 Cornual Ectopic Pregnancy: a Case series and Literature review

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Abstract

Background: Cornual (interstitial) ectopic pregnancy is an uncommon type of ectopic pregnancy which accounts for 2%-4% of all ectopic pregnancies. It often poses a diagnostic and therapeutic challenge with a high mortality risk as a result of massive intraperitoneal bleeding. We report review of three cases of cornual ectopic pregnancy. Objective: To describe clinical presentation and management of cornual ectopic pregnancy cases Methods: Three cases of cornual ectopic pregnancy were retrospectively analyzed Results: Successful cornual wedge resection and removal of products of conception was performed in two cases (one ruptured and the other unruptured), while the 3rd case (ruptured with massive hemorrhage) was managed with hysterectomy. Conclusion: Early diagnosis of cornual ectopic pregnancy gives patients a wider opportunity to have conservative management either with MTX or laparoscopic surgery. However; whenever there is hemodynamic instability, laparotomy with either cornual resection or hysterectomy is advisable.

Title

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Abstract

Background: Cornual (interstitial) ectopic pregnancy is an uncommon type of ectopic pregnancy which accounts for 2%-4% of all ectopic pregnancies. It often poses a diagnostic and therapeutic challenge with a high mortality risk as a result of massive intraperitoneal bleeding. We report review of three cases of cornual ectopic pregnancy.

Objective: To describe clinical presentation and management of cornual ectopic pregnancy cases in a Sub-Saharan setting.

Design: Case series

Setting: St. Paul’s Hospital Millennium Medical College (Addis Ababa, Ethiopia)

Population: Cornual ectopic pregnancy cases

Methods: Three cases of cornual ectopic pregnancy were retrospectively analyzed by reviewing maternal charts. Data on clinical presentation, investigation results, and operative outcomes were extracted by reviewing physicians’ evaluation notes, lab and imaging results and operation notes.

Main outcome Measures: Successful securing of hemostasis and post-operative course of patients

Results: Successful cornual wedge resection and removal of products of conception was performed in two cases (one ruptured and the other unruptured), while the 3rd case (ruptured with massive hemorrhage) was managed with hysterectomy.

Main outcome measures:

Conclusion: Early diagnosis of cornual ectopic pregnancy gives patients a wider opportunity to have conservative management either with MTX or laparoscopic surgery. However; whenever there is hemodynamic instability, laparotomy with either cornual resection or hysterectomy is advisable.

Introduction

Cornual (interstitial) ectopic pregnancy is an uncommon type of ectopic pregnancy which is located in the interstitial part of the fallopian tube. It accounts for 2%-4% of all ectopic pregnancies. It often pose a diagnostic and therapeutic challenge with a significant morbidity and mortality as a result of massive intraperitoneal bleeding (1). Cornual pregnancy refers to the implantation and development of a gestational sac in one of the upper and lateral portions of the uterus (2).

Because of the elasticity of the myometrium, cornual ectopic pregnancies tend to remain asymptomatic longer than most other ectopic pregnancies; rupture usually occurs at about 7 to 12 weeks’ gestation but rupture at such an advanced gestation may result in catastrophic hemorrhage (3, 4). Mortality from such hemorrhage range of 2.0% to 2.5%, and this accounts for 20% of all deaths caused by ectopic pregnancies (5). Thus, understanding the clinical course and treatment options is essential. Whether or not maternal symptoms are present, cornual ectopic pregnancy is potentially dangerous and must be treated promptly and efficiently to decrease morbidity and mortality (6).

Traditionally, the treatment of cornual pregnancy has been laparotomy, cornual resection or hysterectomy in cases presenting with hypovolemic shock and ruptured uterus (7). Recently, more conservative approaches are being used such as cornuostomy instead of cornual resection, as well as laparoscopy in place of laparotomy (8).

Case-1

A 20 Years-old primigravida lady presented with a history of five months amenorrhoea, and vaginal bleeding and lower abdominal pain of three days duration. Gestational age from ultrasound done on the day of her
presentation was 17 weeks. She took repeated doses of misoprostol with a diagnosis of missed second trimester abortion before she was referred to our Hospital as a case of failed medication abortion.

