

Laparoscopic Resection of a Big Interstitial Pregnancy With Intra-operative Rupture and Expulsion of the Foetus

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We report a case of interstitial pregnancy diagnosed by ultrasonography at 11 weeks' gestation and managed by laparoscopic resection and cornual repair. During resection, the gestational sac ruptured expelling the whole foetus. The operative blood loss was 100 mL. The postoperative course was uneventful and the ultrasonography performed 7 weeks afterwards was normal.

The clinical features, diagnosis, differential diagnosis and management options of interstitial pregnancy are discussed. Surgical treatment was indicated in our case because the ectopic gestation was big and viable with a high initial human chorionic gonadotropin level. Our case illustrates laparoscopic resection for interstitial pregnancy can be achieved with little morbidity. With the advancement in minimally invasive surgery, laparoscopic resection should be the preferred surgical treatment instead of laparotomy or hysterectomy.

本文報告一個輸卵管間質部妊娠的病例。孕婦當時已懷孕11週，經超聲波檢查確診後，施以腹腔鏡切除術取出胎兒。妊娠囊在手術中破裂，導致整個胎兒從囊裏跌出。手術過程中失血一百毫升。術後病人順利康復，7星期後超聲波檢查結果正常。

本文討論了輸卵管間質部妊娠的臨床徵狀、診斷、鑑別診斷以及各種治療方法。本病例以手術治療，是因為異位妊娠的胎兒頗大，加上初始絨毛膜促性腺激素濃度高。本病例顯示，以腹腔鏡手術來治療輸卵管間質部妊娠是可行並發病率低。隨著微創手術的進步，在治療輸卵管間質部妊娠的各種手術方法中，腹腔鏡切除術比起剖腹手術和子宮切除術更可取。

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Case Report

A 31-year-old gravida 2 para 0 woman was seen in the antenatal clinic at the gestation of 10 weeks and 5 days since her last menstrual period. Pelvic examination revealed an 8-to-10-week gravid uterus and a tender right adnexal mass. Ultrasound scan was performed 10 days afterwards and revealed a 6.03 x 5.02 cm gestational sac containing a viable foetus of crown rump length 4.1 cm (equivalent to 11 weeks' gestation) in the right cornual region. The diagnosis was interstitial pregnancy. The haemoglobin (Hb) was 12.4 g/dL and the serum human chorionic gonadotropin (HCG) was 94,263 IU/L.

Laparoscopy was performed. A 6-cm diameter right interstitial pregnancy was seen (Figure 1). Pitressin was infiltrated around the gestational mass at the right cornu and harmonic scalpel was used to resect it. During resection, the gestational sac ruptured and delivered the whole foetus into the pouch of Douglas

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Figure 1. The 6-cm right interstitial pregnancy prior to rupture

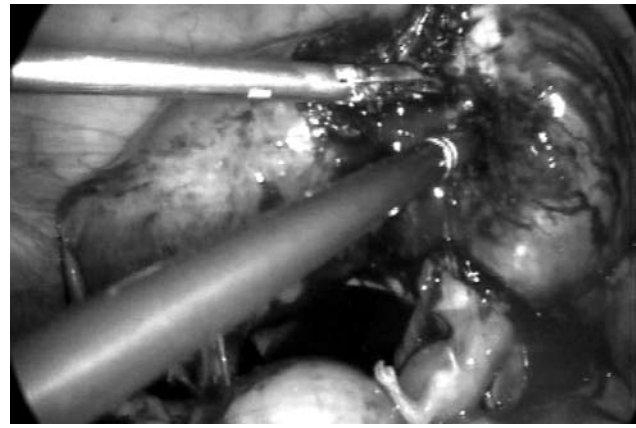


Figure 2. The gestational sac ruptured and delivered the foetus into the pouch of Douglas during laparoscopic resection of the interstitial pregnancy

(Figure 2). The defect at the right cornu was then sutured intra-corporeally in 2 layers using vicryl o. Right salpingectomy was performed, too. All of the specimens were removed inside an endobag. Care was taken to ensure that no residual gestational products were left behind. Hysteroscopy was performed at the end of the operation and the findings were unremarkable. The blood loss was 100 mL.

