Pregnancy Outcome in Unicornuate Uterus with Rudimentary Horn

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Keywords: Pregnancy, Rudimentary Horn, Unicornuate Uterus

Abstract

Background: Unicornuate uterus with rudimentary horn is one of the rare mullerian congenital anomalies (class-II) and consists of a relatively normal appearing uterus on one side with rudimentary horn on the other side. Pregnancy can occur either in unicornuate uterus or in rudimentary horn. If pregnancy occurs in unicornuate uterus, outcome may be spontaneous abortion, preterm labour or term delivery. Obstetric complications like breech presentation, IUGR, dysfunctional labour and caesarean section also are more common. If pregnancy occurs in rudimentary horn, rupture is a rule when undiagnosed. Aim: To study pregnancy outcome in unicornuate uterus with rudimentary horn.

Methods: This is a study of 8 cases diagnosed at laparotomy/ LSCS at Mamata general hospital over a period of 5years from November 2010 to october2015. Pregnancy outcome of 18 pregnancies in these 8 cases was studied retrospectively.

Results: 5 (27.8%) patients came with rudimentary horn pregnancy. 4(80%) were ruptured and one(20%) was unruptured. 13 (72.2%) pregnancies occurred in unicornuate uterus. 3 pregnancies (23.1%) aborted spontaneously. Preterm and term deliveries were seen in 3 (23.1%) and 7 (53.8%) pregnancies respectively. Obstetric complications present were breech-1(7.7%), IUGR-3(23.1%), oligohydramnios- 4(30.8%), intra-uterine death-2 (15.4%) and LSCS- 6(46.2%). There were 8 (61.5%) live births.

All the four ruptured rudimentary horn pregnancies presented around 20 weeks of gestation. Out of these one patient died of irreversible shock.

Conclusion: Pregnancy in unicornuate uterus with rudimentary horn is associated with poor pregnancy outcome. Especially pregnancy in rudimentary horn has considerable morbidity and occasional mortality.

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INTRODUCTION

Uterine malformations are the results of abnormal mullerian duct development-fusion, canalization and septal defects. Unicornuate uterus with a rudimentary horn is one such anomaly of uterus occurring due to fusion defects. It belongs to class-II mullerian anomalies according to classification by American fertility society. Failure of one mullerian duct to develop and elongate completely or partially with normal development of other horn leads to absence or presence of rudimentary horn along with unicornuate uterus. The attachment of the rudimentary horn to main uterus varies from a fibro muscular band to an extensive fusion between the two horns where there is no external separation between them.

The incidence of mullerian duct malformations in the general population is estimated to be to be 4.3% while that of unicornuate uterus is about 0.4%. According to Reichman, (2009), it is 1 in 4000 women. It constitutes 2.4-13% of all mullerian anomalies. Rudimentary horn pregnancy occurs in approximately 1/1,00,000 to 1/1,40000 pregnancies.

This condition has an apparently normal unicornuate uterus, round ligament, fallopian tube on one side along with normal cervix. On the other side rudimentary horn with or without cavity, communicating or not, may or may not be present. Active endometrium in non-communicating rudimentary horn may present with cyclic, unilateral dysmenorrhea. Conception in the rudimentary horn is very rare, and occurs either from small communication with uterine cavity or by trans-peritoneal migration of the sperm from contralateral side.

Diagnosis may be suspected by clinical examination- 1) Bimanual palpation of a mass extending outside the uterine angle (Baart’s de la Faille’s sign); 2) displacement of the fundus to the contralateral side with rotation of the uterus and elevation of the affected horn (Ruge Simone syndrome); and 3) deviation of uterus to one side with an adrenal mass in pregnancy may indicate the presence of rudimentary horn.

Hysterosalpingography, ultrasonography and magnetic resonance imaging may be useful in diagnosis of unicornuate uterus. HSG shows a deviated ‘banana-shaped’ uterus with single fallopian tube. Trans-vaginal sonography may show a small, well-formed elliptical uterus with single cornu deviated to one side. 3-D imaging and MRI may give a classic banana picture. Renal anomalies are detected in 40% of cases.

Rudimentary horn pregnancy is complicated by rupture and intraperitoneal haemorrhage. Rudimentary horn pregnancy is very difficult to diagnose before it ruptures. Ultrasound shows- 1) A pseudo pattern of asymmetrical bicorunuate uterus; 2) Absent visual continuity of tissue surrounding the gestation sac and the uterine cervix 3) Presence of myometrial tissue surrounding the gestation sac. None-the-less most cases remain undiagnosed until it ruptures and presents as an emergency. 80% rupture before III trimester (Nahum,2002).