Up on her presentation, she had tachycardia of 118 beats per minute and her blood pressure was 100/70 mmHg. Her body temperature was 37.9 degree centigrade. Abdominal examination revealed gravid uterus of 20 weeks sized and mild tenderness on the lower abdomen, while rebound tenderness was negative. Pelvic ultrasound was repeated and showed an empty uterus with a fetus corresponding to a gestational age of 17 weeks attached to the left side of the uterus but contained in separate sac with abundant amniotic fluid (Figure 1). CBC was determined and revealed a hematocrit of 39.6 percent.

With an assessment of unruptured cornual ectopic pregnancy, laparotomy was done. The intra-operative finding was an intact, tense, and shiny left cornual pregnancy with minimal hemorrhagic fluid in the cul-de-sac. Wedge resection of the ectopic mass was done and the myometrial defect was repaired with mattress sutures using vicryl(Figure-2).

Case -3

A 41 years-old Gravida-VI para-V woman presented with a history of lower abdominal pain of one day duration and amenorrhea of four months duration with associated minimal vaginal bleeding. On physical examination, she was acutely sick-looking in shock (blood pressure of 80/50 mmHg and pulse rate of 128 beats per minute). She had lower abdominal tenderness with rebound tenderness and signs of peritoneal fluid collection. Pelvic ultrasound revealed significant peritoneal free fluid collection with well-formed fetus corresponding to 13 weeks in right cornual area. CBC profile revealed a hematocrit of 16%. With an assessment of ruptured cornual pregnancy, emergency laparotomy was done. Intra-operative finding was 2000 ml hemopertionium and ruptured right cornual ectopic pregnancy with active bleeding (Figure-3). Hemoperionium was sucked out and right cornual wedge resection was done and the defect was repaired with vicryl 0.Contralateral salpingectomy was also done. She was transfused with 3 liters of blood in the post-operative period and post-trasfusion hematocrit was 23%. After 3 days of recovery, she was discharged home with therapeutic iron for three months.

Case-3

A 30 years-old Gravida-II Para-I presented with a history of lower abdominal pain of 4 days duration with associated vaginal bleeding and amenorrhea of 2 months. On physical examination, she was acutely sick looking with paper-white conjunctiva, tachycardia of 124, and blood pressure of 90/60. She had tenderness and rebound tenderness on the lower abdomen with guarding and sign of peritoneal fluid collection. Pelvic ultrasound revealed a significant free fluid in the peritoneal cavity with empty uterus and a well formed non-viable fetus corresponding to 16 weeks floating in the peritoneal cavity on the left side. Her hematocrit was 9.3 % (Hgb=3.2). With an assessment of ruptured cornualal pregnancy, emergency laparotomy was done after adequate preparation of blood and blood products was made. Intrao-operative finding was 2600 ml hemopertenium with ruptured left cornual pregnancy with active bleeding and a gestational sac along with placenta expelled in to the pelvic peritoneum. Total abdominal hysterectomy was done after gestational sac along with placenta was removed from the peritoneal cavity. She was transfused with 4 units of blood and the post-transfusion hematocrit was 24%. She was discharged after 5 days with improvement.

Discussion

Main findings

In this case series, two cases (case-1 and case-2) were managed with cornual wedge resection and suturing of uterine defect while total abdominal hysterectomy was done in the third case. In the first case, being unruptured and advanced gestational age were the determining factors to undergo for open cornual resection and differ laparascopic cornual resection respectively. Laparoscopy was contraindication in case-2 and case-3, as they presented with hemodynamic instability, and surgeon’s ability to secure hemostasis within a
reasonable time dictated the decision to go for cornual resection in one case and hysterectomy in the other case.

