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Case Series

Non-communicating rudimentary horn of a unicornuate uterus: clinical spectrum and diagnostic challenges: a case series

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ABSTRACT

Pregnancy or hematometra in a non-communicating rudimentary horn of a unicornuate uterus is a rare and potentially life-threatening condition, often misdiagnosed due to its atypical presentation and resemblance to other pelvic pathologies. We report three cases highlighting the varied presentations and diagnostic challenges associated with rudimentary horn anomalies: a 28-year-old woman presented with persistent lower abdominal pain and bleeding following a failed medical termination of pregnancy. Imaging revealed a 12-week live gestation in a non-communicating rudimentary horn; a 36-year-old woman with chronic dysmenorrhea and a suspected subserosal fibroid was intraoperatively diagnosed with a rudimentary horn; and a 45-year-old perimenopausal woman with irregular menstrual cycle and an adnexal mass was found to have hematometra within a non-communicating rudimentary horn. Early diagnosis of rudimentary horn anomalies remains challenging. A high index of suspicion and appropriate imaging (MRI/3D ultrasound) are essential for accurate diagnosis and timely surgical intervention to prevent complications.

Keywords: Müllerian duct anomalies, Uterine diseases, Pregnancy, Ectopic, Hematometra, Diagnostic imaging

INTRODUCTION

Müllerian duct anomalies arise from defects in the development, fusion, or resorption of the paramesonephric ducts during embryogenesis, with an estimated prevalence of 0.5-1% in the general population and higher rates in women experiencing infertility or recurrent pregnancy loss.[1] The unicornuate uterus with a rudimentary horn represents a rare variant, accounting for approximately 2.5-13% of all Müllerian anomalies.[2] Rudimentary horns may be communicating or non-communicating with the main uterine cavity, the latter posing significant diagnostic challenges and complex management considerations. Pregnancy in a non-communicating rudimentary horn is an extremely rare event, often misdiagnosed due to its unusual presentation and anatomical position, and can culminate in catastrophic uterine rupture, typically in the second trimester, if not identified early.[3,4] Hematometra within a non-communicating horn may present as chronic dysmenorrhea, irregular menstrual bleeding, or an adnexal mass and is frequently misinterpreted as a fibroid or other adnexal pathology.[5] This case series illustrates three distinct scenarios: a live rudimentary-horn pregnancy, a presumed fibroid later identified intraoperatively, and hematometra, underscoring the importance of heightened clinical suspicion, appropriate imaging and timely surgical intervention to avert serious complications.

CASE SERIES

Case 1

Pre-rupture diagnosis of a live 12-week gestation in a non-communicating rudimentary horn

A 28-year-old woman, gravida 3 para 2, presented with dull, continuous lower abdominal pain for one month, not relieved by analgesics. She also reported three months of

amenorrhea with intermittent vaginal spotting. Fifteen days prior, she had undergone a medical termination of pregnancy (MTP) with dilation and curettage by a local practitioner, performed without prior imaging. Post-procedure, her symptoms persisted, and a repeat urine pregnancy test remained positive. Her obstetric history included two prior vaginal deliveries (one preterm, one term). She had no significant gynaecologic, medical or surgical history.

On examination, the patient was afebrile and mildly pale with stable vital signs. Abdominal examination revealed a palpable mass in the left iliac fossa, approximately corresponding to 12 weeks' gestation. Speculum examination showed a closed cervix, and bimanual examination revealed a mobile, non-tender mass separate from the uterus.

Laboratory investigations showed mild anaemia with otherwise normal renal, hepatic and coagulation profiles. Transvaginal ultrasound demonstrated an empty uterine cavity with decidual reaction. Adjacent to the uterus, a gestational sac surrounded by a thin muscular wall (<2 mm) was visualized, with a positive foetal heart rate. Foetal biometry was consistent with a 12-week gestation. Renal imaging showed no anomalies.

Differential diagnoses included abdominal pregnancy, pregnancy in a rudimentary horn, and bicornuate uterus with pregnancy. Although magnetic resonance imaging (MRI) would have provided additional diagnostic clarity, it was unavailable at our centre and financially inaccessible to the patient. Given the high risk of rupture and associated morbidity, a laparotomy was performed.

