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Case Report

Diagnostic challenges in chronic pelvic pain: delayed diagnosis of a functional non-communicating rudimentary horn mimicking benign gynaecologic disease: a case report and literature review

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ABSTRACT

Functional non-communicating rudimentary horn is a rare Müllerian anomaly that may remain undiagnosed until adulthood because its presentation often mimics common gynecological conditions. Delayed diagnosis can result in chronic pelvic pain, severe dysmenorrhea, and prolonged ineffective treatment. A 32-year-old multiparous woman with two previous caesarean deliveries presented with chronic pelvic pain and severe dysmenorrhea for two years, refractory to medical therapy. Previous evaluations suggested fibroid uterus, endometrioma, adnexal mass, and ectopic pregnancy. Three-dimensional transvaginal ultrasonography identified a left-sided functional non-communicating rudimentary horn with hematometra. Surgical excision was performed, and histopathological examination confirmed the diagnosis. The postoperative course was uneventful, with complete resolution of pelvic pain and dysmenorrhea. A focused literature review of reported cases with delayed diagnosis or misdiagnosis demonstrated that chronic pelvic pain and dysmenorrhea were the most common presenting symptoms, while endometriosis, fibroids, and pelvic masses were frequent alternative diagnoses. Surgical excision resulted in symptom improvement in all reviewed cases. This case highlights the diagnostic challenges associated with functional non-communicating rudimentary horns, particularly in adult women with previous successful pregnancies. Müllerian anomalies should be considered in patients with refractory dysmenorrhea and chronic pelvic pain despite conventional treatment. Early use of advanced imaging modalities, especially three-dimensional ultrasonography, can facilitate timely diagnosis and definitive management, thereby reducing diagnostic delays and associated morbidity.

Keywords: Unicornuate uterus, Rudimentary horn, Müllerian anomaly, Chronic pelvic pain, Dysmenorrhea, Three-dimensional ultrasonography

INTRODUCTION

Müllerian duct anomalies (MDAs) are congenital malformations resulting from abnormal development, fusion, or canalization of the Müllerian ducts during embryogenesis. They are estimated to occur in approximately 5-7% of the general female population and are more frequently encountered among women with infertility, recurrent pregnancy loss, and adverse reproductive outcomes.[1] Unicornuate uterus accounts for approximately 2-10% of all Müllerian anomalies, while a functional non-communicating rudimentary horn represents one of the rarest variants.[6,7]

In a North Indian study conducted at King George's Medical University, Lucknow, among 2,423 fertile women undergoing laparoscopic sterilization, congenital uterine anomalies were identified in 4.29% of women. Arcuate uterus was the most common anomaly (3.1%), while unicornuate uterus and unicornuate uterus with a rudimentary horn were observed in 0.8% and 0.12% of cases, respectively.[3]

A functional non-communicating rudimentary horn is a rare subtype that contains functioning endometrium but lacks communication with the uterine cavity. Progressive accumulation of menstrual blood may result in hematometra, retrograde menstruation, endometriosis, severe dysmenorrhea, and chronic pelvic pain.[4] Owing to its low prevalence and variable clinical presentation, diagnosis is often delayed or missed, particularly in adult women. Patients frequently undergo prolonged evaluation and treatment for more common gynecological conditions such as fibroids, endometriosis, adnexal masses, or chronic pelvic inflammatory disease before the underlying congenital anomaly is recognized. Failure to identify these anomalies early can result in chronic pelvic pain, severe dysmenorrhea, endometriosis, repeated healthcare encounters, and significant impairment in health-related quality of life.[6]

The present case illustrates the diagnostic challenges associated with these rare anomalies, as a functional non-communicating rudimentary horn remained unrecognized for nearly two years despite multiple evaluations, refractory hormonal therapies including Elagolix and Leuprolide acetate, and two previous caesarean deliveries. The eventual diagnosis by three-dimensional ultrasonography and subsequent surgical excision resulted in complete symptom resolution, highlighting the importance of maintaining a high index of suspicion for Müllerian anomalies in women with refractory chronic pelvic pain and dysmenorrhea.