**Interpretation**

Cornual pregnancy remains the most difficult type of ectopic pregnancy to diagnose due to low sensitivity and specificity of symptoms and because on ultrasound, the pregnancy often appears to be intrauterine. Vessels leading from the cornual laterally may help with proper diagnosis (9, 10). In the present case series, pelvic ultrasound demonstrated an empty uterus with gestational sac with a 17 weeks well-formed fetus attached to the left side of the uterus in the first case, which hinted the diagnosis of unruptured cornual pregnancy, while it detected a significant free peritoneal fluid with well-formed fetus in the right cornual area and floating in the pelvic cavity in the 2nd and 3rd cases respectively, which suggested ruptured cornual ectopic pregnancies.

Management of a cornual pregnancy depends on many factors including gestational location and age, haemodynamic status, presence of uterine rupture, and local factors such as the surgeons’ expertise and preference and the patients’ wishes of retaining fertility (7, 11). Traditionally, the treatment of interstitial and cornual pregnancy has been laparotomy, cornual resection or hysterectomy in cases presenting with hypovolemic shock and ruptured uterus (7,12). Cornual wedge resection and repair of the uterine defect was done in 1st and 2nd cases in our case series, while total abdominal hysterectomy was done in the 3rd case, in which there was massive hemorrhage that threatened the woman’s life.

In hemodynamically stable patients, conservative measures may be attempted including medical management and laparoscopy (13). Uludag et al. reported successful local methotrexate (MTX) treatment in 7 cases and successful laparoscopic cornuostomy in the remaining 3 cases. The success rate was not different between the local MTX and laparascopy groups (100% vs. 66.6%, p > .05) (14). In her case series published in 2018, Dagar et al. presented successful treatment of cornual pregnancy with methotrexate injection (15). Recently in 2020, Parker et al. reported a failed medical management of cornual ectopic pregnancy case which developed uterine rupture and ended up in having hysterectomy, which poses an alarm that careful selection of patients should be made while deciding for conservative management of cornual pregnancy (16).

A retrospective review of 53 cases in 2019 documented successful laparoscopic management in 52 cases while one case was converted into laparotomy. Laparoscopic wedge resection was carried out in 33 patients, cornuostomy in 13 patients, and salpingectomy in 7 patients (17). Another review done in UK in 2007 reported 10 (91%) out of 11 cases of cornual ectopic pregnancy had successful operative laparoscopy as one (9%) patient had conversion to laparotomy (18). Similarly, Tinelli et al. reported successful laparoscopic management of three cases in 2010(one out of which was a ruptured case), by incision and enucleating of ectopic cornual mass, coagulating of its surrounding vessels and suturing of the uterine incision site (19). The first case in the present series could have been a candidate for conservative surgery but due to advanced gestational age(17 weeks) laparoscopic wedge resection was differed. Two of the cases in the present series were not candidates for MTX or laparascopy because of massive hemorrhage.

**Strengths and limitation**

The main strength of this study is the ability to discuss full clinical picture of the cases along with answers as to how deeply were available options of management for cornual ectopic pregnancy considered in each case and why was one option preferred over the other options. Limitations of this study are mainly small sample size and retrospective data collection.

**Conclusion**

Early diagnosis of cornual ectopic pregnancy gives patients a wider opportunity to have conservative management either with MTX or laparoscopic surgery. However; whenever there is hemodynamic instability, as
was seen in two of our cases, laparotomy with either cornual resection or hysterectomy, depending on the extent of hemorrhage and ability to secure hemostasis within a reasonable, is advisable.

**Declarations**

**Consent for publication**

Written informed consent was obtained from patients for the publication of this case series and accompanying images.

**Ethics Approval**

Not applicable

**Availability of supporting data**

All supporting documents are submitted along with the case report

**Authors’ contributions**

AF and BG contributed case review, analysis of cases, and manuscript write-up

**Declaration of conflict of Interest**

There is no conflict of interest

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**References**


**FIGURES**

Figure 1 Pelvic ultrasound findings in Case-1

N.B : On the left side of the uterus could be seen the ectopic mass)

Figure 2: Intra-operative finding and cornual wedge resection in Case-1
Figure-3 : Intra-operative finding and cornual wedge resection in Case-2