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Case Report

# Twin Gestation in a Non-Communicating Rudimentary Horn Mimicking Tubal Ectopic Pregnancy on Early Transvaginal Sonography

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## ABSTRACT

An uncommon and potentially fatal type of ectopic gestation linked to Müllerian duct abnormalities is pregnancy inside a primitive uterine horn. Because imaging results may resemble tubal ectopic pregnancy, twin gestation in a non-communicating rudimentary horn is extremely rare and presents a substantial diagnostic hurdle. After experiencing amenorrhea for six weeks, a primigravida in her twenties came in for a normal prenatal examination. Transvaginal sonography revealed an eccentrically positioned gestational sac with two viable embryos encased in a thick hypoechoic myometrial mantle, as well as an empty uterine cavity. Twin tubal ectopic pregnancy was initially suspected based on the imaging look. A laparoscopic examination revealed a unicornuate uterus with a rudimentary, non-communicating horn that held the twin gestation. The ipsilateral salpingectomy and laparoscopic removal of the rudimentary horn were effectively completed. Products of conception within an endometrial-lined, rudimentary horn that does not communicate were confirmed by histopathological investigation. To avoid rupture and severe maternal bleeding, early detection and timely surgical intervention are crucial.

***Keywords****: Unicornuate uterus; Müllerian abnormality; rudimentary horn pregnancy; twin gestation; ectopic pregnancy; transvaginal sonography.*

## INTRODUCTION

An uncommon type of ectopic gestation linked to Müllerian duct defects, pregnancy within a rudimentary uterine horn carries a high risk of uterine rupture, severe intraperitoneal haemorrhage, and maternal morbidity if delayed diagnosis. The prevalence of rudimentary horn pregnancy is believed to be between 1 in 100,000 and 140,000.[2] The majority of pregnancies take place in a non-communicating horn as a result of the fertilized ovum or sperm migrating transperitoneally.[2]

In a non-communicating rudimentary horn, twin gestation is extremely uncommon and poses significant diagnostic difficulties.[3] Particularly in the early stages of pregnancy, clinical and sonographic results may strongly resemble tubal ectopic pregnancy, interstitial pregnancy, or angular pregnancy.[4,5] If the diagnosis is delayed, the rudimentary horn may burst, usually in the second trimester, which could be fatal for the mother.

Accurate diagnosis and prompt treatment depend on early identification of distinctive imaging features, such as an eccentrically positioned gestational sac encircled by myometrium and lack of continuity with the cervical canal.[5] This example emphasizes the significance of keeping a high index of suspicion for rudimentary horn pregnancy when assessing an extrauterine gestational sac on first-trimester transvaginal sonography that appears to have an abnormally thick surrounding wall.

**CASE PRESENSATION**

After six weeks of amenorrhea and a positive urine pregnancy test, a primigravida in her twenties came in for a standard first-trimester prenatal assessment. The patient was asymptomatic at the time of presentation and had no history of syncopal episodes, vaginal bleeding, abdominal pain, or dizziness. The pregnancy was spontaneous. There was no known family history of congenital uterine abnormalities or repeated miscarriages, nor was there any noteworthy prior medical, surgical, or gynaecological history.

The patient had stable hemodynamic upon clinical assessment. Examining the abdomen revealed nothing unusual, including no palpable lump or soreness. No cervical motion pain or adnexal soreness were found during the pelvic examination.

To ascertain gestational age and establish viability, transvaginal sonography was used. Imaging showed a decidualized endometrium and an empty uterus. Superolateral to the uterus and separate from the endometrial cavity was shown to be an eccentrically situated gestational sac. The thick circumferential hypoechoic myometrial mantle encircled the gestational sac. Within the gestational sac, two living embryos were visible. The first embryo's crown-rump length was 0.93 cm, whereas the second embryo's was 1.05 cm. This indicates a gestational age of roughly 7 weeks with little inter-embryonic discordance.