We reported a case of a 32-year-old woman with chronic pelvic pain and refractory medical management who was initially suspected to have a fibroid and endometrioma. Surgical excision and histopathological examination ultimately confirmed a non-communicating functional rudimentary horn, highlighting the diagnostic challenges associated with delayed recognition of Müllerian anomalies in adulthood.

CASE REPORT

A 32-year-old multiparous woman with a history of two previous lower-segment caesarean sections presented to the gynecology outpatient department with complaints of chronic pelvic pain and progressively worsening severe dysmenorrhea for approximately two years. The pain was cyclical, predominantly localized to the left lower abdomen and pelvis, and significantly affected her daily activities.

Over the course of her illness, the patient underwent multiple evaluations at various healthcare facilities. Several provisional diagnoses were considered, including uterine fibroid, endometrioma, adnexal mass, and ectopic pregnancy. Despite repeated consultations, a definitive diagnosis could not be established. The patient received multiple medical treatment regimens, including nonsteroidal anti-inflammatory drugs, hormonal suppression therapy with leuprolide acetate (3.75 mg depot injection), and Elagolix 200 mg, with only minimal and temporary symptomatic relief.

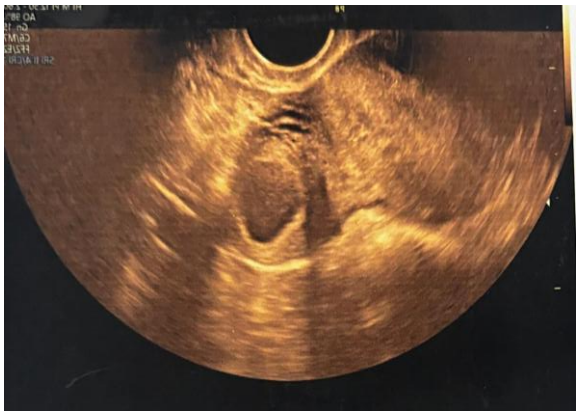

Figure 1: Transvaginal ultrasound demonstrating a left-sided rudimentary uterine horn containing hemorrhagic collection.

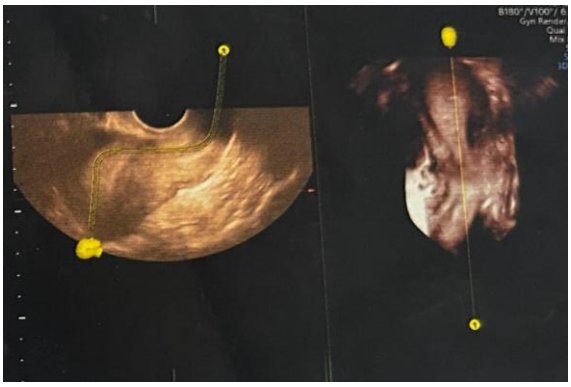

Figure 2: Three-dimensional ultrasonographic reconstruction showing a non-communicating functional rudimentary horn separate from the normal uterine cavity.

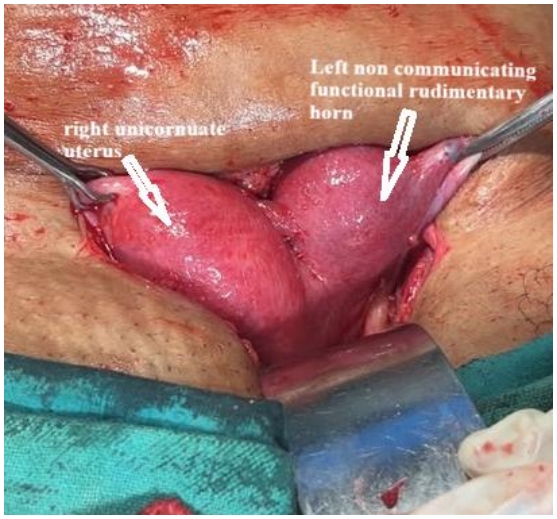

Figure 3: Intraoperative view of the left rudimentary uterine horn adjacent to the right unicornuate developed uterus.

Figure 4: Surgical dissection and mobilization of the rudimentary horn prior to excision.