Unicornuate uterus may be complicated by unilateral dysmenorrhea, infertility and endometriosis. Pregnancy in unicornuate uterus is associated with a high rate of spontaneous abortion, preterm labour, intrauterine growth retardation, intra-uterine death, breech presentation, pre-labour rupture of membranes (Chan 2011), dysfunctional labour and caesarean section (Acien, 1993).

Pathogenesis of pregnancy loss in unicornuate uterus is poorly understood. It may be because of reduced uterine capacity, anomalous distribution of uterine artery as suggested by Burschell and associated cervical incompetence. Currently there are no surgeries to enlarge the cavity of unicornuate uterus. Prophylactic cerclage and gestational surrogacy are a few options in management. Removal of rudimentary horn, especially with cavity can be done when diagnosed to reduce the morbidity. If there is no cavity, ipsilateral salpingectomy or salpingo-oophorectomy is done to prevent ectopic pregnancy although the risk is low.

MATERIALS AND METHODS

This is a study of 8 cases diagnosed at laparotomy/ LSCS at Mamata general hospital over a period of 5years from November 2010 to october2015. Pregnancy outcome of 18 pregnancies in these 8 cases was studied retrospectively. Data was compiled into frequency tables and analysed. Institutional board has approved the article.

RESULT

Base line characteristics of study population are shown in Table:1. Out of 18 pregnancies, 5(27.8%) pregnancies were in rudimentary horn and 13(72.2%) occurred in unicornuate uterus. Age of the study population ranged from 17 to 28years with mean being 22.8years. Gestational age at presentation ranged from 7 weeks 5 days to 39weeks and mean gestational age was 29.4 weeks.

Table 1: Base line characteristics of study population

| Pregnancy in rudimentary horn | 5 (27.8%) |
| Pregnancy in unicornuate uterus | 13(72.2%) |
| Range(age) | 17-28y |
| Mean age | 22.88y |
| Gestational age-range | 7wks 5 d – 39 wks |
| Mean gestational age | 29.94 (30wks) |

Table-2 shows pregnancy outcome in rudimentary horn pregnancy & its characteristics. Out of 5 pregnancies in rudimentary horn, 4 (80%) were ruptured at presentation [figure-1] and one (20%) was unruptured [figure-2]. Gestational age at presentation ranged from 7 weeks 5 days to 22 weeks 3 days with mean being17weeks 3days. There was one maternal death.

Pregnancy outcome in unicornuate uterus is shown in table-3. Out of 13 pregnancies in unicornuate uterus, abortion, preterm delivery and IUGR was present in 23.1% each. Malpresentations complicated 7.7% pregnancies, oligohydramnios in 30.8% and IUD in 15.4%. Rates of term delivery, LSCS and live births were 53.8%, 46.2% and 61.5% respectively. 5.5% had history
of infertility in present study. There was no case of pre-eclampsia and renal anomalies.

Table 2: Pregnancy outcome in rudimentary horn pregnancy & its characteristics

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>No. of horn pregnancies n=5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ruptured</td>
<td>4 (80%)</td>
</tr>
<tr>
<td>Unruptured</td>
<td>1 (20%)</td>
</tr>
<tr>
<td>Gestational age at presentation-range</td>
<td>7wk 5d – 22wk 3d</td>
</tr>
<tr>
<td>Gestational age-mean</td>
<td>17wk 3d</td>
</tr>
<tr>
<td>Maternal death</td>
<td>1 (20%)</td>
</tr>
</tbody>
</table>

Table 3: Pregnancy outcome in unicornuate uterus

<table>
<thead>
<tr>
<th>Pregnancy outcome</th>
<th>No. of pregnancies n=13</th>
<th>percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abortion</td>
<td>3</td>
<td>23.1%</td>
</tr>
<tr>
<td>Preterm</td>
<td>3</td>
<td>23.1%</td>
</tr>
<tr>
<td>Term</td>
<td>7</td>
<td>53.8%</td>
</tr>
<tr>
<td>Malpresentations</td>
<td>1</td>
<td>7.7%</td>
</tr>
<tr>
<td>IUGR</td>
<td>3</td>
<td>23.1%</td>
</tr>
<tr>
<td>Oligohydramnios</td>
<td>4</td>
<td>30.8%</td>
</tr>
<tr>
<td>IUD</td>
<td>2</td>
<td>15.4%</td>
</tr>
<tr>
<td>Live births</td>
<td>8</td>
<td>61.5%</td>
</tr>
<tr>
<td>Pre-eclampsia</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>LSCS</td>
<td>6</td>
<td>46.2%</td>
</tr>
</tbody>
</table>

DISCUSSION

When pregnancy occurs in the rudimentary horn, as the foetus enlarges, the chances of rupture in the first or second trimester are increased. Catastrophic haemorrhage results in increased maternal morbidity and mortality. Majority of cases are diagnosed after rupture of the rudimentary horn. When pregnancy occurs in developed unicornuate uterus, complications are more and pregnancy outcome tends to be poor.

