

# Simultaneous cornual heterotopic and intrauterine pregnancy following in vitro fertilization/embryo transfer: new conservative surgery with laparoscopic lesion resection

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## Summary

**Objective:** To report a case of simultaneous heterotopic cornual and intrauterine pregnancy managed with laparoscopic lesion resection. **Results:** A 37-year-old woman with heterotopic cornual and intrauterine pregnancy after assisted reproductive technologies (ART) was treated with laparoscopic lesion resection. Finally the integrity of uterus was maintained and the patient delivered at term by cesarean section. **Conclusion:** This is the first report on managing heterotopic cornual and intrauterine pregnancy by lesion resection with laparoscopy. This minimally new conservative surgery can be consider in the management of heterotopic cornual pregnancy.

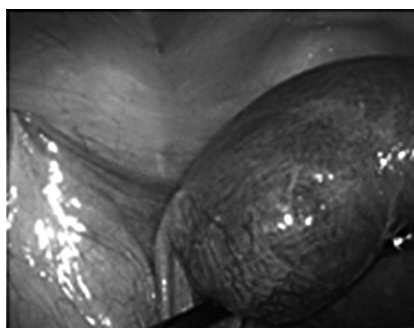
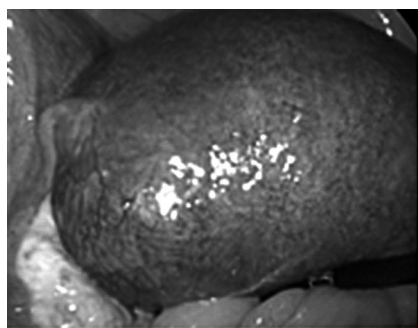
**Key words:** Cornual heterotopic pregnancy; IVF; New conservative surgery.

## Introduction

As the elevated tendency of assisted reproductive technologies (ART), the occurrence of heterotopic pregnancy (HP) has been increasing gradually in recent years. The ratio of HP with ART are about to 1% [1] in all pregnancies. Among all HPs, simultaneous cornual pregnancy and intrauterine pregnancy is still a rare case. Therefore managing methods are very limited. The authors reported a case of a heterotopic pregnancy (left cornual pregnancy and intrauterine pregnancy) managed with laparoscopic lesion resection. Finally the integrity of uterus was maintained and the patient delivered at term by cesarean section.

## Case Report

A 37-year-old G<sub>1</sub>P<sub>0</sub> female, who suffered from infertility for ten years, presented to the emergency department with discontinuous left lower abdominal pain lasting seven days. The patient underwent *in vitro* fertilization (IVF) and two fresh embryos and was transferred to other hospital 37 days prior. The result of blood hCG on 14<sup>th</sup> day after embryo transfer (ET) was 524.54 mIU/ml and a pregnancy was confirmed. Her prior history included laparoscopic surgery for bilateral fallopian tube obstruction one year ago. In this hospital, the result of blood E<sub>2</sub>, P, and hCG were 1,193.3 pg/ml, 28.6 2 ng/ml, and > 200,000.0 mIU/ml, respectively. Transvaginal sonography revealed intrauterine single live fetus (gestational sac was about 2.3×1.8×3.4 cm, and fetal bud was about 1.2 cm, with fetal heart beat) and a second gestational sac with a live fetus (gestational sac was about 1.5×1.6×1.7 cm, and fetal bud was about 0.7 cm, with fetal heart beat) located in the left cornual region where the serosal layer was continuous and the gestational sac protruding was not obvious.



Figures 1-2. — Left cornual and intrauterine pregnancy,

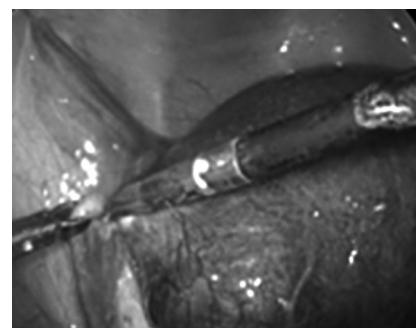
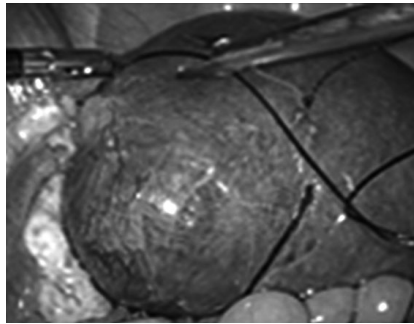
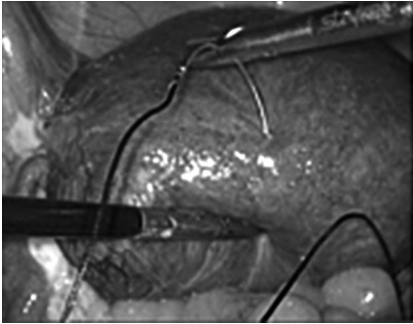


Figure 3. — Left fallopian tube is divided.

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Figures 4-5. — Circumferential suture around the left uterine horn.

