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Laparoscopic Management of the Cornual Pregnancy

*Gordan Crvenkoviæ, Dubravko Barišić, Ante Æorušić, Marin Nola*¹

Department of Obstetrics and Gynecology and ¹Department of Gynecological and Perinatal Pathology, Zagreb University School of Medicine, Zagreb, Croatia

Traditional treatment of interstitial pregnancy includes cornual resection or hysterectomy by laparotomy, but advanced minimally invasive surgery allows successful endoscopic management. We report a case where interstitial pregnancy was successfully diagnosed by ultrasound and treated by laparoscopy. Patient had an unremarkable postoperative course. This case demonstrates that a laparoscopic approach toward cornual pregnancy is possible.

Key words: amenorrhea; histology; pregnancy, ectopic; pregnancy, first trimester; laparoscopy; ultrasonography

When implantation of the blastocyst occurs in a location other than the endometrial lining, the pregnancy is ectopic. In more than 95 percent of such cases, the implantation site is in the fallopian tube, usually in the ampullary region (1). Interstitial (cornual) implantation remains the rarest form of tubal gestation, with an estimated incidence of 1 in 2,500 to 5,000 live births (2). Traditionally, it is treated by resection or hysterectomy performed by laparotomy (2), although a variety of conservative approaches have been introduced (3), such as expectant follow-up with serial sonography, systemic methotrexate administration, local injection of chemotherapeutic agents into the gestational sac, hysteroscopic removal, and, more recently, laparoscopic resection (4-8).

Case Report

A 27-year-old woman, gravida 0, para 0, had a history of regular, monthly menstrual periods every 27-30 days, usually lasting 6 days. She never used any type of contraceptive method.

The patient presented to a private gynecological office on January 19, 1998, with a 7-week history of amenorrhea and slight vaginal bleeding, but without any pain. After pelvic and vaginal ultrasound examinations, the preliminary diagnosis of left-sided ectopic pregnancy was made. The patient was referred to the local hospital for further evaluation. Nineteen days later, one day after she was admitted to the hospital, β -human chorionic gonadotrophin (β -hCG) level was 8,060 mIU/L, hematocrit 36%, and hemoglobin 122 g/L. Abdominal ultrasound examination showed an empty uterus of normal appearance. Left-sided, 26x19 mm solid mass with 12 mm central cystic area was seen. She was transferred to our Department for diagnostic laparoscopy. Upon admission on February 10, 1998, the patient's vital signs were stable, without orthostatic blood pressure change or tachycardia. General physical examination was within normal limits. The abdomen was not tender and was without rebound. Pelvic examination revealed a closed cervix with minimal old blood in the vaginal vault. The uterus was at the upper limit of normal size, mobile, and minimally tender. There was a slight enlargement of both adnexa and the left side was sensitive on palpation. Pelvic ultrasound revealed enlarged uterus with the gestational sac in the left cornual region (Fig. 1). No embryonic pole or fluid in the cul-de-sac was seen. Morphological appearance of both adnexa was normal. The complete blood count showed a white blood cell count of 6,600/mm³. The hematocrit was 32%, and hemoglobin 103 g/L. The β -hCG level was 8,800 mIU/L.

Figure 1 Coronal plane of the uterus showing gestational sac in the left cornua.

1: [\[view this figure\]](#)

Figure 2 Laparoscopic view of the asymmetrically enlarged uterus with the gestational sac in the left cornual region.

2: [\[view this figure\]](#)

Figure 3 Sutured cornual region of the uterus after laparoscopic removal of the pregnant region.

3: [\[view this figure\]](#)

Figure 4 Immature first trimester placental villi found in the uterine horn.

4: [\[view this figure\]](#)

On February 12, 1998, laparoscopy was performed using a standard laparoscopic equipment and instrumentation (Karl Storz & Co., Tuttlingen, Germany). Mobile and irregularly enlarged uterus with 4 centimeter bulge at the left horn of the uterus was detected (Fig. 2); no fluid in the cul-de-sac was seen and both tubes and ovaries (adnexa) appeared normal. Twenty mL of a vasopressin solution (10 IU diluted in 100 mL of saline) was injected intramurally, circularly around the left cornual region, using a 20-gauge spinal needle introduced through the abdominal wall until the myometrium blanched. The cornual area with pregnancy was resected using a bipolar forceps and scissors. After the hemostasis was achieved by bipolar coagulation, the myometrium was sutured using a polyglactin-monofilament-0 suture (Bio-Syn, Auto Suture, USSC; Norwalk, CT, USA) (Fig. 3). Distal portion of the left tube was cauterized and removed. The resected uterine horn was expanded by the hemorrhagic mass and myometrium and blood clot with chorionic villi were found on microscopic examination (Fig. 4). At the completion of the procedure, the peritoneal cavity was carefully lavaged until the irrigation fluid was devoid of any blood. Ringer lactate in the volume of 500 mL was left in the peritoneal cavity. Operative time was 60 minutes. Blood loss was minimal, and the patient had an unremarkable postoperative course. Her postoperative hematocrit was 34%. She was discharged on the fourth postoperative day.

