

PRIMARY DYSMENORRHEA DUE TO MULLERIAN DUCT ANOMALY—A DIAGNOSTIC CHALLENGE IN RADIOLOGY

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PJR January - March 2022; 32(1): 40-45

ABSTRACT

Mullerian duct dysgenesis results in various congenital anomalies including unicornuate uterus with a rudimentary functional horn. This is a rare congenital anomaly with a frequency of 1/100,000.¹ However the true incidence and imaging findings are largely undiscussed as according to studies only symptomatic cases are reported.⁴ Unicornuate uterus has an impact on the fertility of young females. Most commonly presenting with dysmenorrhea, dyspareunia, endometriosis, hematometra, UTI in severe cases torsion of the rudimentary horn.² Keeping in view the anatomical variations of unicornuate uterus, the various symptoms associated with it and fewer literature on this topic we present the imaging findings of a young female who presented to the emergency department with severe lower abdominal pain and a palpable mass. On imaging she had a unicornuate uterus with a non-communicating functional rudimentary horn.

Key words: Unicornuate uterus, Rudimentary horn, Magnetic Resonance Imaging, Acute abdomen.

Introduction

Mullerian abnormalities can result from abnormal fusion of mullerian ducts or incomplete resorption of the uterine septum.¹ Uterine anomalies are present in 1/200 females.³ According to the American society for reproductive medicine (ASRM) uterine anomalies are divided into four groups 1 isolated unicornuate uterus, 2 unicornuate uterus with communicating rudimentary horn, 3 unicornuate uterus with non-communicating functional rudimentary horn, 4 unicornuate uterus with non-communicating non-functional rudimentary horn.¹

Unicornuate uterus with a functional rudimentary horn is present only in 1/100000 patients and therefore the rarest uterine anomaly. It is associated with various obstetrical and gynecological complications including endometriosis, hematometra, dyspareunia, pelvic pain and rarely torsion of rudimentary horn causing acute abdominal pain.^{1,2,4} Pregnancy in a unicornuate

uterus has further implications as there are chances of ectopic implantation in the rudimentary horn thereafter rupture of the rudimentary horn, fetal growth retardation and premature birth.⁶

Most of the females present during pubertal age with cyclical pelvic pain, vaginal pain, dysmenorrhea, dyspareunia and palpable pelvic mass.⁴ Imaging plays an important role in the identification of these patients thereby providing a pathway for management of such patients. Various imaging modalities are being used currently including MRI, ultrasound and HSG.⁸ MRI is considered the most sensitive in this case with approximately 100% accuracy. Whereas Ultrasound is 98 % sensitive.⁸

The ultimate management of these patients is the removal of the rudimentary horn to save the patients from the future complications.

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Submitted 28 October 2021, Accepted 7 December 2021

Case Report

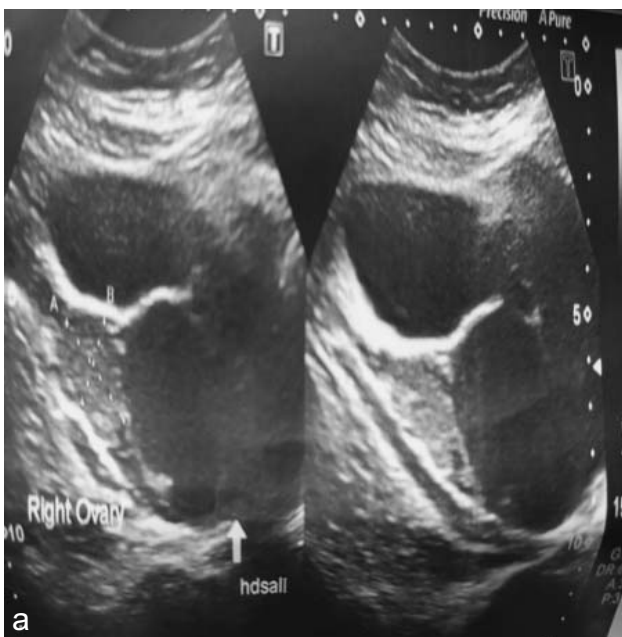
Our patient was a 14 year old female with no previously known co-morbid who presented to the gynecological OPD with the complain of dysmenorrhea and abdominal distension. She was examined clinically and her bladder was palpable up to the umbilicus on per abdominal examination. She was thereafter referred to the ultrasound department for further evaluation.

Her ultrasound abdomen and pelvis was carried out which showed a dilated endometrial canal and heterogeneous material was seen within it. The ultrasound also showed hydrosalpinx and on right side with incomplete septae sign. The rest of the abdominal examination was normal. She was advised an MRI scan for further evaluation.