Sonography revealed no discernible contact between the uterine cavity or the cervical canal and the gestational sac. The eccentric extrauterine placement originally supported a tentative diagnosis of twin tubal ectopic pregnancy, despite the surrounding hypoechoic wall appearing thicker than would be expected for a fallopian tube.

Laparoscopic exploration was performed due to the significant danger of rupture and severe bleeding. During the procedure, a distended left rudimentary horn harbouring the twin gestation was discovered beside a right-sided unicornuate uterus with normal bilateral ovaries. Without any contact with the main uterine cavity, the primitive horn was joined to the unicornuate uterus by a thin fibromuscular stalk. The adjacent myometrial mantle looked noticeably thinner.

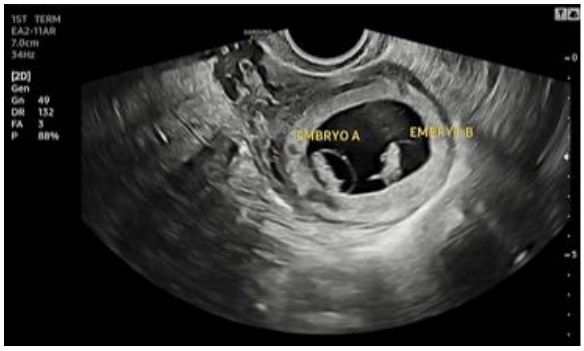


***Figure 1:*** *Transvaginal ultrasound (first trimester) demonstrating a twin intrauterine gestation. A single gestational sac is visualized containing two embryos (Embryo A and Embryo B), consistent with a monochorionic diamniotic twin pregnancy. Both embryos are seen with identifiable fetal poles within the gestational sac.*

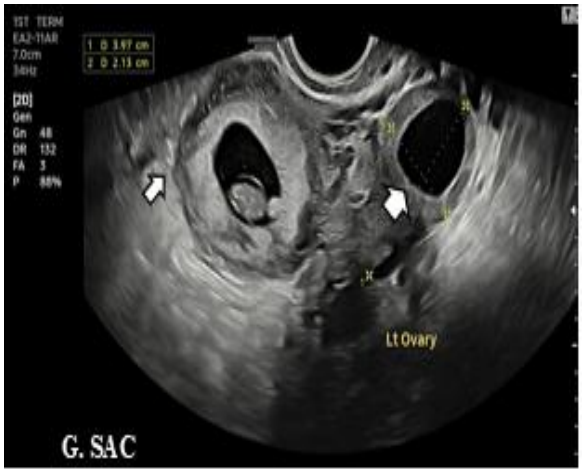


***Figure 2:*** *Transvaginal ultrasound showing an eccentrically located gestational sac with a disproportionately thick hypoechoic rim, suggestive of myometrial lining rather than a tubal wall. The left ovary is seen separately, favouring a non-adnexal ectopic implantation.*

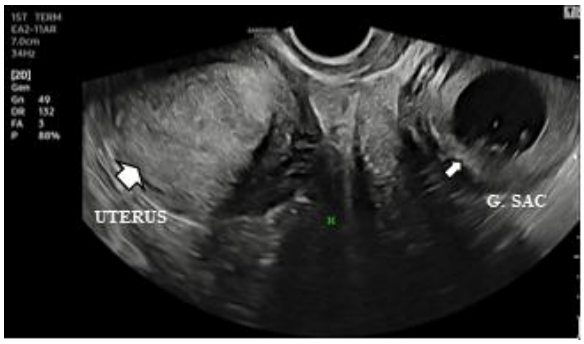


***Figure 3:*** *Transvaginal ultrasound showing a gestational sac separate from the uterine cavity, with no demonstrable stalk or communication, leading to a presumptive diagnosis of ectopic twin pregnancy.*