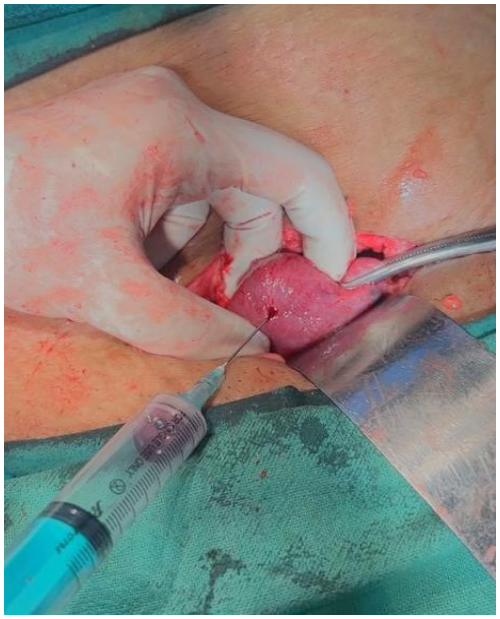

Figure 5: Rudimentary horn aspiration demonstrating retained hemorrhagic contents.

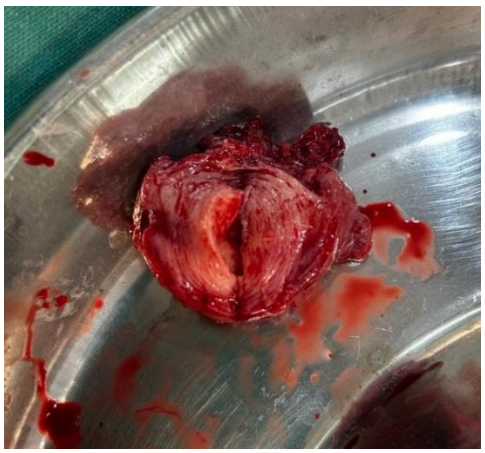

Figure 6: Gross pathological specimen of the excised rudimentary horn demonstrating a cavitary structure lined by functional endometrium and surrounded by myometrial tissue.

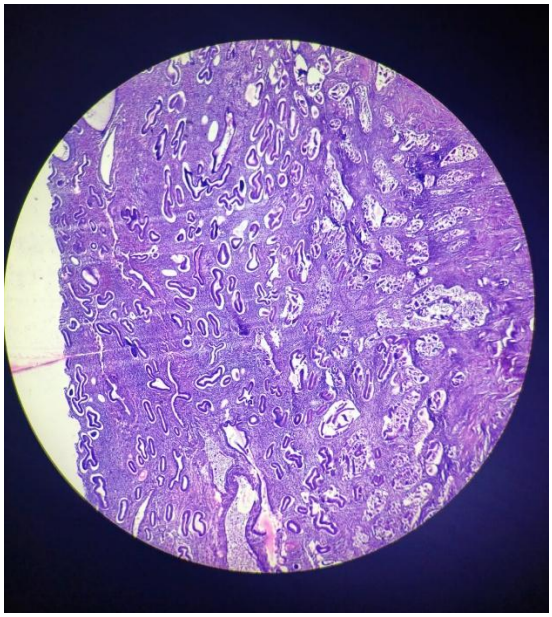

Figure 7: Histopathological section showing functional endometrial glands and stroma surrounded by myometrium (H&E stain).

Physical examination revealed lower abdominal tenderness without any palpable abdominal mass. Routine laboratory investigations were within normal limits. Owing to persistent symptoms despite prolonged medical management, a detailed pelvic imaging evaluation was performed.

Transvaginal three-dimensional ultrasonography demonstrated an anteverted enlarged uterus measuring 7.83×5.55×5.13 cm. A left-sided rudimentary uterine horn containing hemorrhagic collection was identified, suggestive of retained menstrual blood within a non-communicating functional cavity. An intramural fibroid measuring approximately 50.9×41.0 mm was also noted on the posterior uterine wall. The endometrium was centrally placed with a thickness of 14.29 mm. The right ovary appeared enlarged, while the left ovary was not clearly visualized. Based on these findings, a diagnosis of a functional non-communicating rudimentary uterine horn with hematometra was considered.