Quantitative β -hCG level was serially evaluated (every third day). The first postoperative day β -hCG level dropped to 3,360 mIU/L, and it was 650 mIU/L on the fourth postoperative day; 295 mIU/L on the seventh, and 80 mIU/L on the eleventh day after the surgery.

Discussion

Interstitial pregnancy is by definition located in the intramural part of the fallopian tube, i.e., the part of the tube that traverses the uterine wall. It is the least frequent variety of the tubal gestation, with an incidence estimated to 2-4% of all ectopic pregnancies (9). In addition to the factors that result in the increased risk for all forms of tubal pregnancy, patients with previous salpingectomy are at increased risk for ipsilateral interstitial ectopic pregnancy (10). Interstitial pregnancies often rupture later than other tubal pregnancies because the myometrium is more distensible than the fallopian tube. Increased vascularity associated with interstitial ectopic pregnancies is more likely to result in a catastrophic hemorrhage and death (11). The mortality rate of interstitial pregnancy is more than twice that of other tubal pregnancies (12,13). Signs and symptoms are non-specific, resembling those of other tubal pregnancies, though the gestation at the time of the rupture tends to be more advanced. At pelvic examination a broad-based palpable mass may be found extending outward from the uterine angle (Baart de la Faille's sign), or the fundus is displaced to the contralateral side with rotation of the uterus and elevation of the affected horn (Ruge-Simon syndrome), but these signs are by no means constant (14). In the past, diagnosis was usually made at laparotomy. With the advent of ultrasonography and its routine use in early pregnancy, interstitial pregnancy can be detected with accuracy before serious complications arise.

Characteristic sonographic signs include (9,11,15-17): empty uterine cavity, eccentrically located or very lateral gestational sac, thin or incomplete myometrial mantle covering the gestational sac, demonstration of the myometrium between sac and uterine cavity, no gestational sac visible above the level of the internal os in the longitudinal plane of the uterus. Conditions such as sacculization of the uterus, leiomyomatous uterus distorting normal anatomy, pregnancy in the rudimentary horn or in a separate or otherwise malformed uterus, as well as Piskacek's sign (temporary asymmetry of the fundus in a normal intrauterine pregnancy before the 12th week of gestation), should be included in the differential diagnosis. In patients in whom differentiation is difficult, the presence of prominent peritrophoblastic blood flow on color Doppler examination should lead to the correct diagnosis.

The choice of treatment depends on the extent of trauma that has occurred in the uterine wall and on the interest of the patient in preserving her childbearing function. The classical treatment is surgical, either cornual resection with simple suture repair of the lesion or hysterectomy. Meyer and Mitchell reported a case of interstitial pregnancy treated by hysteroscopically guided curettage under laparoscopic control (18). Treatment of interstitial pregnancies with methotrexate (19) or local potassium chloride injection under ultrasound guidance (20) has also been described.

Although it is difficult to reach conclusion from such limited published experience, it nevertheless appears that cornual pregnancies can be treated by conservative surgical means. Whether this involves hysteroscopic curettage under laparoscopic control or a laparoscopically directed intervention should probably be decided on a case to case basis. The size of the gestational sac, preservation of patient fertility, and surgeon's experience are the factors that should be considered before a decision on the therapeutical approach is made. In our opinion, relatively small and easily approachable interstitial pregnancies should be treated by laparoscopy in the hands of an experienced surgeon. The lower cost of the procedure, shorter length of hospitalization and

reconvalescence period, as well as smaller amount of blood loss and avoidance of the eventual negative consequences of general anesthesia are clear advantages of this approach over laparotomy.

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Correspondence to:

Gordan Crvenkoviæ

Department of Obstetrics and Gynecology

Zagreb University Hospital Center

Petrova 13

10000 Zagreb, Croatia

gordan.crvenkovic@zg.tel.hr