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Juvenile Cystic Adenomyoma Presenting As Accessory Cavitated Uterine Mass: Radiology-Centric Report Of Two Adolescent Cases And Literature Review

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Abstract

Background: *Juvenile cystic adenomyoma—now more precisely termed accessory cavitated uterine mass (ACUM)—is an uncommon Müllerian anomaly that mimics rudimentary horn, cystic degeneration of fibroids, and focal adenomyosis. Because teenagers typically present with severe, drug-resistant dysmenorrhoea, prompt radiological recognition is essential to avoid misdirected surgery.*

Cases: *We describe two otherwise healthy adolescents.*

Case 1: An 18-year-old reported right-sided pelvic pain that intensified during menses. Pelvic MRI demonstrates a 2.4 × 1.9 × 2.3 cm ovoid cystic lesion along the right anterolateral uterine fundus. The lesion is hyperintense on both T1- and T2-weighted sequences, contains fluid–fluid levels, and is encircled by a low-signal rim mirroring the junctional zone. No communication with the endometrial cavity is identified..

Case 2: A 19-year-old with polycystic ovary syndrome presented for escalating dysmenorrhoea. MRI demonstrates a 2.9 × 2.7 × 3.1 cm cystic lesion in the left uterine fundus containing haemorrhagic debris with susceptibility blooming on gradient-echo sequences. It is separated from the endometrial cavity by intact normal myometrium.

Interventions and Outcomes: *Both patients underwent laparoscopic cystectomy. Histopathology confirmed an endometrium-lined cavity within hypertrophic myometrium, consistent with ACUM. Post-operative recovery was uneventful, and each patient reported near-complete symptom resolution at three-month follow-up.*

Discussion: *Characteristic MRI findings—a solitary haemorrhagic cyst beneath the round-ligament insertion in an otherwise normal-shaped uterus—allow confident diagnosis and differentiation from mimics. Complete laparoscopic excision is curative in most series and preserves fertility.*

Conclusion: *Awareness of ACUM's imaging signature in adolescents with severe dysmenorrhoea streamlines diagnosis and directs fertility-sparing, minimally invasive surgery. Early recognition prevents unnecessary radical procedures and offers rapid pain relief.*

INTRODUCTION

Here's the thing: when a teenager turns up with disabling cramps that start on day 1 and never fully let go, the differential is long but the clock is short. Most clinicians first think endometriosis or an obstructed Müllerian horn. Juvenile cystic adenomyoma—better named an accessory cavitated uterine mass (ACUM)—sits low on that list simply because it's rare: fewer than a hundred well-documented cases have surfaced since Acién drew the modern template in 2010 [1]. Yet the lesion may be more common than we realise; one tertiary-care MRI audit found a prevalence of 1 in 700 pelvic scans of women under 25 [2]. Pathologically, ACUM is a self-contained endometrium-lined cavity buried in hypertrophic myometrium just beneath the round-ligament insertion. The working embryologic theory holds that gubernacular traction during müllerian fusion pinches off a sliver of paramesonephric duct that continues to cycle monthly in splendid isolation [3]. Its contents—haemoglobin, haemosiderin, and sloughed epithelium—build up pressure until pain forces diagnosis, usually within five years of menarche [4]. Hormonal suppression can mask symptoms for a while, but once the cyst exceeds two or three centimetres the mass effect, not bleeding, becomes the chief tormentor. Radiology, especially MRI, is where things crystallise. A spherical or ovoid cavity 1–4 cm across that lights up on both T1 and T2, often with fluid–fluid layering and a dark rim mimicking the junctional zone, is almost pathognomonic. Crucially, the native uterine cavity looks normal and shows no communication with the cyst, a point that rules out non-communicating uterine horns. Degenerating fibroids can be hyperintense on T2, but they lose signal on T1 and frequently calcify; focal adenomyosis blurs the junctional zone rather than forming a discrete wall [5]. In skilled hands, sagittal and coronal T2 sequences settle the matter in minutes, sparing the patient a battery of invasive tests. Why does this still get missed? Partly because radiologists and gynaecologists approach the same pain from different angles: radiologists scan for cystic malformations; surgeons plan