In view of persistent symptoms and imaging findings suggestive of an obstructive Müllerian anomaly, surgical management was planned. Intraoperatively, a left-sided non-communicating rudimentary uterine horn was identified adjacent to the normally developed hemi-uterus. The left fallopian tube and ovary were densely adherent to the rudimentary horn. The horn was distended and contained retained hemorrhagic material, consistent with hematometra. Careful adhesiolysis was performed to separate the adnexal structures while preserving ovarian and tubal integrity. Following identification and protection of the surrounding pelvic anatomy, complete excision of the rudimentary horn was undertaken with meticulous hemostasis.

The uterine anomaly can be classified as a unicornuate uterus with a functional noncommunicating rudimentary horn according to the American Society for Reproductive Medicine (ASRM) Müllerian Anomalies Classification 2021, corresponding to ESHRE/ESGE Class U4a C0 V0, indicating a hemi-uterus with a functional rudimentary horn and normal cervical and vaginal anatomy.[6,7]

Gross examination of the excised specimen revealed a cavitary structure containing altered blood products. Histopathological examination confirmed the presence of endometrial glands and stroma lined by functional endometrium surrounded by smooth muscle bundles, consistent with a functional rudimentary uterine horn.

The postoperative period was uneventful. At follow-up, the patient reported marked improvement in pelvic pain and dysmenorrhea, with significant enhancement in health-related quality of life and no recurrence of symptoms.

Table 1: Published cases of functional non-communicating rudimentary horns diagnosed after delayed recognition or misdiagnosis.

Author (year)	Age (yrs)	Presenting symptoms	Delay/misdiagnosis	Imaging modality	Treatment	Outcome
Rajashekara et al[9]	24	dysmenorrhea, chronic pelvic pain, infertility	Endometriosis	MRI	Excision	Resolved
Agarwal et al[10]	22	Severe dysmenorrhea	hematocolpus	MRI/MSCT SCAN	Excision	Resolved
Hartup et al[11]	36	dysmenorrhea, chronic pelvic pain	endometriosis	MRI/DHL	Excision	Improved
Alsahabi et al[12]	24	Acute on chronic pelvic pain	Missed anomaly despite prior pregnancy	MRI	Excision	Improved
Atmaca et al[13]	27	Acute abdomen	Ectopic pregnancy	laproscopy	Excision	Improved
Behrens et al[14]	20	Chronic pain abdomen	pelvic inflammatory disease with pelvic mass	DHL	Excision	Improved
Lee et al[15]	39	Severe dysmenorrhea	Endometriosis	Diagnostic laproscopy	Excision	Improved
Scheibner Et al[16]	23	severe dysmenorrhea	Submucosal fibroid	MRI	Excision	improved
Present case (2026)	32	chronic pelvic pain, dysmenorrhea	Fibroid/Endometrioma	3D USG	Excision	Complete resolution

Table 2: Summary of findings from reported cases.

Parameters	Findings
Mean age	27.2 years
CPP	66.7%
Dysmenorrhea	77.8%
MRI used	66.7%
Surgical excision	100%
Symptom relief	100%

DISCUSSION

A functional non-communicating rudimentary horn is a rare Müllerian anomaly resulting from incomplete development of one Müllerian duct with the presence of a cavitated horn that lacks communication with the normal uterine cavity. The functional endometrium within the rudimentary horn leads to progressive accumulation of menstrual blood, resulting in hematometra, retrograde menstruation, endometriosis, severe dysmenorrhea, and chronic pelvic pain. Although symptoms typically begin soon after menarche, diagnosis is frequently delayed because the condition mimics more common gynecological disorders such as endometriosis, endometrioma, adnexal masses, and uterine fibroids.[4,5]