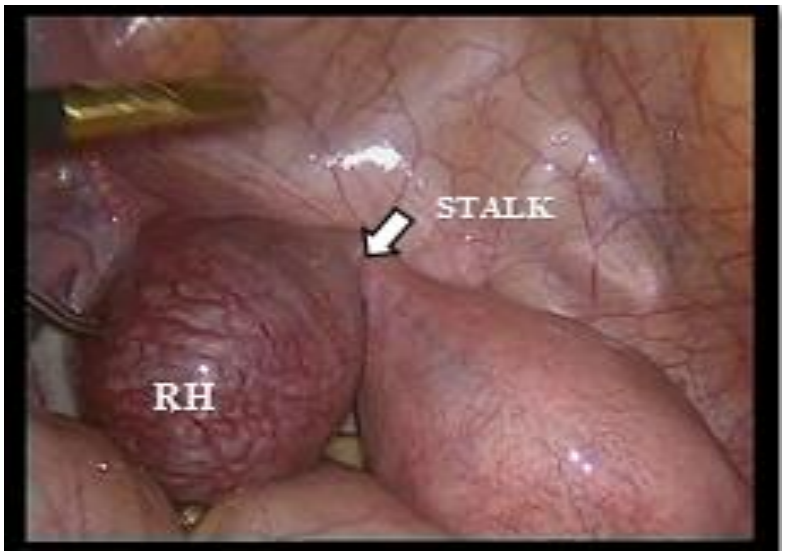


***Figure 4:*** *Laparoscopic image demonstrating the fibrous stalk connecting the rudimentary horn (RH) to the unicornuate uterus.*

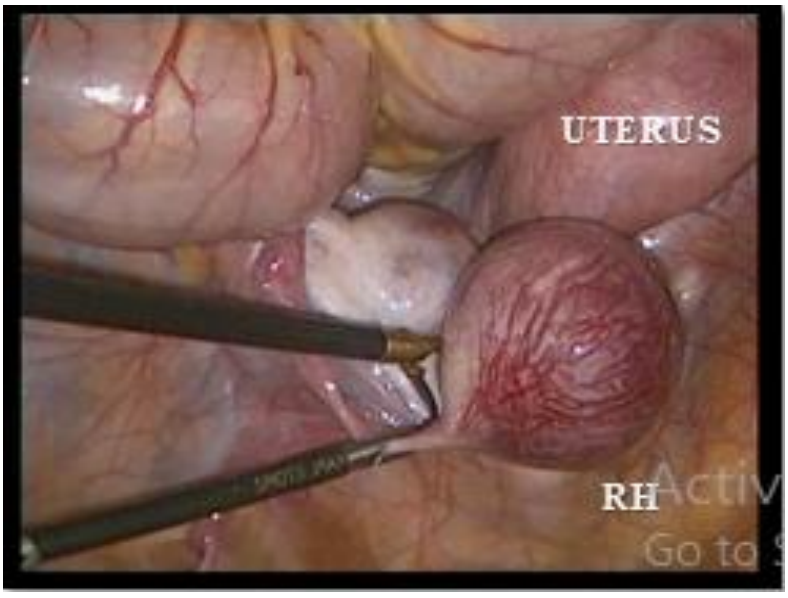


***Figure 5:*** *Intraoperative laparoscopic image showing a right-sided unicornuate uterus with a distended rudimentary horn (RH) on the left side containing the gestation.*