In present study, five (27.8%) patients came with rudimentary horn pregnancy. All rudimentary horn pregnancies were diagnosed intra-operatively. Four (80%) were ruptured at presentation in II trimester. One patient presented at 22 weeks 3 days with rupture of rudimentary horn and died of irreversible shock despite vigorous resuscitative measures. In a study by P.K.Heinonen, rate of rudimentary horn pregnancy was 22%. It ruptured in only 3/7 cases. However in a review of studies by Reichman et al, only 2.7% had ectopic pregnancy in rudimentary horn. In another study by Vani Malhotra et al, eighteen patients (47.38%) had rudimentary horn pregnancy and 17 presented in the second trimester. All patients underwent laparotomy, 12 for hemoperitoneum and 5 for failed induction. Preoperative diagnosis was suspected clinically in 13/18 cases. In a study by Goel et al, pre-operative diagnosis was suspected in 2/7 cases. Two were seen in I trimester, and five in II trimester. With high index of suspicion pre-operative diagnosis is possible by clinical examination and USG.

One un-ruptured case presented at 7 weeks 5 days in I trimester as ectopic pregnancy in present study. Two similar cases were reported to be diagnosed before rupture in I trimester by Nagaratna and D. Sharma, where resection of horn along with salpingectomy was done. In their case report, Deepti Sharma et al reported a case with 12 weeks gestation, where laparoscopic resection of non-communicating unruptured rudimentary horn pregnancy was carried out making laparoscopy a safe alternative to laparotomy.

Most horn pregnancies end up disastrously and rupture before 20 weeks of gestation. There are very rare case reports of unruptured horn pregnancy with live birth in literature. A case report by G. Nahum showed Twin pregnancy in rudimentary horn, where both babies survived. Goel P reported an extremely rare case of non-communicating unruptured rudimentary horn pregnancy that progressed to 41 weeks and 3 days period of gestation which was missed at 18-34 weeks by ultrasound and later wrongly diagnosed as abdominal pregnancy. Similarly Patra S et al reported a multigravida who presented at 37 weeks of gestation with transverse lie and oligohydramnios. At laparotomy non-communicating unruptured rudimentary horn pregnancy with a live fetus and placenta percreta was revealed.

Laparotomy with resection of rudimentary horn was done in all rudimentary horn pregnancies in present study similar to study by Vani Malhotra et al. Indications for resection (Anne deviwold,2006) are rupture, unilateral dysmenorrhea, and haematometra.
In present study, thirteen pregnancies occurred in unicornuate uterus with rudimentary horn and diagnosis was made incidentally at LSCS similar to studies by Vani Malhotra and Goel et al. All obstetric complications like abortion, preterm delivery, IUGR, IUD, were more compared to normal, similar to study by Goel et al. Rate of abortion was 23.1%, similar to 25.8% in Goel et al and 24.3% in Reichman et al. Rate of preterm delivery was 23.1% similar to 20.1% in Reichman et al. 15.4% had intruterine fetal demise compared to 3.8% in Reichman et al. Primary infertility in a study by P.K.Heinonen was 14% but in present study it was 5.5%. The patient conceived after ovulation induction and intra-uterine insemination.

Unilateral renal agenesis was 38% in the study by PK Heinonen and was associated with pre-eclampsia. In Goel et al, 16.7% had renal anomalies similar to 13.1% in Vani Malhotra et al. But in present study there was no case of pre-eclampsia and renal agenesis. LSCS rate when pregnancy occurred in unicornuate uterus was 46.2% similar to Goel et al (38.7%).

Pregnancy outcome in present study was poor overall. However rate of term delivery was 53.8%, compared to 32.25% in Goel et al may be because of good antenatal care overall. Live birth rate was 61.5%. In two review of studies it was 54% & 51% respectively. Poorest outcomes were associated with unicornuate uterus among all uterine anomalies according to Paul C Lin.

CONCLUSION
Pregnancy in unicornuate uterus with rudimentary horn is associated with poor outcome. Especially pregnancy in rudimentary horn has considerable maternal morbidity and occasional mortality.

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COMPETING INTERESTS
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REFERENCES

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