Intraoperatively, a unicornuate uterus with a non-communicating rudimentary horn was identified on the left side. The horn contained a viable 12-week gestation, was vascular, and showed no communication with the main uterus. The rudimentary horn and ipsilateral fallopian tube were excised. Postoperative renal ultrasound confirmed the normal anatomical location of both kidneys. The patient recovered uneventfully and was discharged on postoperative day three.

Transabdominal ultrasound demonstrates a gestational sac with a live fetus (lower red arrow) located within a thick-walled structure separate from the main uterine body. The upper red arrow indicates the empty main uterine cavity. The white arrow highlights the thin fibrous band suggestive of a non-communicating connection between the rudimentary horn and the uterus. This configuration is characteristic of a rudimentary horn pregnancy, which poses a high risk for rupture (Figure 1).

The intraoperative photograph shows a markedly distended rudimentary horn (indicated by the black arrow) containing a live gestation. The horn is non-communicating with the main uterine cavity and demonstrates a tense, vascularized wall suggestive of imminent rupture. The adnexa are seen adjacent to the horn. This finding confirms the diagnosis of a unicornuate uterus with a gravid rudimentary horn, as suspected on preoperative imaging (Figure 2).

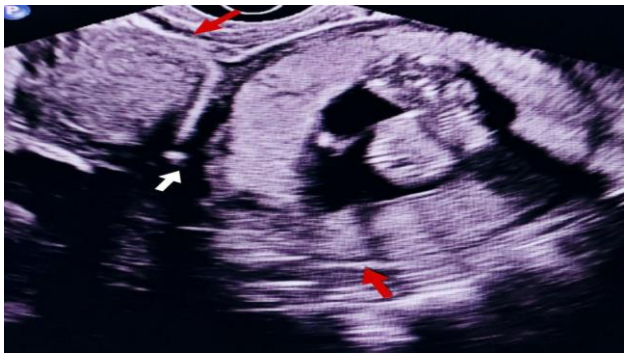

Figure 1: Ultrasound image showing a live intrauterine pregnancy in a non-communicating rudimentary horn.

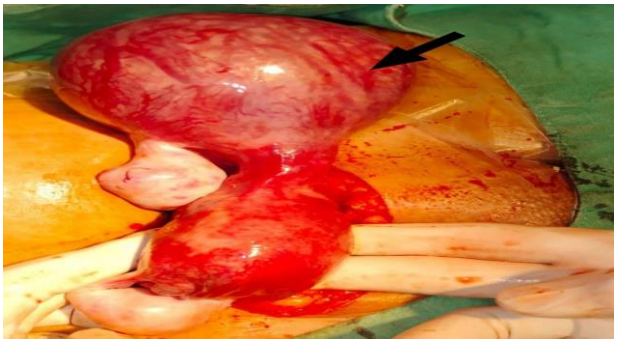

Figure 2: Gravid non-communicating rudimentary horn visualized intraoperatively.

Post-excision image showing an intact gestational sac with a fetus approximately 14–16 weeks of gestation, removed from a non-communicating rudimentary uterine horn. The fetus is seen attached to the placenta, with clearly visible umbilical cord vessels. The specimen demonstrates the horn's limited distensibility and capacity, emphasizing the life-threatening risk of rupture in advancing pregnancies within rudimentary horns. Timely diagnosis and surgical management are essential to prevent maternal morbidity and mortality (Figure 3).

Case 2

Non-communicating rudimentary horn mimicking subserosal fibroid in a patient with chronic dysmenorrhea

A 36-year-old woman, para 1, living 1, with history of two spontaneous abortions (at 12 and 20 weeks), presented with chronic dysmenorrhea and occasional intermenstrual spotting for two years. Her cycles were regular. Obstetric history included an uncomplicated vaginal delivery ten years earlier. She had no significant medical or surgical history. On abdominal examination, mild right iliac fossa tenderness was noted. Bimanual examination revealed a

mildly enlarged uterus with a firm, irregular contour. Transvaginal ultrasound revealed a 5 cm hypoechoic mass adjacent to the right lateral uterine wall, suggestive of a subserosal fibroid. Ovaries were normal.

Due to persistent symptoms and imaging findings, a laparotomy was planned with a provisional diagnosis of uterine fibroid. Intraoperatively, a unicornuate uterus with a non-communicating rudimentary horn was discovered on the right side, attached via a fibrous band. The horn had a thick muscular wall and no communication with the endometrial cavity. The rudimentary horn and ipsilateral fallopian tube were excised. Postoperative renal imaging confirmed normal kidneys. The patient recovered well and reported significant symptomatic relief at follow-up.