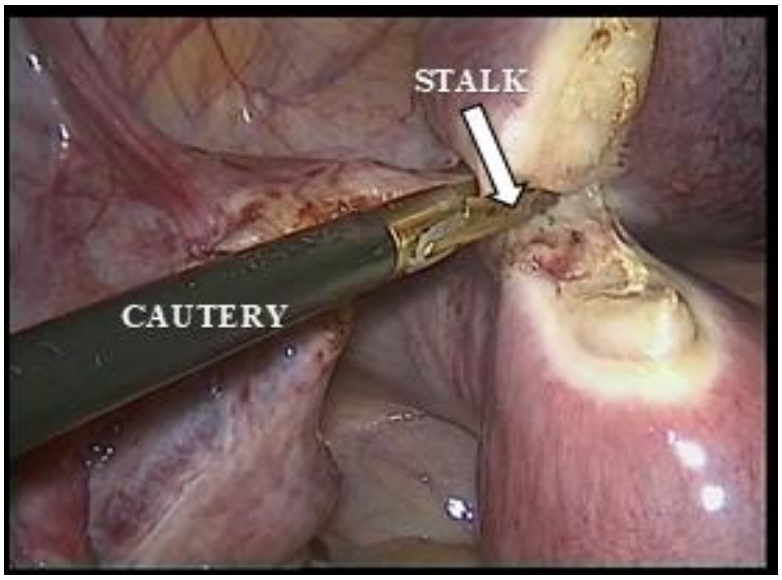


***Figure 6:*** *Laparoscopic view demonstrating bipolar cauterization of the pedicle followed by stalk transection*

The ipsilateral ovary was preserved by laparoscopic removal of the rudimentary horn and ipsilateral salpingectomy. Twin gestation within a non-communicating rudimentary horn was confirmed by histopathological testing, which revealed an endometrial-lined chamber holding products of conception without canalicular connection with the uterine cavity.

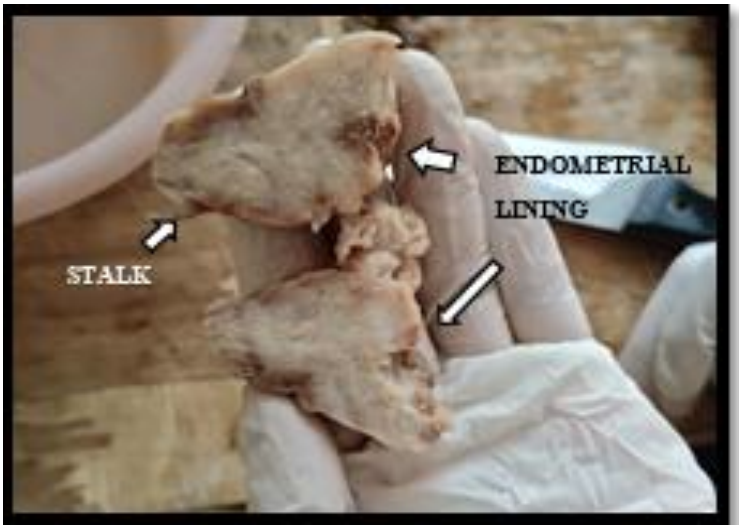


***Figure 7 (A)***


***Figure 7(B)***


***Figure 7(C)***

***Figure 7 A–C:*** *Gross specimen of a rudimentary uterine horn demonstrating a well-formed endometrial lining within the horn* ***(A, B).*** *A fibromuscular stalk is seen extending from the rudimentary horn toward the normal sized right cornua* ***(B, C).*** *The stalk is non-communicating, with no identifiable endometrial tissue within it, confirming absence of luminal continuity with the main uterine cavity*

**CLINICAL EVENT**

| **Clinical event** | **Timeline** |
|---|---|
| A positive urine pregnancy test and amenorrhoea | 6 weeks of pregnancy |
| Regular prenatal transvaginal sonography | Day 1 |
| Provisional diagnosis of twin ectopic pregnancy | Day 2 |
| Diagnostic laparoscopy | Day 2 |
| Ipsilateral salpingectomy and removal of rudimentary horn | Day 2 |
| Confirmation of histopathology after surgery | Two weeks after surgery, a follow-up assessment |

**INVESTIGATIONS**

Complete blood counts and regular prenatal biochemical markers were among the baseline laboratory tests that were within normal ranges. The urine pregnancy test came back positive.

The principal diagnostic test was transvaginal sonography, which showed:

- A decidualized endometrium in an empty uterus.
- A gestational sac that is eccentrically positioned and distinct from the uterus,
- The gestational sac is encircled by a thick, hypoechoic myometrial mantle.
- The gestational sac contains two living embryos.
- The crown-rump lengths are 1.05 cm and 0.93 cm, respectively.
- No discernible continuity between the cervical canal and the gestational sac.

