



Laparoscopic Cornuectomy and Removal of Products of Conception: A Case Report

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Abstract

Introduction: Ectopic pregnancy is a major health problem for pregnant women. Cornual pregnancy, a rare form of ectopic pregnancy, can be life threatening due to the risk of rupture.

Clinical Findings: We report here a case of a 31-year-old-multigravida who presented to us with amenorrhea and a positive pregnancy test for routine antenatal checkup. Her beta human chorionic gonadotropin level (β -hCG) was 22,000 but there was no intrauterine sac seen on screening ultrasound. She was sent to the Radiology department for an ultrasound that revealed a picture of left ectopic pregnancy. In her past history she had left salpingectomy as a teenager because of hydrosalpinx.

Diagnoses: Left ectopic pregnancy with high levels of β -hCG in a patient with prior ipsilateral salpingectomy was diagnosed. Surgery was advised. Laparoscopic cornuectomy was performed with successful removal of products of conception.

Conclusion: In a patient with ectopic pregnancy following ipsilateral salpingectomy, possibility of cornual pregnancy must be kept in mind. Surgical approach with laparoscopy is an accepted route in equipped facilities given the increased risk of rupture and bleeding. If bleeding is encountered, achievement of hemostasis with application of clips, suture, or hemostatic agents may be required. Given the limited availability of case reports in literature on Laparoscopic cornuectomy, this case is being reported.

Keywords: Ectopic Pregnancy; Cornual Pregnancy; Laparoscopic Cornuectomy; Interstitial Pregnancy; High Beta hCG; Case Report

Abbreviations

6W5D: 6 Weeks 5 Days; β -hCG: Beta Human Chorionic Gonadotropin; CP: Cornual Pregnancy; ED: Emergency Department; EP: Ectopic Pregnancy; G3P1A1: Gravida 3 Para 1 Abortion 1; GA: Gestational Age; LMP: Last Menstrual Period; TVUS: Transvaginal Ultrasound

Introduction

An Ectopic pregnancy (EP) occurs when a fertilized egg implants and grows outside the main cavity of the uterus. For most of the ectopic pregnancies implantation occurs in the fallopian tube area [1]. Interstitial and cornual pregnancy is a rare and most dangerous form of ectopic pregnancy [2]. Implantation occurring in the rudimentary horn of the uterus with communicating or non-communicating uterine cavity is known as Cornual pregnancy [3]. Embryo Implantation In the lateral angle of uterine cavity, medial

to the utero-tubal junction gives rise to an angular pregnancy. Implantation of blastocysts in the proximal intramural portion of the tube refers to interstitial pregnancy, whereas if the implantation occurs in the upper and lateral uterine cavity, it is called cornual implantation [4]. Cornual pregnancy represents 2–4% of all tubal pregnancies and occurs once in every 2500–5000 live births. The increase in morbidity/mortality is because of the delay in diagnosing this non-viable EP thus allowing for distension of the myometrium which in turn may increase the risk of uterine rupture [1]. The terms cornual ectopic pregnancy and interstitial pregnancy are often used interchangeably in clinical practice. Having a history of prior ectopic pregnancy, a history of ipsilateral salpingectomy, and in vitro fertilization are some of the predisposing factors to cornual pregnancy that have been identified. Beta human chorionic gonadotropin (β -hCG) level and transvaginal ultrasound remain the mainstay for diagnosis of cornual pregnancy [5]. It is not easy

to differentiate cornual pregnancy from intrauterine pregnancy due to the low sensitivity and specificity of imaging techniques and symptom presentation. Abdominal pain, amenorrhea and vaginal bleeding occur in 40% of ectopic pregnancy cases. Uterine wall invasion with implantation site being the intrauterine portion of involved fallopian tube increases the inability to differentiate from intrauterine pregnancy on ultrasound imaging [2]. Uterine rupture may occur in up to 20% of the cases that progress beyond 12 weeks of amenorrhea, resulting in massive hemorrhage due to high vascularity in this region through the branches of the uterine and ovarian arteries, leading to a higher mortality rate [3]. There have been case reports regarding cornual pregnancy resulting in viable fetus, it has been reported that an interstitial pregnancy which was not ruptured at the time of cesarean delivery, hysterectomy was not necessary and a viable fetus was delivered [6]. In another scenario due to decreased fetal movements emergency cesarean section was done uneventfully in a 37 week pregnant lady. Intraoperatively it was diagnosed as a case of placenta previa with pregnancy in right non-communicating horn of uterus [3]. Although laparotomy with cornual resection or hysterectomy had been offered as treatment for interstitial pregnancy in the past, more conservative routes like cornuostomy instead of cornual resection, laparoscopic approach replacing laparotomy are being looked into [2].