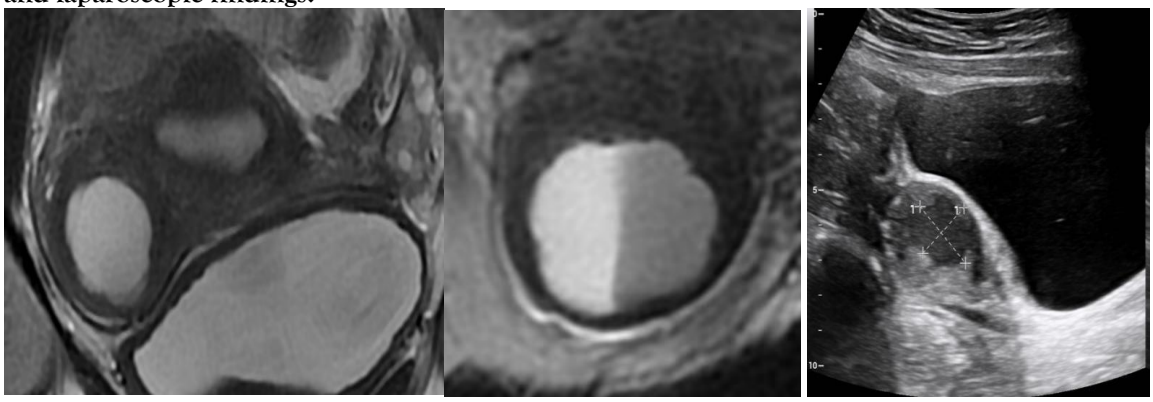
for excision of presumed endometriosis. When terminology isn't shared, lesions hide in plain sight. Publishing detailed imaging–pathology correlations helps close that gap. What this really means is that each new, well-illustrated case acts as another signpost for teams weighing laparoscopic drainage, cystectomy, or, in misguided cases, hysterectomy. Our two adolescents presented with textbook MRI findings, underwent fertility-sparing laparoscopic resection, and walked out pain-free. By foregrounding the imaging clues and the embryologic story, we aim to make the next diagnosis faster and the next surgery smaller. After all, a condition this curable shouldn't steal an extra year of anyone's teenage life.

CASE PRESENTATION

Case 1

An 18-year-old nulliparous arrived complaining of sharp, right-sided pelvic pain that flared with every menstrual cycle and kept her home from college. Menses had been regular since menarche at 14, but dysmenorrhoea had grown steadily worse over the preceding eight months. She denied hormonal therapy, surgery, or systemic illness. Examination and laboratory work-up were unremarkable: afebrile, soft abdomen, no adnexal masses on bimanual palpation, haemoglobin 12.6 g/dL, normal β-hCG. Transabdominal ultrasound depicts an eccentric cystic focus within the right fundal myometrium, warranting MRI for further characterization. MRI pelvis revealed a well-circumscribed 2.4 × 1.9 × 2.3 cm ovoid cavity perched just beneath the right round-ligament insertion (Figure 1A). The contents were homogeneously hyperintense on fat-suppressed T1 and T2 sequences, with a subtle fluid–fluid level (Figure 1B). A low-signal rim, equal in thickness to the native junctional zone, surrounded the cyst (Figure 1C). There was no communication with the endometrial cavity; the remainder of the uterus, cervix, and vagina were normal. Both ovaries were morphologically typical, and there were no peritoneal implants. Radiological consensus favoured an accessory cavitated uterine mass (juvenile cystic adenomyoma). After counselling, she elected laparoscopic excision. Intraoperative examination revealed a bulging, bluish cyst on the right fundus with an intact serosal covering (Figure 1D). The capsule was excised en bloc, exposing a cavity filled with thick, chocolate-coloured fluid.Histopathology demonstrated an endometrium-lined cyst surrounded by hypertrophic myometrium, sealing the diagnosis. The patient was discharged on post-operative day 1 and, at three-month review, reported complete resolution of cyclical pain without analgesics.

Figure 1. Accessory cavitated uterine mass at the right fundus in an 18-year-old: MRI characteristics and laparoscopic findings.