Because of the apparent adnexal position, the imaging results initially favoured twin tubal ectopic pregnancy. But rather having a fallopian tube, the abnormally thick surrounding wall boosted the possibility of implantation within a primitive horn myometrium.

By revealing a unicornuate uterus with a rudimentary, non-communicating horn joined by a fibromuscular stalk, laparoscopy offered conclusive anatomical characterization.
An endometrial-lined compartment harbouring products of conception without luminal connection with the uterine cavity was shown by histopathological testing, which supported the diagnosis.

**DIFFERENTIAL DIAGNOSIS**

Due to the gestational sac's eccentric location outside the uterine cavity, twin tubal ectopic pregnancy was the primary diagnostic factor. This tentative diagnosis was supported by the apparent adnexal position and the lack of obvious continuity with the endometrial cavity.

Due to the eccentric implantation close to the uterine cornua, interstitial pregnancy was also taken into consideration. In contrast to what is usually seen in interstitial ectopic pregnancy, a more significant myometrial layer encircled the gestational sac.

Because there was little evidence of communication with the uterine cavity and the gestational sac did not appear implanted within the lateral angle of the endometrial cavity, angular pregnancy was deemed less plausible.
Another crucial differential diagnosis was pregnancy within a bicornuate uterus. Because the accessory horn was connected by a fibromuscular stalk, consistent with a primitive horn, and lacking communication with the main uterine cavity, this hypothesis was ruled out intraoperatively.

After laparoscopic examination and histological verification, the final diagnosis of twin gestation within a non-communicating rudimentary horn was made.

**TREATMENT**
Surgical treatment was used due to the high danger of rupture and catastrophic bleeding.
A right-sided unicornuate uterus with a swollen, non-communicating rudimentary horn that contained the twin gestation was revealed by laparoscopic examination. A slender fibromuscular stalk joined the unicornuate uterus to the primitive horn.
Bipolar electrocautery and surgical transection of the fibromuscular stalk were used for laparoscopic removal of the rudimentary horn and ipsilateral salpingectomy. It preserved the ipsilateral ovary. To lower the chance of ectopic implantation in the future and avoid the recurrence of rudimentary horn pregnancy, the rudimentary horn was completely removed.

Analgesics, regular postoperative care, and hemodynamic monitoring were all part of postoperative supportive therapy.

**OUTCOME AND FOLLOW-UP**
The postoperative period was uneventful. The patient remained haemodynamically stable, with no evidence of postoperative bleeding or infection, and was discharged on the second postoperative day.

At follow-up evaluation 2 weeks later, the patient had recovered well with satisfactory wound healing and no abdominal or pelvic complaints. She had resumed routine daily activities without limitation.

The patient received counselling regarding the diagnosis of unicornuate uterus with a non-communicating rudimentary horn and was informed about the potential obstetric risks associated with future pregnancies, including preterm delivery, malpresentation, miscarriage, and intrauterine growth restriction.[7] Close antenatal surveillance in future pregnancies was advised, along with planned delivery by caesarean section if clinically indicated.

**DISCUSSION**
A rare and possibly fatal type of ectopic gestation caused by aberrant Müllerian duct development is pregnancy inside a primitive uterine horn.[2] The reported incidence is between 1 in 100,000 and 1 in 140,000 pregnancies. [2] The majority of primitive horn pregnancies take place in non-communicating horns, where the fertilized ovum or sperm are thought to migrate transperitoneally.[2,8]

These pregnancies are more likely to rupture during the second trimester due to the rudimentary horn's restricted distensibility and underdeveloped muscles, which can cause extensive intraperitoneal haemorrhage and serious maternal morbidity. Because clinical signs and imaging results often resemble other types of ectopic pregnancy, early diagnosis is crucial but still difficult.