Case Report

Our patient is a 31-year-old Asian Female, G3P1A1, who presented on 9th of April 2023 with h/o amenorrhea and a positive pregnancy test for routine antenatal visit. LMP date was 14th of Feb 2023. In the past history, she had laparoscopic appendectomy, laparotomy and left salpingectomy for hydrosalpinx in 2005. She had undergone D&C in 2018 for missed abortion. Elective cesarean was done in June 2021 for breech presentation. Clinical and vaginal exam was normal. β -hCG done on 9th of April 2023 came as 22507 mIU/mL. Ultrasound of Pelvis(trans-abdominal) on 10th April 2023 showed left adnexal well defined thick walled cyst/gestational sac showing fetal pole within of crown-rump length = 8 mm denoting GA = 6W5D and positive cardiac pulsation. No appreciable fluid collection or hematoma could be noted on the current study. Uterus is anteverted and shows normal size. It measures 10.5 x 4.8 x 6 cm. No evidence of intrauterine gestational sac could be noted. Normal contour and echo pattern of the uterus is seen with no evidence of any solid or cystic lesion of the wall. Endometrial thickness is 16 mm. Smooth endometrial lining - no focal thickening or hyperplasia was seen. Both ovaries appear normal in size and show a normal echo pattern.

Left cornual ectopic pregnancy was diagnosed. Diagnostic laparoscopy and proceed was advised to the patient and after obtaining the necessary consents and labs, surgery was performed.

Following pneumoperitoneum and insertion of camera port in the standard fashion, a sac was found in the left uterine cornual region. Laparoscopic visualization revealed a uterus that appeared normal, with previous cesarean section scar present on the ves-

outerine fold. An ectopic mass was seen in the left uterine cornual region that appeared to be arising from the stump of salpingectomy from previous ectopic pregnancy (Figure 1). Left ovary appeared normal (Figure 2). Right side ovary and fallopian tube appeared normal.



Figure 1: Ectopic pregnancy sac arising from left side cornual tube.

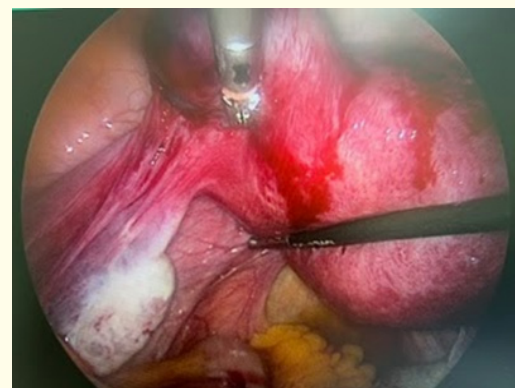


Figure 2: Normal left side ovary.

The ectopic mass was resected in toto using bipolar and scissors. The excised specimen was placed in an endobag and removed through the umbilical port and later sent for histopathology examination. No free fluid was seen. Hemostasis was achieved with bipolar cautery. Exploration of the abdominal cavity revealed normal abdominal structures. Abdominal cavity was irrigated. Liver and spleen beds, subdiaphragmatic areas were checked and suctioned. Operated area was reexamined before coming out (Figure 3). Laparoscopic port sites were visualized. The rectus sheath and skin incisions were sutured. Estimated blood loss was 30 ml. Laparoscopic Cornuectomy was performed with removal of products of conception successfully with no adverse or unanticipated events occurring. Histopathology reported the microscopic section comprises of tubular structure distended by chorionic villi showing a normal proliferation of cytotrophoblasts and syncytiotrophoblasts (polar). Fibrinoid necrosis of vessels and some decidua is also seen. No gestational trophoblastic disease is seen.



Figure 3: After ectopic removal.

