Ectopic gestation can be present at various parts of the tube; the most common site being the ampulla. If it occurs in the interstitial region, it is called cornual gestation. 2-4% of ectopic gestation can be in the cornual region. Management depends upon the time at diagnosis. Early cornual gestation can be managed medically while advanced cornual gestation needs surgery that may range from conservative to radical depending upon clinical presentation. The mortality rate due to rupture of a cornual pregnancy can range from 2 to 2.5% if not managed promptly. The high mortality rate is due to the presence of increased vascularity of the cornual region. A case report of a cornual pregnancy and its management is being presented.

Keywords: Ectopic, Pregnancy, Rupture

INTRODUCTION

The part of the fallopian that lies within the musculature of uterus is called the interstitial or cornual region. It measures 1-2 cm with a diameter of 0.7 mm. Its course is slightly tortuous and extends upward and outward in an oblique manner from within the uterine cavity.

Interstitial or cornual pregnancy is implanted at this site. Although, among the ectopic pregnancies, ampullary region is the most common site; the risk of maternal mortality is more with cornul pregnancy. Moreover, the diagnosis of cornul pregnancy is difficult as they are diagnosed relatively late around 7-12 weeks as myometrium at this region can undergo distension allowing the pregnancy to grow; and if at all cornual rupture occurs it leads to hypovolemia and shock due to profuse haemorrhage.

CASE REPORT

A 30-year-old G3P2L2 Mrs. S presented with abdominal pain following 9 weeks amenorrhea on August, 03, 2014 at 9 pm to our institution. On examination, her general condition and vitals were stable, and there was no pallor. On per vaginal examination, uterus was enlarged to 8 weeks, and there was no cervical motion tenderness and fornices were free. An ultrasound examination revealed empty uterine cavity and right live cornual pregnancy. As the patient requested for sterilization, we performed an emergency laparotomy. Operative findings revealed a right cornual pregnancy with impending rupture (Figure 1). We proceeded for the right cornual resection with right salpingectomy and left tubal ligation (Figure 2). Figure 3 shows a specimen with the fetus. Post-operative period was uneventful. She was discharged on the 5th post-operative day without any complications.

DISCUSSION

Cornual pregnancy poses difficulty in early diagnosis. There was no difficulty in diagnosis of our patient as gestational age was 9 weeks.

The diagnosis of cornual pregnancy is difficult because the gestational sac will be seen in an eccentric position, and the adjacent myometrium will be thinned out due to distension; giving the appearance of an eccentric intrauterine pregnancy.

Diagnosis can make with trans abdominal or transvaginal ultrasound using following criteria:

1. Uterine cavity should be empty of gestational sac.
2. <10 mm of the lateral edge of the uterine musculature would be measured from the gestational sac.
3. The myometrial layer surrounding the sac would be thin.
4. Early cornual gestation may be seen located in the lateral part of the uterus but if detected late, the cornual gestation may mimic an eccentrically located intrauterine pregnancy also known as “interstitial line” sign.
5. In cornual gestation, a thin echogenic line may be seen extending up to the gestational sac representing either the interstitial portion of the fallopian tube or the cavity of endometrium that depend on the size of cornual gestation.

Sonologist should take care in interpretation as a normal intrauterine pregnancy in an anomalous uterus (bicorneate or septate) may mimic a cornual pregnancy. Increased flow
a gestational sac can be seen surrounded by myometrium below the cornu and away from endometrium.\textsuperscript{3}

Differential diagnosis of cornual pregnancy is the angular pregnancy, which is implanted lateral to the round ligament. 3D and 4D transvaginal ultrasound provides diagnostic accuracy if there is doubt in the diagnosis.

The risk factors are as for other types of ectopic pregnancy are contralateral salpingectomy, previous ectopic pregnancy and \textit{in vitro} fertilization.

\section*{Complications and Management}

\subsection*{Uterine myometrial rupture}
Uterine myometrial rupture: This usually occurs after 12 weeks of gestation and leads to profuse intra-abdominal bleed and hemorrhagic shock because the cornual region of the uterus is extensively supplied by both uterine and ovarian vessels. This can lead to sudden collapse and death.\textsuperscript{4} Laparotomy is the preferred treatment of choice in rupture of advanced cornual gestation. Unilateral uterine artery ligation prior to attempting at repairing a ruptured cornu helps in achieving hemostasis better. However, laparoscopic cornuectomy can also be performed by experienced surgeon with significant hemoperitonium along with blood transfusion. Only a skilled laparoscopic surgeon should attempt surgery in such cases to safeguard the life of the patient and if need arises the surgery should be converted to laparotomy.

\subsection*{Other Management Options}

\textbf{Medical management}
Cornual pregnancy can also be managed with systemic methotrexate if diagnosis is made early. In such cases, surgery can be avoided. Use of local injection of methotrexate either transvaginally or under ultrasound guidance or laparoscopically is also highly effective. The recommendations given by The Royal College of Obstetrician & Gynaecologists is that patients with ectopic gestation should be managed medically only if their beta human chorionic gonadotropin (hCG) level is <3000 IU/L and patient should be asymptomatic or has only minimal symptoms. However, medical management can also lead to complications like rupture of uterine cornu leading to profuse hemorrhage and shock. Relative contraindications for medical management include an advanced and live cornual ectopic.

The pre-requisite for medical management include:
\begin{itemize}
  \item a. Hemodynamic stability
  \item b. No signs of rupture
  \item c. Motivated to attend for regular (perhaps prolonged) follow-up
  \item d. No medical contraindications to methotrexate.
\end{itemize}
The initial level of beta hCG may predict the need for a second dose of methotrexate. It is given in the dose of 1 mg/m². Single-dose methotrexate is not associated with toxicity, and folic acid rescue is not needed.

Other nonsurgical procedure comprises of selective uterine artery embolization along with methotrexate or in methotrexate failure to decrease the vascularity and prevent catastrophic haemorrhage. Other nonsurgical procedure comprises of selective uterine artery embolization along with methotrexate or in methotrexate failure to decrease the vascularity and prevent catastrophic haemorrhage.5,6

**Hysteroscopic Management**

The rationale behind this approach is to avoid more extensive surgery. Candidates suitable for the hysteroscopic management include those who do not wish for medical management with methotrexate or those who do not respond to medical treatment. However, laparoscopic guidance may be needed during resection of cornual endometrium including tubal ostium.8

**Surgical Management**

Consists of conservative techniques, such as cornual resection, cornuostomy and radical operations such as hysterectomy. These can be performed either by laparotomy or laparoscopically. If the hemorrhage is life threatening the surgeon may resort to radical surgery like hysterectomy. Conservative management either medical or surgical has a high risk of recurrence in the subsequent pregnancy. Conservative surgical methods involve salpingostomy if gestation is <3.5 cm. For gestation more than 4.5 cm, cornual resection is preferred. Tubal pathology and the assisted reproductive conception are the cause for recurrence. However, cornual resection affects future fertility, and there is always a chance of rupture uterus at the scar site in the future pregnancy.

**CONCLUSION**

Cornual pregnancy management can be a nightmare as the diagnosis is difficult and therapeutic options also carry risks. There is a greater risk of maternal mortality than any other ectopic pregnancy. Early diagnosis and management forms the mainstay in the conservative management. Hysteroscopic approach is another option that is usually performed under laparoscopic guidance. Cornual excision and hysterectomy are the traditional treatments but medical management with systemic, or local methotrexate and laparoscopic cornuectomy can be performed after adequate counseling regarding risk rupture uterus in future pregnancy and mode of delivery. It is recommended to perform an elective caesarean section in subsequent pregnancy.

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