Very few instances of twin gestation within a primitive horn have been documented in the literature, making it extremely rare.[3,9] The majority of instances previously reported were only identified upon rupture or during urgent surgery.[3] The diagnosis was taken into consideration during early first-trimester imaging prior to catastrophic rupture, which makes this case interesting.

Differentiating from tubal ectopic pregnancy was the main diagnostic issue in this instance. The following sonographic criteria were proposed by Tsafrir et al. to diagnose rudimentary horn pregnancy:

- A bicornuate uterine aspect that is pseudo-asymmetrical
- The gestational sac and cervical canal are not connected.
- The gestational sac is surrounded by myometrial tissue

The present case had several of these characteristics. Looking back, the abnormally thick hypoechoic rim enclosing the gestational sac was a crucial imaging clue that indicated primitive horn myometrium instead of a tubal wall.

It is crucial to distinguish between interstitial pregnancy, angular pregnancy, and pregnancy inside a bicornuate uterus due to the significant differences in treatment approaches and related hazards. When imaging results are unclear, careful transvaginal sonographic examination and prompt surgical exploration are essential.[5,10] By enhancing the definition of uterine anatomy and detecting a lack of continuity between the rudimentary horn and the endometrial cavity, magnetic resonance imaging may also help diagnose certain unclear instances.[5]

Reduced postoperative morbidity, a shorter hospital stay, and better pelvic anatomy visualization are all benefits of laparoscopic excision, which is regarded as the final treatment for rudimentary horn pregnancy.[4,6] It is frequently advised to remove the ipsilateral fallopian tube in order to lower the chance of another ectopic pregnancy.[4]

This example highlights the significance of keeping a high index of suspicion for Müllerian abnormalities in individuals who show up on first-trimester sonography with an eccentrically placed gestational sac encircled by a thick myometrial mantle. Preventing rupture and potentially fatal maternal complications requires early detection and timely surgical intervention.[2,5]

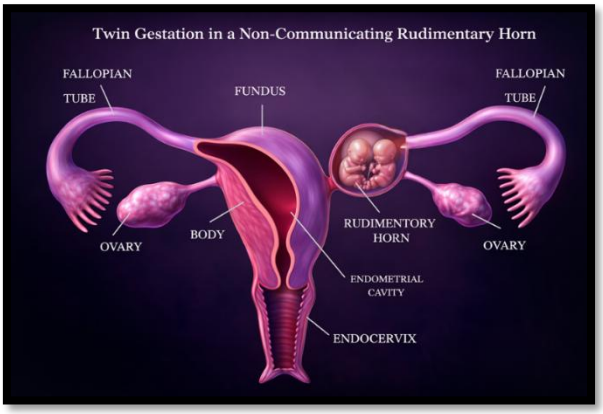


***Figure 8:*** *Schematic 3D illustration of twin gestation in a non-communicating rudimentary horn, demonstrating a normal unicornuate uterus with a separate rudimentary horn connected via a fibromuscular stalk. The rudimentary horn contains twin foetuses, with no communication with the endometrial cavity of the main uterine body. Bilateral ovaries and fallopian tubes are visualized separately.*

## LEARNING POINTS/TAKE HOME MESSAGES

- Patients who have a thick myometrial mantle surrounding an eccentrically positioned gestational sac should be evaluated for rudimentary horn pregnancy.
- On early sonography, twin gestation within a non-communicating rudimentary horn can resemble tubal ectopic pregnancy, which is extremely uncommon.
- One crucial diagnostic sign is the lack of continuity between the cervical canal and the gestational sac.
- In order to avoid rupture and severe bleeding, early laparoscopic excision is crucial.
- Maternal outcomes can be improved and pre-rupture detection made easier with careful first-trimester transvaginal sonographic examination.

## AUTHOR CONTRIBUTIONS

Each author made a significant contribution to the manuscript's inception, writing, editing, and final approval. The final version was accepted for publishing by all writers.


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## COMPETING INTERESTS

The writers claim to have no conflicting interests.

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