopic cornual pregnancy; surgical, medical or expectant treatment. The patient can be treated surgically by cornual resection or hysterectomy either by laparotomy or laparoscopy. Another option is the direct injection of potassium chloride (KCl), hypertonic solution, and methotrexate into the ectopic gestational sac [1–3,5]. Lastly, if the patient has no symptoms and fetal death in the cornual gestation is confirmed by ultrasonography, expectant management can be used [6].

We have adopted laparoscopic cornual resection as the first-line approach for the treatment of this rare but serious condition. This study was performed to demonstrate the feasibility of

* Corresponding author at: Department of Obstetrics and Gynecology, Fertility Center of CHA Gangnam Medical Center, Nonhyunro 566, Gangnam-gu, Seoul 06135, Republic of Korea. Tel.: +82 2 2002 0300; fax: +82 2 2002 0427.
E-mail address: medikys@cha.ac.kr (Y.S. Kim).
[1] These authors equally contributed to this article as co-first authors.

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laparoscopic cornual resection in treating heterotopic cornual pregnancy and to examine the obstetric outcome of an accompanying pregnancy after surgery.

Materials and methods

The study was approved by the institutional review board (IRB) of CHA Gangnam Medical Center (GCI-15-13). After obtaining IRB approval, the authors retrospectively reviewed the medical records of the patients with diagnosed heterotopic cornual pregnancy between January 2003 and March 2015.

The patient data included age, parity, gestational weeks at diagnosis, hemoglobin (Hb) level on the pre- and postoperative day, length of hospital stay, operative time, and obstetric outcomes. The diagnosis of heterotopic cornual pregnancy was established by ultrasonographic findings. In our institution, the diagnosis of heterotopic cornual pregnancy was made by transvaginal ultrasonography using the following criteria: intrauterine pregnancy complicated by cornual ectopic pregnancy, i.e. a gestational sac visualized high in the fundus, and not surrounded by 5 mm of myometrium in all planes; and a gestational sac seen separately and < 1 cm from the most lateral edge of the uterine cavity [1,7,8].

Laparoscopic procedures were as follows. The patient was placed in dorso-lithotomy position. General endotracheal anesthesia was initiated after the preparations for surgery were completed. A 12-mm trocar was directly inserted at the umbilicus through a vertical skin incision. The abdomen was insufflated with CO2. After cornual pregnancy was confirmed with a 5-mm endoscope, three additional 5-mm ancillary trocars were placed in the left lower quadrant, right lower quadrant, and suprapubic area, respectively. The intra-abdominal pressure was maintained at 12 mmHg during surgery. A circumferential incision was made with monopolar hook or harmonic shears around the cornual pregnancy. The patient underwent laparoscopic cornual resection either with or without ipsilateral salpingectomy according to the surgeon's decision. We tried to secure hemostasis with Vicryl 1-0 suture. Hemostasis with bipolar cautery was minimized to reduce thermal damage to the viable intrauterine gestation. The uterine defect was repaired with either single or double layers using interrupted suture technique with Vicryl 1-0 and Vicryl 2-0 (Fig. 1). The resection materials were removed by using a laparoscopic retrieval bag.

After the operation, fetal heart beat was checked with Doppler in the recovery room. The patient was observed for at least 24 h. On postoperative day 1, transvaginal ultrasonography was performed to confirm fetal viability.

Results

From January 2003 through January 2015, a total 3400 cases of ectopic pregnancy were diagnosed in our institution. Among them, 97 (2.9%) were diagnosed with a cornual pregnancy. There were 80 cases (2.4%) of heterotopic pregnancy. A total of 13 cases (0.4%) of heterotopic cornual pregnancy were diagnosed in our hospital.

Table 1 shows the patient characteristics and surgery outcomes. The median age and parity at the time of admission were 31 years (range, 25–36) and 0 (range, 0–1), respectively. Three women had at least one previous extrauterine pregnancy history (case nos. 3, 4, 11 in Table 2), among them one patient had experienced 3 times of ectopic pregnancies (case no. 4). All patients had at least one previous pelvic surgery history such as myomectomy, salpingectomy, or oophorectomy and 12 patients had undergone tubal surgery or had tubal pathology. Eight patients experienced salpingectomy previously. Among them, one patient had undergone laparoscopic surgery 4 times: consecutive two times of unilateral salpingectomies due to ectopic pregnancies, myomectomy, and ovarian cystectomy, respectively (case no.4). Including this patient, all 13 women achieved present pregnancies by ART procedure. A median 3 embryos (range, 2–5) were transferred in each patient among whom 4 patients underwent transfer of 4–5 embryos (case nos. 1–4).

The clinical manifestations of the patients were abdominal pain (4 of 13 patients, 30.8%) and vaginal spotting (2 of 13, 15.4%), but

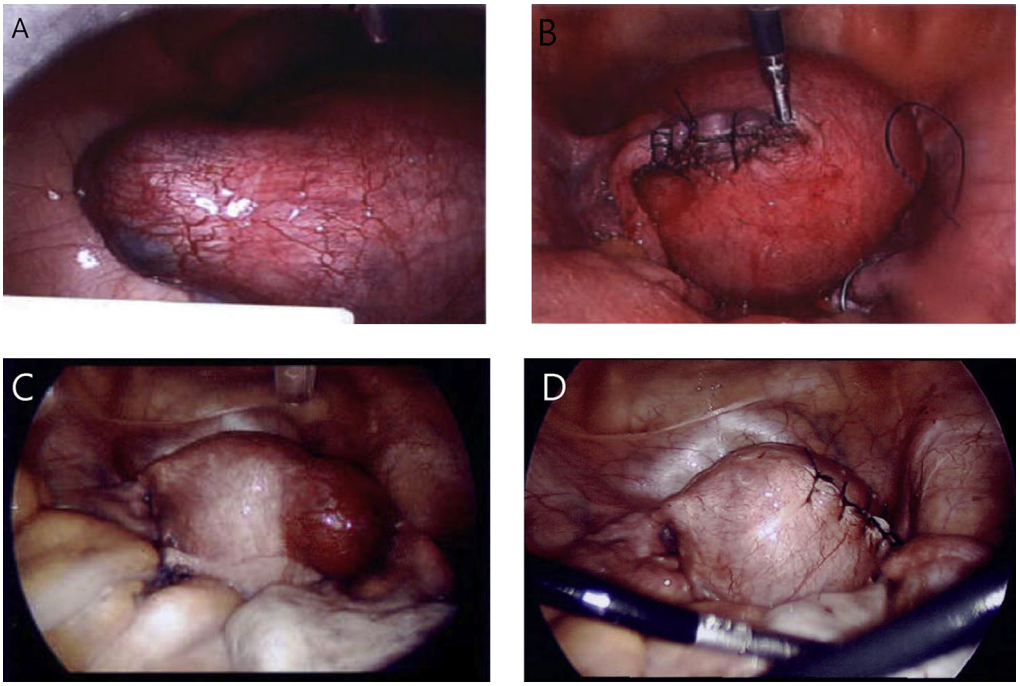

Fig. 1. Pre-and postoperative images of heterotopic corneal pregnancy. (A) Preoperative image of case no. 10. (B) Postoperative image of case no. 10. (C) Preoperative image of case no. 6. (D) Postoperative image of case no. 6.