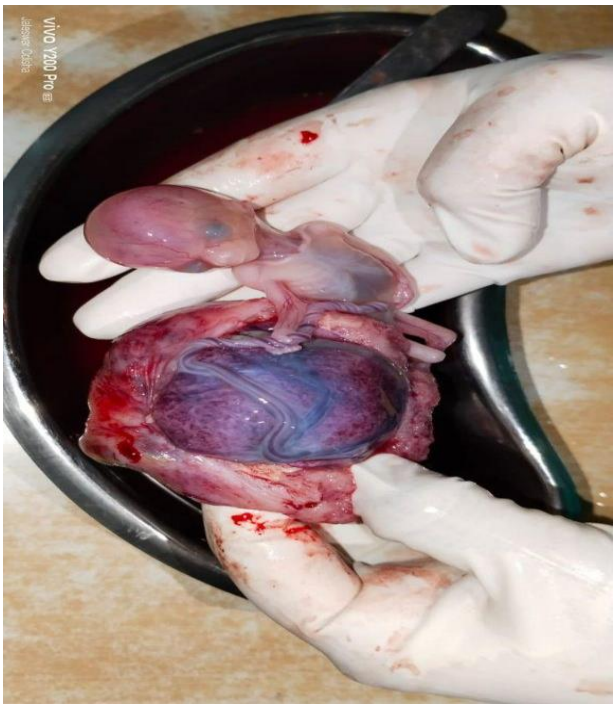

Figure 3: Expelled gestational sac with foetus from a non-communicating rudimentary horn.

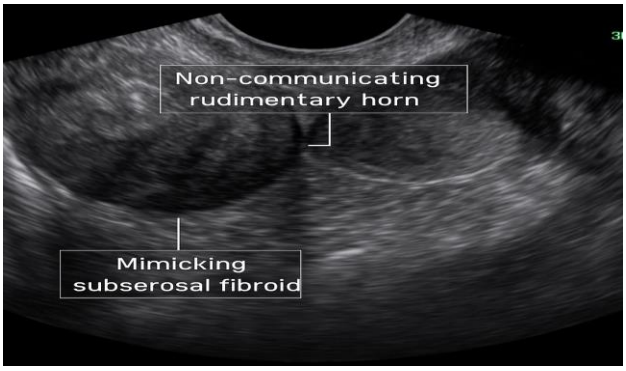

Figure 4: Transvaginal ultrasound image showing a non-communicating rudimentary horn mimicking a subserosal fibroid in a patient with chronic dysmenorrhea.

This transvaginal ultrasound depicts two adjacent uterine-like structures. The structure on the left corresponds to a non-communicating rudimentary horn. The main uterine cavity is visualized separately. The rounded, well-circumscribed appearance of the rudimentary horn may mimic a subserosal fibroid on imaging, particularly in cases of chronic pelvic pain or dysmenorrhea. Accurate diagnosis often requires correlation with MRI or intraoperative findings, especially when standard ultrasound features are equivocal (Figure 4).

Case 3

Hematometra in a non-communicating rudimentary horn of a unicornuate uterus

A 45-year-old perimenopausal woman, para 1, living 1, presented with one month of dull, continuous lower abdominal pain. She also reported irregular menstrual cycles and intermittent spotting over six months. Her past obstetric history included a vaginal delivery 18 years prior, with no significant gynaecologic, surgical or medical history.

On examination, she was afebrile and mildly pale with stable vitals. Abdominal examination revealed mild suprapubic tenderness. Pelvic examination revealed a closed cervix and a mobile mass distinct from the uterus. Transvaginal ultrasound showed a left adnexal mass with internal echoes, raising suspicion of a haemorrhagic ovarian cyst. The uterus was slightly deviated with a thickened endometrium. Conservative management was initially attempted; however, due to persistent symptoms, exploratory laparotomy was performed. Intraoperatively, a non-communicating rudimentary horn with hematometra was found on the left side, attached to a fallopian tube and round ligament. The horn was excised along with the ipsilateral fallopian tube and adherent ovary. Postoperative recovery was uneventful. Renal ultrasound confirmed normal kidneys. At the six-week follow-up, the patient reported resolution of pelvic pain and normalization of menstrual patterns.