Her MR imaging her uterus was deviated towards left side with normal endometrium. A well defined rounded to oval area was seen in pelvis in the midline towards right side. Its signal intensity and enhancement characteristics were similar to myometrium. No obvious communication was seen with the uterus or endometrium. These findings likely represent a rudimentary horn. This rudimentary horn showed a dilated endometrial cavity measuring 4cm with T1 hyper intense signals suggestive of hematometra. A tortuous dilated tubercular fluid filled structure was seen in right adnexa extending up to midline in lower abdo-

men. It shows high signals on T1 and inter mediate signals on T2 representing right sided hematosalpinx. Mild free fluid was also seen in the pelvis. Both ovaries, pelvic walls, muscles, vascular structures and bones were normal. No lymphadenopathy was seen. Her findings represented a unicornuate uterus with a rudimentary non-communicating right-sided horn.

She was offered a laparoscopic surgery but she developed COVID pneumonia and was discharged on patient s request. Later she lost to follow up.



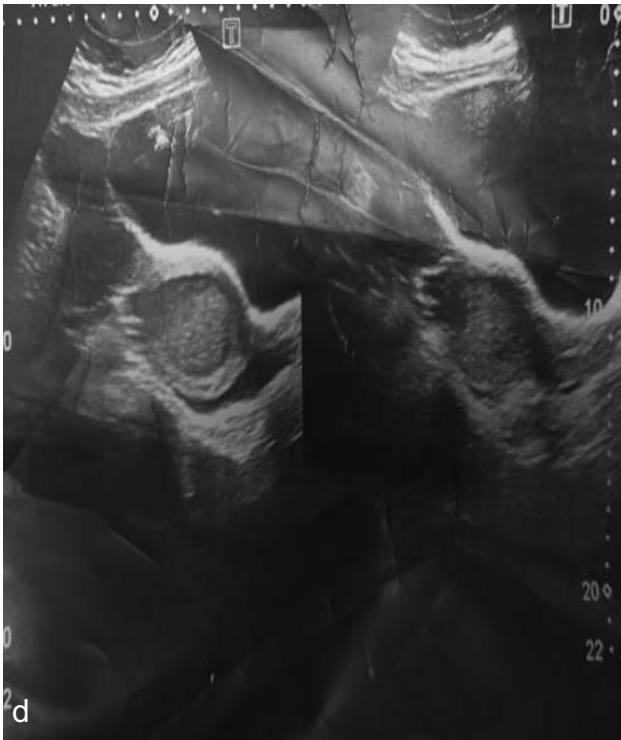


Figure 1: Ultrasound images of the same patient showing: Fluid filled interconnected cystic areas with incomplete septae sign seen in right adnexa representing hydrosalpinx. **(A)** Endometrial cavity distended with echogenic material representing blood, No communication of this cavity with cervix or vagina, minimal pelvic free fluid **(B,C,D)**

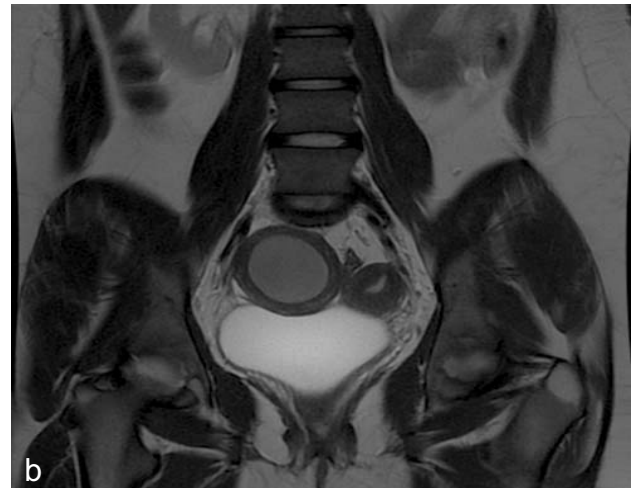


Figure 2: Two uterine horns with two separate endometrial cavities, larger one is distended with blood (T2 intermediate SI) **(A,B)** and show no communication with cervix or vagina, The smaller horn showing continuity with single cervix and vagina **(C,D)**