The present patient experienced chronic pelvic pain and progressive dysmenorrhea for approximately two years and underwent multiple evaluations before the correct diagnosis was established. Several alternative diagnoses, including fibroid uterus, endometrioma, adnexal mass, and ectopic pregnancy, were considered, and she received prolonged medical management with nonsteroidal anti-inflammatory drugs, leuprolide acetate, and elagolix without significant improvement. This diagnostic delay mirrors findings from our literature review, where misdiagnosis was a recurring theme. Among the nine reviewed cases, endometriosis or endometrioma was the most frequent incorrect diagnosis, followed by pelvic masses, fibroids, pelvic inflammatory disease, and ectopic pregnancy. Similar diagnostic challenges were reported by Hartup et al., Behrens et al., and Scheibner et al., in which the anomaly was initially mistaken for more common pelvic pathologies.[11,14,16]

The age at diagnosis in the reviewed cases ranged from 20 to 39 years, with a mean age of 27.2 years. Most patients presented with severe dysmenorrhea and chronic pelvic pain, while a smaller proportion presented with infertility or acute abdominal pain. Notably, our patient was diagnosed at 32 years of age, making her older than the average reported patient. Furthermore, she had previously undergone two caesarean deliveries, a finding that may have contributed to reduced clinical suspicion for a congenital uterine anomaly. Similar delayed presentations in parous women have been reported but remain uncommon, emphasizing that successful pregnancies do not exclude the presence of a significant Müllerian anomaly.

Advanced imaging plays a crucial role in establishing the diagnosis. In our review, MRI was utilized in approximately two-thirds of reported cases and was considered the most useful modality for delineating uterine anatomy and identifying a non-communicating functional cavity. However, in the present case, three-dimensional transvaginal ultrasonography accurately demonstrated the rudimentary horn and associated hematometra preoperatively. This finding highlights the growing role of three-dimensional ultrasonography as a readily available and cost-effective alternative to MRI in experienced hands. Early use of advanced imaging in women with refractory dysmenorrhea and atypical pelvic masses may substantially reduce diagnostic delay.

Surgical excision remains the definitive treatment for a functional non-communicating rudimentary horn. In all reviewed cases, removal of the rudimentary horn resulted in significant symptomatic improvement or complete resolution. Similarly, complete excision of the horn in our patient led to marked relief of pelvic pain and dysmenorrhea, with no recurrence of symptoms during follow-up. Histopathological examination confirmed the presence of functional endometrium within the excised horn, establishing the diagnosis definitively.

This case underscores the importance of maintaining a high index of suspicion for obstructive Müllerian anomalies in women presenting with chronic pelvic pain, severe dysmenorrhea, or pelvic masses that fail to respond to conventional medical therapy. The coexistence of parity, previous caesarean deliveries, and imaging findings suggestive of more common gynecological conditions may further obscure the diagnosis. Recognition of these diagnostic pitfalls and timely use of advanced imaging can facilitate earlier diagnosis, prevent prolonged morbidity, and improve patient outcomes.

CONCLUSION

Functional non-communicating rudimentary horn is a rare Müllerian anomaly that may remain undiagnosed until adulthood and frequently masquerades as more common gynecological conditions such as fibroids, endometriosis, or adnexal masses. This case highlights how delayed recognition can result in prolonged symptoms, repeated healthcare encounters, and unsuccessful medical treatment, even in women with previous successful pregnancies. Clinicians should maintain a high index of suspicion for congenital uterine anomalies in patients presenting with refractory dysmenorrhea and chronic pelvic pain, particularly when clinical findings and imaging are atypical. Early utilization of advanced imaging modalities, including three-dimensional ultrasonography, can facilitate timely diagnosis and appropriate surgical management. Definitive excision of the rudimentary horn not only confirms the diagnosis but also provides excellent symptomatic relief and significantly improves quality of life. Emerging advances in artificial intelligence-assisted ultrasonography and three-dimensional image reconstruction hold promise for improving the evaluation of congenital uterine anomalies. AI-based image analysis may enhance visualization of complex uterine anatomy, reduce operator dependency, and improve diagnostic confidence, particularly in resource-limited settings where MRI is less accessible. Although MRI remains the reference standard for complex Müllerian anomalies, continued integration of AI with advanced ultrasonography may facilitate earlier diagnosis and help reduce the diagnostic delays frequently encountered in such cases.

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