The composite image illustrates (left) the intraoperative finding of a distended, tense rudimentary horn (white arrow) separate from the unicornuate uterus, with a non-communicating fibrous attachment (black arrow), and (right) a schematic representation of the same anomaly. The rudimentary horn contained hematometra due to retained menstrual blood from a functional endometrial lining, clinically simulating a haemorrhagic ovarian cyst. The ovary and tube are visualized separately, aiding differential diagnosis. This correlation highlights the importance of clinical suspicion and imaging interpretation in cases of chronic pelvic pain and atypical adnexal masses (Figure 5).

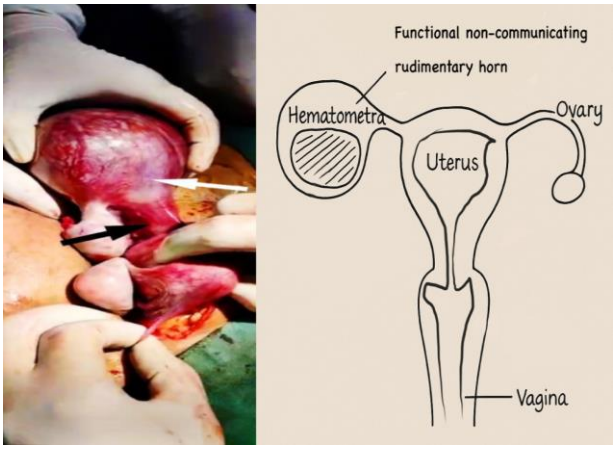

Figure 5: Intraoperative and schematic correlation of a functional non-communicating rudimentary horn with hematometra simulating a haemorrhagic ovarian cyst.

DISCUSSION

Congenital anomalies of the Müllerian ducts represent a spectrum of developmental disorders, with the unicornuate uterus associated with a non-communicating rudimentary horn being among the rarest forms.[6] Although the incidence is low, such anomalies pose significant clinical challenges due to their varied and often non-specific presentations. Pregnancy within a non-communicating rudimentary horn, as demonstrated in case 1, is a life-threatening event, often culminating in rupture between the second and third trimesters if undiagnosed.[4] The rudimentary horn's limited distensibility and abnormal myometrial structure preclude its ability to sustain a growing pregnancy, and the high maternal morbidity and mortality associated with such pregnancies necessitate prompt diagnosis and surgical intervention.[21]

Despite ultrasonography being the first-line imaging modality, its sensitivity remains limited, with only 26% of rudimentary horn pregnancies diagnosed preoperatively.[7] Magnetic resonance imaging offers superior delineation of uterine anomalies but may be inaccessible due to logistical or financial constraints, particularly in low-resource settings, as encountered in our cases.[8] Chronic pelvic pain and dysmenorrhea, as seen in case 2, are common presentations of a non-communicating horn containing functional endometrium; retention of menstrual blood leads to hematometra and endometriosis, contributing to progressive symptoms.[5] Misdiagnosis as a fibroid or adnexal mass is frequent, underscoring the need for heightened clinical suspicion when evaluating atypical pelvic masses, especially in younger women.[2] Case 3 emphasized the potential for delayed diagnosis into the perimenopausal period, where cyclic or irregular bleeding from a functional horn can mimic adnexal pathology.[9]

Surgical excision remains the definitive management for symptomatic rudimentary horns, preventing future complications such as infection, torsion, rupture, or malignant transformation.[17] It is important to systematically evaluate the urinary tract in all cases of Müllerian anomalies due to the frequent coexistence of renal anomalies.[10] Although none of our patients exhibited renal abnormalities, routine screening via ultrasonography or MRI is advocated.

Overall, early recognition and timely surgical management of non-communicating rudimentary horns are pivotal in improving patient outcomes and minimizing morbidity.

CONCLUSION

Non-communicating rudimentary horns, although rare, present a significant diagnostic dilemma due to their varied clinical manifestations. High clinical vigilance, thorough evaluation, and appropriate imaging are critical for early diagnosis. Surgical excision remains the cornerstone of management to prevent life-threatening and chronic complications. Enhanced awareness among clinicians can facilitate timely intervention, ultimately improve reproductive health and reduce morbidity in affected women.

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