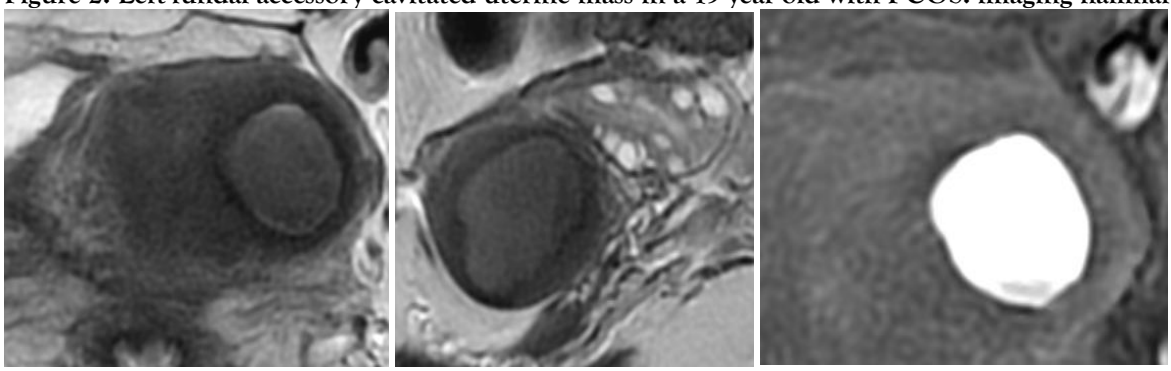


Case 2

A 19-year-old with polycystic ovary syndrome (diagnosed biochemically two years prior) presented for escalating dysmenorrhoea and a constant dull ache in the left iliac fossa. Menstrual cycles were oligomenorrhoeic but painful from day one. She had tried NSAIDs and combined oral contraceptives with only transient relief. Physical examination showed mild tenderness in the left lower quadrant; no pelvic mass was palpable. Routine haematology was normalBecause earlier ultrasound imaging had raised the possibility of a "degenerating fibroid," an MRI was subsequently arranged.MRI pelvis uncovered a 2.9 × 2.7 × 3.1 cm spherical cyst embedded in the left anterolateral fundus (Figure 2A). Signal characteristics mirrored Case 1—bright on fat-suppressed T1 and T2, blooming on gradient-echo due to haemorrhagic products (Figure 2B). Coronal T2 slices confirmed a single, midline endometrial cavity separate from the lesion (Figure 2C). No renal or müllerian anomalies were present; both ovaries were mildly polycystic. Surgical course- Laparoscopy showed a tense, haemorrhagic nodule bulging beneath the left round-ligament (Figure 2D). The cyst was excised with a 5-mm myometrial margin and the uterine wall closed in

two layers. Histology again revealed an endometrium-lined cavity with surrounding smooth-muscle hyperplasia. Pain scores dropped from 8/10 pre-op to 1/10 at six-week follow-up, and she resumed university classes without limitation.

Figure 2. Left-fundal accessory cavitated uterine mass in a 19-year-old with PCOS: imaging hallmarks.



DISCUSSION

During Müllerian fusion the round-ligament fibres pull on the anterofundal myometrium. If a sliver of paramesonephric tissue gets pinched off at that moment it keeps its endometrial character and cycles every month, but now inside muscle rather than a cavity. Blood collects with nowhere to go, pressure rises, and teenagers land in clinic unable to sit through class. Histology proves the point: an endometrium-lined space ringed by hypertrophic smooth muscle. Some authors group the lesion with focal adenomyosis, others call it a miniature rudimentary horn; the clinical behaviour—benign yet brutally painful—lands somewhere between the two. Either way, we are not dealing with malignancy, only with mis-placed physiology. Imaging pearls: the three clues that spare a laparotomy Geography. The cyst hugs the anterior or anterolateral fundus right under the round-ligament. A rudimentary horn sits more lateral and usually higher. Signal fusion. Bright on both T1 and T2 Much appreciated to haemoglobin, often with a tidy fluid–fluid level. A crisp low-signal rim—the thickness of the native junctional zone—encases the cavity. Degenerating fibroids may look cystic on T2, but they lack T1 shine and frequently calcify [6]. A normal main uterus. Coronal T2 sequences show a single, mid-line endometrial stripe with no fistula to the cyst. A unicornuate uterus, by contrast, is asymmetric and missing its contralateral horn.Tick those three boxes and juvenile cystic adenomyoma / ACUM is the front-runner, as in our two cases.: Hormonal suppression can damp bleeding for a semester, but the cyst keeps expanding and pain rebounds [7]. Definitive care is complete excision, preferably laparoscopic to spare fertility and shorten recovery. Incomplete drainage breeds recurrence because the secretory lining is left behind [8]. Ethanol sclerotherapy has surfaced in case reports as a “scar-less” option [8], yet long-term data on recurrence and pregnancy are thin. Our patients chose surgery and echoed the >80 % pain-free rate reported in the largest laparoscopic series to date [9].An obstructed hemivagina with ipsilateral renal anomaly can masquerade as ACUM in early imaging; the key difference is duplication of cervix or vagina, plus renal agenesis on the same side. Non-communicating rudimentary horn comes close radiologically but shows its own endometrium and may contain myometrial junctional zone within the horn wall. Cystic adenomyosis appears later in life and blends grey zones rather than forming a tidy capsule. Matching MRI slices with hysteroscopic or laparoscopic views, when doubt persists, avoids both under- and over-treatment [10]. Published follow-ups are short but encouraging. Women who undergo full cystectomy usually conceive at rates similar to age-matched controls, and successful term pregnancies after ACUM removal are now in double figures [11-12]. The myometrial defect heals well if closed in layers and given six months before attempting conception. That makes early recognition not just a pain-saving exercise but a fertility-preserving one.[13] First, lesion size does not predict misery; both of our cysts measured under 3.5 cm yet caused absenteeism and opiate use. Second, polycystic ovary syndrome does not exclude ACUM—oligo-ovulation can blur cyclical patterns and delay referral. Third, a five-minute MRI review can spare a teenager years of ineffective therapy and the healthcare system repeated emergency visits.[14] What this really means is that ACUM should rise on the differential whenever a young woman presents with unilateral dysmenorrhoea and a perfectly normal uterus—except for one glowing, round intramural cyst.[15]

CONCLUSION

Juvenile cystic Adenomyoma/accessory cavitated uterine mass is uncommon but instantly recognisable once you know the MRI signature—an isolated, haemorrhagic cyst hugging the round-ligament zone in an otherwise normal uterus. Early, radiology-driven diagnosis channels patients toward minimally invasive excision and rapid symptom relief while sparing fertility. The two adolescent cases here add to the growing evidence that careful imaging trumps extensive work-up and avoids mis-directed surgery.

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