Case Report

Laparoscopic Cornuostomy: A Conservative Surgical Approach to Interstitial Pregnancy — A Case Report

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Abstract

Interstitial pregnancy accounts for only 2%–4% of all ectopic pregnancies, however, it is associated with higher mortality rates as compared to other ectopic pregnancies, due to the associated risk of uterine rupture, and hemorrhage. A 35-year-old gravida 4 abortion 3 woman reported at the 8th week of gestation for antenatal care with comorbidity of protein C and protein S deficiency and recurrent pregnancy loss with for routine care. She was diagnosed as a case of interstitial pregnancy by transvaginal sonography and magnetic resonance imaging. She was subsequently managed by laparoscopic cornuostomy. Prompt recognition and definitive management are crucial in averting life-threatening hemorrhage due to this rare condition.

Keywords: Ectopic, imaging, interstitial pregnancy, laparoscopic cornuostomy

Introduction

Interstitial pregnancy refers to a type of ectopic pregnancy, with gestational sac implanted into the interstitial part of the fallopian tube, surrounded by a layer of the myometrium, as well as the supporting interstitial and vascular tissue.[1] It accounts for nearly 2%–4% of all ectopic pregnancies. Presentation is typically delayed because of the distensibility of the myometrium usually between the 9th and 12th week of gestation with abdominal pain or vaginal bleeding. Resulting hypovolemic shock or rupture of the uterus or tube has maternal mortality as high as 2%, which is very high as compared to other tubal ectopic since the interstitial part of the tube is thicker and highly vascular.[2,3]

Earlier, interstitial pregnancies were diagnosed at laparotomy following rupture and collapse. Now due to high-resolution ultrasonography (USG) and three-dimensional ultrasound, early diagnosis is possible with more accuracy.[4] The ultrasound diagnostic criteria used to identify intramural pregnancy, include an empty uterine cavity, a chorionic sac located eccentrically and at >1 cm from the lateral edge of the uterine cavity, a thin myometrial layer (<5 mm) surrounding the gestation sac in all planes, the presence of "interstitial line sign" (an echogenic line between the ectopic sac and the endometrial echo), and the absence of double decidual sac sign, typically seen in the intrauterine pregnancy.[5-7]

Early diagnosis has resulted in increased use of more conservative treatment methods include laparoscopic surgery, local injection of methotrexate (with KCl or without KCl) 4,5,7, systemic methotrexate, or expectant management, but surgery is still the main treatment of interstitial ectopic pregnancy.[8] Surgery includes laparoscopic cornuostomy or cornual wedge resection, uterine horn resection, or hysterectomy.[9,10] We report a case of interstitial pregnancy

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managed by laparaoscopic surgery after attempts at conservative management. This report has been presented according to CARE guidelines.[11]

Case Report

A 35-year-old gravida 4 abortion 3 woman reported to the gynecological outpatient department at 8th week of gestation for antenatal care. She was a case of recurrent pregnancy loss with protein C and protein S deficiency. Initially, a provisional diagnosis of right interstitial pregnancy was made on transvaginal sonography, with an empty endometrial cavity with fetal cardiac activity. Magnetic resonance imaging further confirmed the diagnosis of right interstitial pregnancy [Figure 1]. Serum beta-hCG at diagnosis was 2200 mIU/ml which had a rising titer during workup.

The patient was planned for medical management by transabdominal USG-guided methotrexate injection into the gestational sac, but the procedure had to be abandoned due to technical difficulties in approach. The patient was taken up for diagnostic laparoscopy and proceeded in view of the risk of uterine rupture endangering the life of the patient. Intraoperatively, right interstitial pregnancy was seen with contour bulge of the uterus alongside hyperemic thinning of the right myometrial region. The right fallopian tube and ovary were unremarkable. Vasopressin infiltration was given at the base of the gestational sac and a linear incision was made on the superior cornual surface of the uterus using Harmonic Shear. Products of conception were evacuated. Endosuturing was done with an absorbable suture to achieve hemostasis [Figure 2]. The estimated blood loss during the procedure was 30 ml and operating time was 50 min.

Postoperative period was uneventful. Histopathology reports confirmed the ectopic pregnancy and the patient was kept on follow-up in the postoperative period till serum beta-hCG values were negative. The patient was followed up 3 months postoperatively and a hysterosalpingogram was done to confirm tubal patency, which showed bilateral-free peritoneal spill.