Discussion

The incidence of cornual EP being low, mostly the case reports are the main source of information in literature. Cornual pregnancy falls under high risk EP as it has six to seven percent greater mortality rate compared to other EP. Approximately 2-4% of all EP are Cornual EP [7]. Hence diagnosing the problem earlier is crucial for successful management. Mainly, the clinical examination, the lab result of β -hCG level, and transvaginal ultrasound scanning aide in the diagnosis. The β -hCG level in cornual EP is generally found to be higher than in tubal EP. Better association of implantation bed with the conceptus might probably explain the reason for the improved kinetics of β -hCG. β -hCG levels found in the literature were often lower than 10,000 mIU/ml; whereas in our patient, levels around 22507 mIU/mL was seen. Medical treatment is usually recommended to pregnancies with weak β -hCG levels because of the link to the viability of the conceptus [5]. The main limitation of our case report study is it could not explain or throw light on the mechanism of ipsilateral EP. The mechanism still remains unclear. Two theories have been put forward. Implantation of fertilized egg in the stromal part of fallopian tube via a recommunication path from abdominal cavity side (external migration theory). Implantation in the stromal part via the healthy fallopian tube (internal migration theory) [8]. It is important to identify the Cornual pregnancy early on because as the GA advances, the vascularity builds up which can cause massive bleeding in the event of rupture. The fallopian tube EP is less distensible as compared to CP where the myometrium is more distensible. This can delay identification of CP even up to 14 weeks. As in other EP, bleeding per vaginum and pain abdomen remain the common presenting symptoms of cornual and interstitial pregnancies. But implantation near to viable portions of the uterus, can cause delay in ultrasound identification of the diagnosis [1]. The laparoscopic technique remains the most common surgical treatment given the shortened time for diagnosis. Drainage of trophoblastic tissue through an incision in the cornual area after injecting vasopressin and hysterotomy suture are few of the available laparoscopic techniques. Fibrin glue hemostasis, endoloop or encircle the suture before evacuating the conception products are other laparoscopically feasible methods [5]. Surgical approach is indicated in symptomatic and hemodynamically unstable patients. Ectopic mass with features of imminent rupture or

diameter greater than 35mm (GA>7W), where the use of methotrexate is not advisable, failure of conservative methods and according to patient preference, surgical intervention may need to be considered [9]. Laparoscopic Cornuectomy and Cornuostomy are the available minimal access surgical management techniques in interstitial pregnancy [10]. If the sac diameter is less than 40 mm, cornuostomy has been suggested (removing the gestational products by simple linear incision over the interstitial sac [11]. Raffaele Faiolo et al describe the advantages of cornual resection performed using the endoloop technique where three patients were successfully treated using this approach [12]. In one of the series of eleven case studies authors opined that intracornual methotrexate seems to be more efficacious than intramuscular methotrexate and can be injected directly into the cornua via laparoscopy or TVUS [11]. In few selected patients with Cornual EP, Single incision laparoscopic surgery has been shown to be safe and feasible. The authors using two ENDOLOOP ligatures achieved better hemostasis with decrease in operative time [13]. With the use of enhanced techniques blood loss in laparoscopic surgeries has been decreasing over time. Less surgical time with less hospitalization stay has been seen in laparoscopic approach group for interstitial patients as compared to laparotomy group [14]. Those patients who have undergone medical management or cornuostomy are prone to recurrence whereas cornual resection surgery might increase the fragility of uterine wall predisposing them to uterine rupture [15]. Additional anatomy related factors that can predispose an individual to recurrent interstitial pregnancy risk include hydrosalpinges, blocked tubes, endometriosis, fibroids and prior tubal ectopic pregnancies. Systemic or local methotrexate injections as the first choice when additional anatomical risk factors are absent and cornual wedge resection as the choice in presence of anatomical risk factors has been suggested to prevent recurrent interstitial pregnancy [16]. Resection of the fallopian tube and coagulation of the remnant tissue, longer time period for getting pregnant again, and finally, hysteroscopy to check the fallopian tube angle before pregnancy may help reduce the recurrence of cornual pregnancy [8].

Conclusion

In a patient with previous ipsilateral salpingectomy, coming with ectopic pregnancy, the possibility of cornual pregnancy must be borne in mind. High levels of β -hCG and imaging along with the clinical scenario can guide us in making the surgical decision. Laparoscopic management of cornual pregnancy aids in quickness of diagnosis, can be done successfully in well-equipped settings, and adequate hemostasis can be achieved. Long term follow-up results of operated ectopic pregnancy cases, the surgical technique adopted, future pregnancy status etc., need to be analyzed from the literature to be able to better identify the probable causes and prevent recurrent cornual/ectopic pregnancy.

Consent

Written informed consent was obtained from the patient for publication of this case report and any accompanying images.

Financial Relationships

All authors have declared that they have no financial relationships with any organizations that might have an interest in the submitted work.

Authors' Contribution

All authors contributed equally to this study.

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