The postoperative course was uneventful and our patient was discharged on day 4. The HCG levels on day 2, 8, 15, 22 and 29 were 7 IU/L, 147 IU/L, 576 IU/L, 129 IU/L, 26 IU/L and 11 IU/L respectively. Our patient was well when seen 7 weeks after the operation and she had normal menstruation 1 week before the visit. Ultrasound scan revealed normal pelvic findings.

Discussion

Interstitial pregnancy (IP) is a rare form of ectopic pregnancy, accounting for 2-4% of all ectopic pregnancies¹. It is often referred to as cornual pregnancy, which means pregnancy in the rudimentary horn of a bicornuate uterus. IP is defined as a gestation developing in the uterine portion of the fallopian tube lateral to the round ligament². The pathogenesis is not exactly known. Risk factors are similar to those of other tubal pregnancies, including a previous history of pelvic inflammatory disease and tubal surgery and the use of an intrauterine contraceptive device.

Clinical features of IP are similar to the other ectopic pregnancies, though IP tends to present later and carries a higher maternal mortality than the other types of tubal pregnancies. It is because the interstitial

portion has more distensible myometrium than the rest of the fallopian tube that enables the pregnancy to reach a more advanced gestation. Rupture can occur as late as the beginning of the second trimester and therefore bleeding can be massive and life threatening. Our case is a good example in which the rupture occurred late at the gestation of 11+ weeks during surgical excision. It is probable that the rupture was partly triggered by the intraoperative manipulation. Otherwise, the rupture might have occurred later.

Transabdominal and transvaginal ultrasound scan is the mainstay of diagnosis, which is confirmed by laparoscopy. Ultrasound scan shows an empty uterus and the presence of an eccentric gestational sac that is very laterally located. The myometrium surrounding the sac should be less than 5 mm³. The “interstitial line”, which is an echogenic line extending into the cornual region and abutting the mid-portion of the interstitial mass or gestational sac, is said to be 80% sensitive and 98% specific for the diagnosis of IP⁴. IP should be distinguished from angular pregnancy which occurs when an embryo implants medially to uterotubal junction in the lateral angle of the uterine cavity close to the internal ostium of the fallopian tube. IP always causes uterine rupture while angular pregnancy may develop normally⁵. The gestational sac in angular pregnancy, though laterally located, is surrounded by decidua and is inside the endometrial cavity. The pitfalls of diagnosis include intrauterine pregnancy. The empty uterine corpus in IP had been mistaken as a cervical fibroid in a gravid uterus with an intrauterine pregnancy⁶.

Management options of IP include medical

therapy and surgery. Medical management is usually by administering methotrexate systemically, locally with ultrasound or laparoscopic guidance, or combined. Uterine artery embolisation was also reported to be employed in addition to methotrexate treatment for complete resolution of IP⁷.

Apart from haemodynamic stability, other prerequisites for medical management according to ACOG (American College of Obstetricians and Gynecologists) guidelines include: initial HCG level not exceeding a predetermined level of 6000 to 15,000 IU/L, absence of foetal cardiac activity and unruptured ectopic mass smaller than 3.5 cm⁸. Nevertheless, there are reports of cases with HCG exceeding 50,000 IU/L that have been successfully treated by methotrexate⁹. The overall success rate of methotrexate treatment, local, systemic or combined, was 65-83%^{2,10}. Expectant management had also been recommended where the initial HCG was less than 2000 IU/L and subsequent HCG levels were declining¹¹. Successful non-surgical management avoids anaesthetic and surgical risks but has disadvantages of slow return of HCG to normal, possibility of uterine rupture during observation despite a falling HCG levels and a concern about a deficient scar in the uterus, especially if further pregnancies are desired.