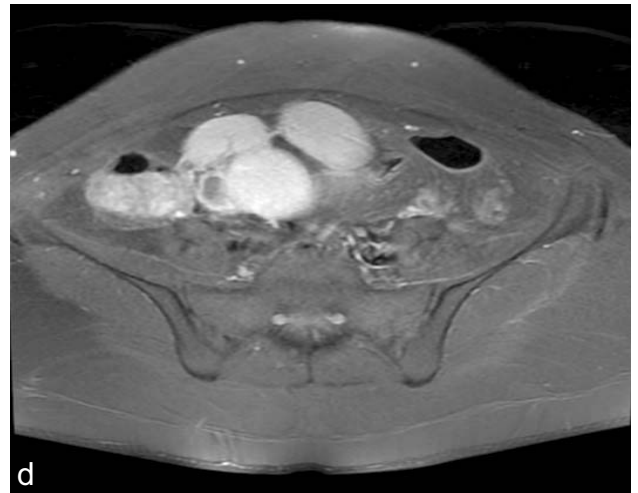
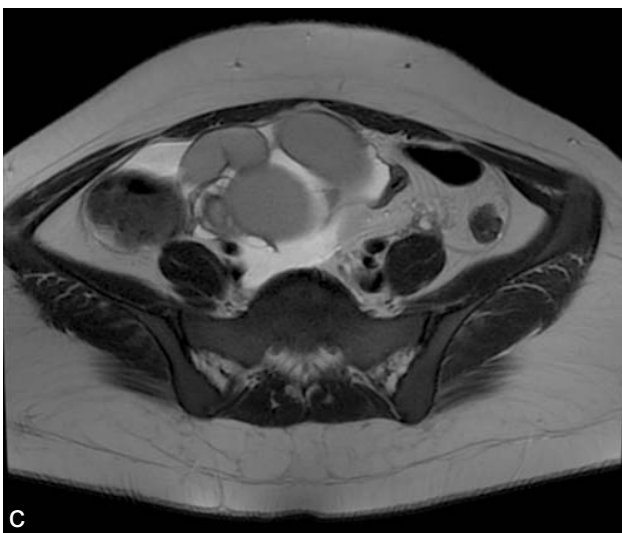
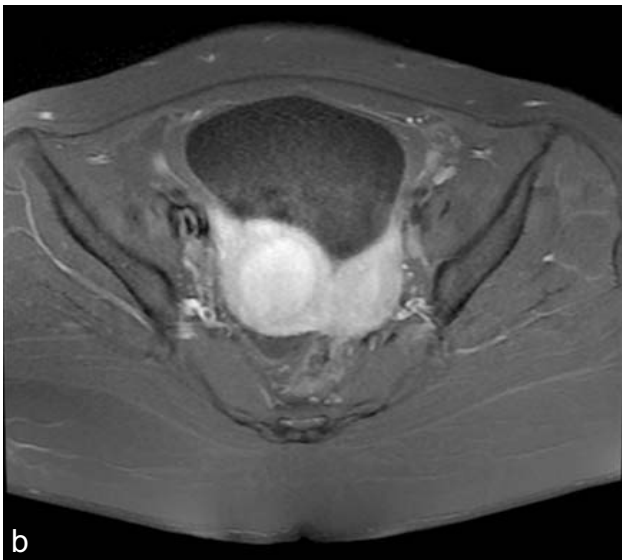
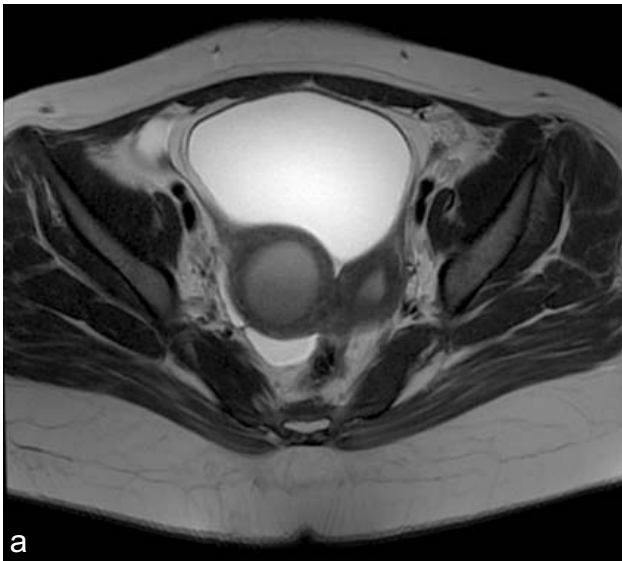
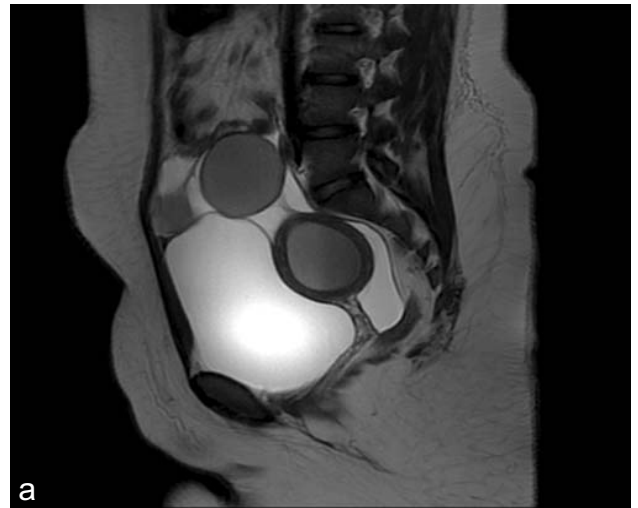