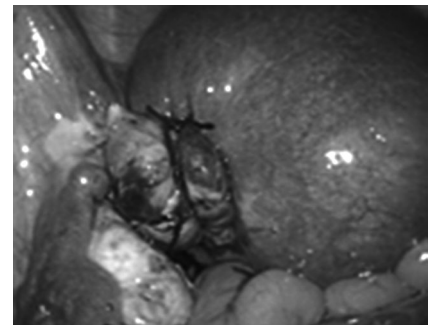
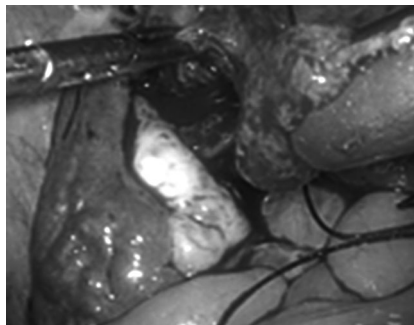
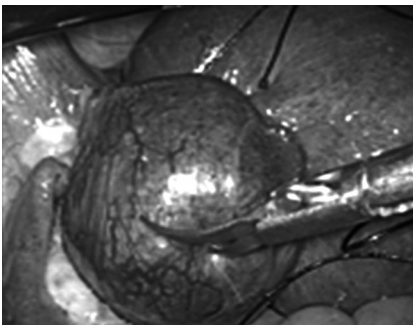


Figure 6. — The left uterine horn is cut.

Figure 7. — Gestational sac and villi are removed

Figure 8. — Suturing of left uterine horn.

Because of the poor outcome of cornual pregnancy resulted in rupture and the patient's strong willing to keep baby, conservative laparoscopic lesion resection was performed after multidisciplinary discussion and consent of the couple.

Laparoscopic surgery showed a slightly convex, soft and thin wall of the left uterine cornu which next to the 8 weeks gestation of uterus (Figures 1 and 2). First, left fallopian tube was divided along uterine serosa (Figure 3). Prior to excision, 1-0 vicryl sutures were sutured circumferentially about the left uterine cornual pregnancy (Figures 4 and 5). Next, ectopic site was looped ligature and excised from the thinnest wall of ectopic site (Figure 6), the gestational sac and villi were carefully clamped (Figure 7). The implantation of cornual pregnancy was burned by PK knife which destroyed the residual tissue of villi and hemostasis was confirmed. At last, the left uterine cornual incision was sutured gently (Figure 8). The time of surgery was about 40 minutes and the estimated blood loss was 20 ml. The supplementary progesterone was fixed throughout the peri-operative period. Transvaginal sonogram was performed 3 days after surgery. The left uterine cornual displayed no fluid collection. We identified an intact intrauterine gestational sac at 3.8×3.8×3.9cm, and fetal heart beat was obvious. The patient was discharged home uneventfully 4 days after surgery. A female infant was delivered by cesarean at 39 weeks.

## Discussion

According to reports, the rate of HP is increasing slowly with improvement of ART. Simultaneous cornual pregnancy and intrauterine pregnancy are believed to occur in 1% of all HPs [2]. Multiple embryos to uterus after IVF, history for salpingitis, previous tubal surgery, history of infertility, and smoking were thought to be risk factors for HP [3]. The authors found only four cases that reported simultaneous cornual and intrauterine pregnancies. Table 1 shows clinical characteristics of these cases [4-7]. Like these four cases, infertility and multiple embryos were the risk factors of HP in our report.

To date, there are no standard protocols for managing simultaneous intrauterine and extrauterine pregnancies, especially in the uterine horn. As we know, there are surgical, medical, and expectant management for simultaneous cornual and intrauterine pregnancies. Because a cornual pregnancy often results in severe abdominal hemorrhage or even death, most are treated by laparotomy excision. However, the risk of uterine rupture would gradually increase

Table 1. — *Clinical characteristics of reported cases.*

Study	Conception	Outcome	Method	Risk factor	Symptoms
Sills [4]	IVF	Cesarean at term	Laparotomic cornual incision	Laparoscopy tubal occlusion	Abdominal pain
Park [5]	IVF	Cesarean at term	Transvaginal potassium, chloride injection	Infertility	None
Seye [6]	IVF	Labor	Injection low-dose methotrexate	Infertility	None
Dwivedee [7]	IVF	Cesarean at term	Conservative observation Cornual pregnancy shrinkage	Tubal factor sub-fertility Tubal ectopic pregnancy	Intra-abdominal bleeding

in a subsequent pregnancy resulting in a weak surgical scar. Therefore, many patients tended to choose medical and expectant methods when faced with this disease. Although some cases were successful through conservative methods, the rate of failure, operation, and the safety of drug to intrauterine fetus were not reported before.

In the present case, the authors performed to suture circumferentially around lesion of uterine horn, loop ligature, cut and suture by laparoscopy during operation. It is the first report on managing heterotopic cornual and intrauterine pregnancy simultaneously by lesion resection with laparoscopy. The advantages of these new conservative surgeries include maintaining the integrity of the uterus, less surgery time, less blood loss, and faster recovery of patient and etc. However, complications and fertility still need to be assessed in future research.

## Conclusion

The more ART is used, the more likelihood of HP is to occur. We should be cautious and careful when facing these patients. This new conservative lesion resection by laparoscopy may be a safe and feasible method for managing heterotopic cornual and intrauterine pregnancies.

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