In our case, the initial high HCG level and the presence of a viable 11+ weeks' gestation foetus justified the choice of surgical management. Classically, surgery is in the form of hysterectomy or laparotomy and

cornual resection. Nowadays, there are many reports of laparoscopic surgical treatment including cornuostomy or cornual resection and repair the defect on the uterine cornu with or without ipsilateral salpingectomy¹²⁻¹⁴. Overall laparoscopic cornual resection is deemed to be an effective treatment¹⁵ but entails risks of anaesthesia and surgery, as well as a possibility of necessitating a hysterectomy in case of uncontrolled haemorrhage during operation. With the advance in minimally invasive surgery and given the benefits of laparoscopic surgery compared with laparotomy, it is reasonable to anticipate that laparoscopic surgical removal will become the surgery of choice for IP. At the moment it is difficult to comment on the scar integrity and safety of subsequent pregnancies and whether elective Caesarean section is indicated for future deliveries. However, it is logical to recommend suturing of the myometrial defect at the uterine cornu after resection or cornuostomy of an IP so as to minimise the chance of uterine rupture in subsequent pregnancies. Ipsilateral salpingectomy was carried out in our patient so as to avoid possible ipsilateral ectopic pregnancy in the preserved fallopian tube¹⁶. Moreover, unless subsequent tubo-uterine reimplantation can be successfully performed, the preserved tube will not be functional. The patient may still be at increased risk of further ectopic pregnancy with successful tubo-uterine reimplantation.

Our case illustrates that for cases of IP, where surgical management is indicated, laparoscopic resection can be achieved with little morbidity and should probably be the first-line surgical treatment if facilities and expertise are available.

References

1. Rock JA, Thompson JD. *Telinde's operative gynecology*. 8th ed. Philadelphia: Lippincott-Raven, 1997.
2. Lau S, Tulandi T. Conservative medical and surgical management of interstitial ectopic pregnancy. *Fertil Steril* 1999; 72:207-215.
3. Timor-Tritsch IE, Monteagudo A, Matera C, et al. Sonographic evolution of cornual pregnancies treated without surgery. *Obstet Gynecol* 1992; 79:1044-1049.
4. Ackerman TE, Levi CS, Dashefsky SM, et al. Interstitial line: sonographic findings in interstitial (cornual) ectopic pregnancy. *Radiology* 1993; 189:83-87.
5. Jansen RP, Elliott PM. Angular intrauterine pregnancy. *Obstet Gynecol* 1981; 58:167-175.
6. Chan LY, Fok WY, Yuen PM. Pitfalls in diagnosis of interstitial pregnancy. *Acta Obstet Gynecol Scand* 2003; 82:867-870.
7. Ophir E, Singer-Jordan J, Oettinger M, et al. Uterine

- artery embolization for management of interstitial twin ectopic pregnancy: case report. *Hum Reprod* 2004; 19:1774-1777.
8. ACOG practice bulletin. Medical management of tubal pregnancy. Number 3, December 1998. Clinical management guidelines for obstetricians-gynecologists. American College of Obstetricians and Gynecologists. *Int J Gynecol Obstet* 1999; 65:97-103.
 9. Rodriguez L, Takacs P, Kang J. Methotrexate is safe for the management of interstitial ectopic pregnancy. *Obstet Gynecol* 2003; 101:s54.
 10. Barnhart K, Spandorfer S, Coutifaris C. Medical treatment of interstitial pregnancy. A report of three unsuccessful cases. *J Reprod Med* 1997; 42:521-524.
 11. Seow KM, Hsieh BC, Tsai YL. et al. Expectant management of a cornual pregnancy followed up by serial transvaginal color power Doppler angiography and serum beta human chorionic gonadotropin levels. *Acta Obstet Gynecol Scand* 2004; 83:1221-1224.
 12. Huang MC, Su TH, Lee MY. Laparoscopic management of interstitial pregnancy. *Int J Gynaecol Obstet* 2005; 88:51-52.
 13. Yoo EH, Chun SH, Kim JI. Endoscopic treatment of interstitial pregnancy. *Acta Obstet Gynecol Scand* 2003; 82:189-191.
 14. Sasso RA. Laparoscopic diagnosis and treatment of cornual pregnancy. A case report. *J Reprod Med* 1995; 40:68-70.
 15. Tulandi T, Al-Jaroudi D. Interstitial pregnancy: results generated from the Society of Reproductive Surgeons Registry. *Obstet Gynecol* 2004; 103:47-50.
 16. Sangal PR, Kotwal H. Unusual presentation of a third tubal pregnancy. A case report. *J Reprod Med* 1987; 32:320-321.