Figure 3: Two separate uterine horns with no communication (A,B) Tortuous dilated fluid filled tubular structure with T2 intermediate signals representing hematosalpinx (C,D)



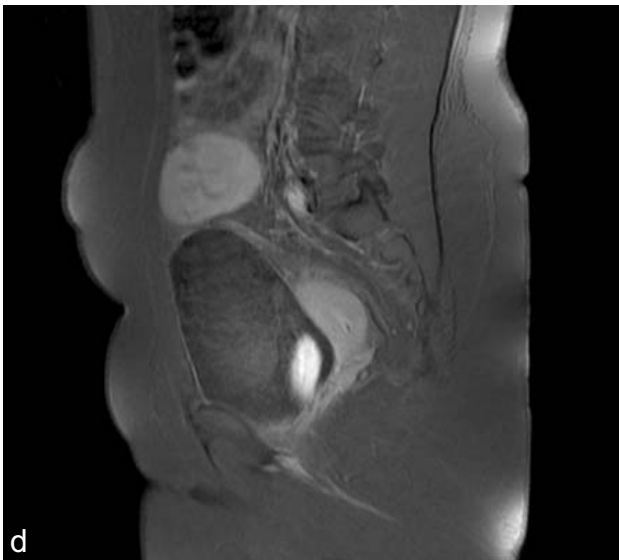
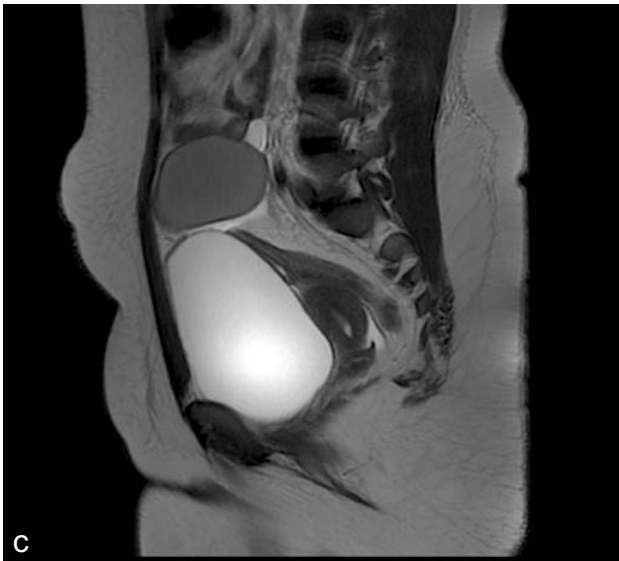


Figure 4: Distended uterine horn with ipsilateral hematosalpinx (A,B), left para sagittal cut shows normal left uterine horn with normal endometrial cavity and no hydrosalpinx.

Discussion

Young females with pelvic pain commonly present in the emergency. Most of the times the differentials for such patients are endometriosis, menstrual pain, ectopic pregnancy, adenomyosis and etc. However uterine anomalies should be kept in the mind as well. Unicornuate uterus with non-communicating functional rudimentary horn is one important cause of pelvic pain. Although rare and present in only 0.1-3.8% of the population.^{4,8} There is mullerian dysgenesis

causing incomplete union of both horns of uterus. According to Buttram and Gibbons, unicornuate uterus can be classified into four sub-types based on the anatomical findings: II-A-1-a having a cavitory horn, communicating with the opposite horn, II-A-1-b cavitory horn, not communicating with the opposite horn, II-A-2 no cavity II-B no rudimentary horn.⁵ In our patient there was a unicornuate uterus with a rudimentary noncommunicating but functional horn that is a type II-A-1-b.

Such patients may remain asymptomatic or present at various stages of life from puberty to menopausal age, in pregnant or non-pregnant females. Major symptoms being cyclic or non-cyclic pelvic pain, abnormal vaginal bleeding or with an ectopic pregnancy.⁴

Conclusion

Uterine anomalies have a significant impact on females apart from the gynecological and obstetric complications there are psychological implications. Unicornuate uterus with a functional rudimentary horn is a rare entity that causes significant discomfort to the patients due the dysmenorrhea associated with it and its diagnosis is important to save the patient from major complications like ectopic pregnancy, torsion and rupture of the rudimentary horn. It should be considered as an important differential in females of pubertal age with cyclical pelvic pain. So it is necessary for clinicians and as well as for radiologists to be aware of clinical presentation and radiological features of the disease.

Conflict of Interest: The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the paper.

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