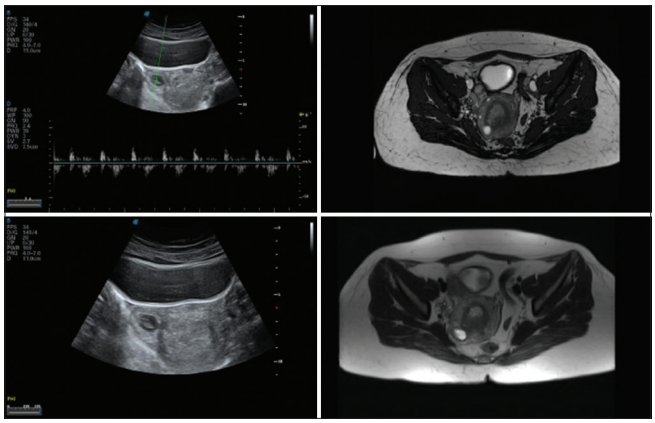

Figure 1: Transvaginal sonography and magnetic resonance images of interstitial pregnancy

Discussion

The optimal management of interstitial ectopic pregnancy depends on early and accurate diagnosis to prevent significant morbidity and mortality due to this rare condition. The main challenge remains an early diagnosis and timely intervention to reduce the complications. Clinical examination, β-hCG levels, and TVS constitute the main modality of diagnosis, as well as follow-up of medical management.[12,13]

The management of interstitial ectopic pregnancy has evolved from laparotomy to more conservative treatment modalities. Medical management by intralesional or systemic methotrexate may be done for the management of interstitial ectopic pregnancy with a high success rate of up to 83%.[8] Even expectant management has been proposed by authors if beta-hcg has a falling trend.[14] In cases of failed medical management, contraindication to medical management, rupture of pregnancy, or hemodynamically unstable patient, a surgical approach is preferred.[15] In contrast, open surgery may be complicated with a prolonged hospital stay, and more wound complications such as postoperative pain, surgical site infection, dehiscence, and incisional hernia.[16] A systematic review of 728 interstitial pregnancies by Marchand *et al*. in 2001 concluded that minimally invasive approach is associated with similar surgical outcomes and the absence of wound complications.[17] The approach is suitable even if signs of rupture are noted with a relatively hemodynamically stable patient. Some authors have performed a laparoscopic wedge when pregnancy has advanced to the second trimester.[18]

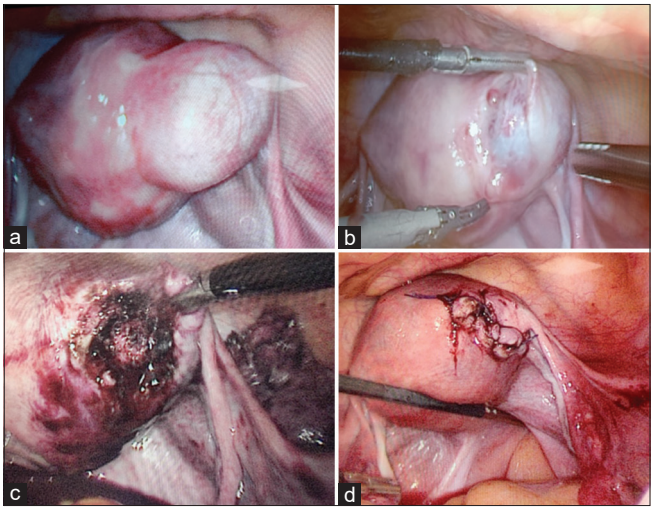

Figure 2: Intraoperative images; (a) intraoperative view of interstitial ectopic, (b) incision on cornu, (c) evacuation of products of conception, (d) endosuturing and closure

Conclusion

While there is no optimal management of an interstitial ectopic pregnancy, various resection approaches may be attempted through laparoscope or hysteroscope. Cornuostomy procedure helps preserve fallopian tubes enabling future pregnancies in patients seeking future fertility. The technique and expertise of the surgeon are paramount in the surgical decision-making process.

Ethics statement

This study was conducted in accordance with the ethical principles outlined in the Declaration of Helsinki and its amendments. Written informed consent was obtained from the patient for publication of this case report and accompanying images.

Author contributions

Vinod Nair and Gunjan Rai were actively involved in management of the case. Roshni Abichandani and Abhijeet Kumar did the data collection and analysis. Eshwarya Jessy Kaur wrote the manuscript. All the authors have read the manuscript and approved.

Data availability statement

The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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