

# Reevaluation of Large Pelvic Masses after Inconclusive MRIs: A Case Report

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**The lack of a classification system addressing the size of pelvic masses challenges their evaluation. The American College of Obstetricians and Gynecologists recommends using an ultrasound (US) as the first-line modality, followed by magnetic resonance imaging (MRI). However, these do not guarantee optimal assessment. We present a case of a 36-year-old woman with a large pelvic mass of unknown etiology, after being evaluated with US, a computed tomography scan, and MRI. A reassessment by a US-specialized radiologist found a stalk ( $\geq 2.0$  cm) with internal bridging vessels at the uterine fundus. The mass was identified as a pedunculated myoma and removed *en bloc* during a total abdominal hysterectomy with a bilateral salpingectomy and an oophorectomy. A reassessment by a US-specialized radiologist could be beneficial for cases of pelvic masses with unknown etiology after an evaluation with multiple imaging studies. These specialists possess extensive knowledge and vast expertise, potentially allowing US evaluations to be more effective than MRIs. [P R Health Sci J 2023;42(3):256-259]**

*Key words: Large pelvic mass, Pedunculated myoma, MRI, Ultrasound*

**M**yomas are common benign pelvic tumors in women. Although their pathogenesis remains unclear, these tumors have been associated with early menarche, low parity, obesity, and smoking (1). Approximately one-third of all women become symptomatic, with abnormal uterine bleeding as the most common complaint (1,2). Other symptoms include frequent urination, bowel obstruction, and dyspnea, if the myomas grow enough to cause a mass effect (3).

Large pelvic masses present a challenge for gynecologists. The American College of Obstetricians and Gynecologists recommends the gray-scale ultrasound (US) as the gold standard, followed by magnetic resonance imaging (MRI) (2,4). However, higher-resolution imaging does not guarantee the optimal assessment of a mass and involves higher costs for patients. This report presents the case of a woman with a large pelvic mass of unknown etiology, although it was evaluated with multiple imaging modalities. Its etiology was identified after a reassessment by a US-specialized radiologist.

## Case report

The case of a 36-year-old Puerto Rican female who presented to the gynecology clinic complaining of abnormal uterine bleeding and non-cyclical pelvic pain, associated with menses and intercourse, for more than 3 years. The patient also complained of increased weakness, bloating, and a 15 lb weight gain within the 6 months prior to her visit. Her medical history was non-contributory, and her surgical history was remarkable for 2 cesarean sections, a sterilization, bariatric surgery, and a laparoscopic cholecystectomy.

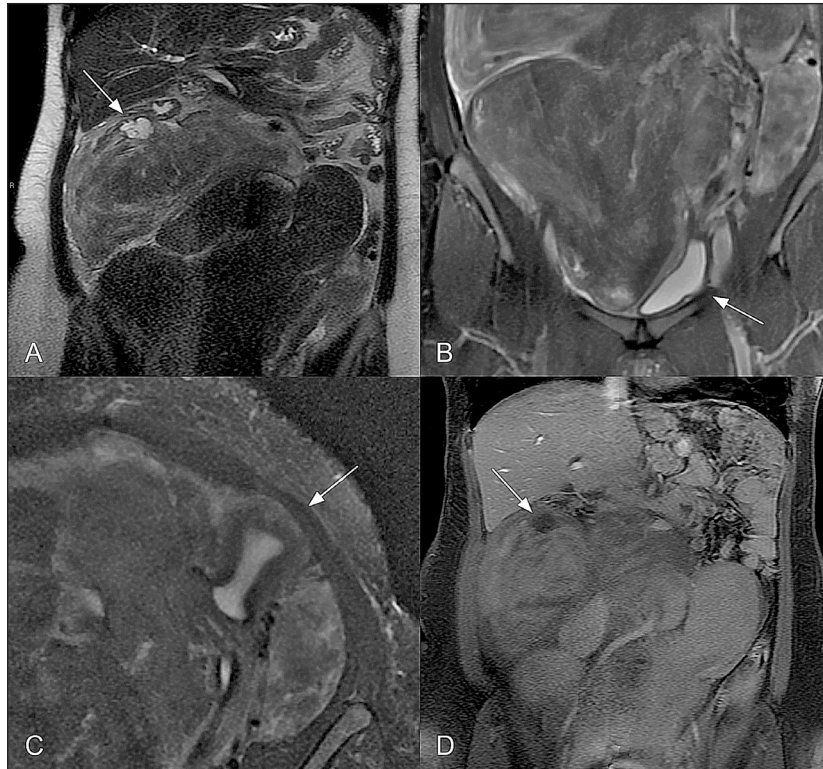
The patient had previously been evaluated by her gynecologist and diagnosed with a pelvic mass. Images by transvaginal US (TVUS) evidenced a mass of unknown origin measuring 14.0 x 8.0 x 12.0 cm. An endometrial biopsy was also done yet resulted negative for malignancy. Given such findings, the patient was referred to the University Hospital for further management, yet she delayed care for 3 years because of her limited access to transportation.

Several imaging studies were completed within 6 months of her initial visit to our clinic. All the studies (a TVUS, a computed tomography [CT] scan, and an MRI) were consistent with a mass of unknown etiology causing a leftward displacement of the uterus, bladder, and rectum. The size of the mass had increased to 24 x 22 x 23 cm (Figure 1). A physical examination at our clinic revealed a distended abdomen. A bimanual evaluation was also remarkable for a firm, irregular mass that extended up to the supraumbilical region. After discussing the case with the attending physicians, the patient was scheduled for an exploratory laparotomy. Screening for tumor markers was also ordered to rule out malignancy.

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*The authors have no conflict of interest to disclose.*

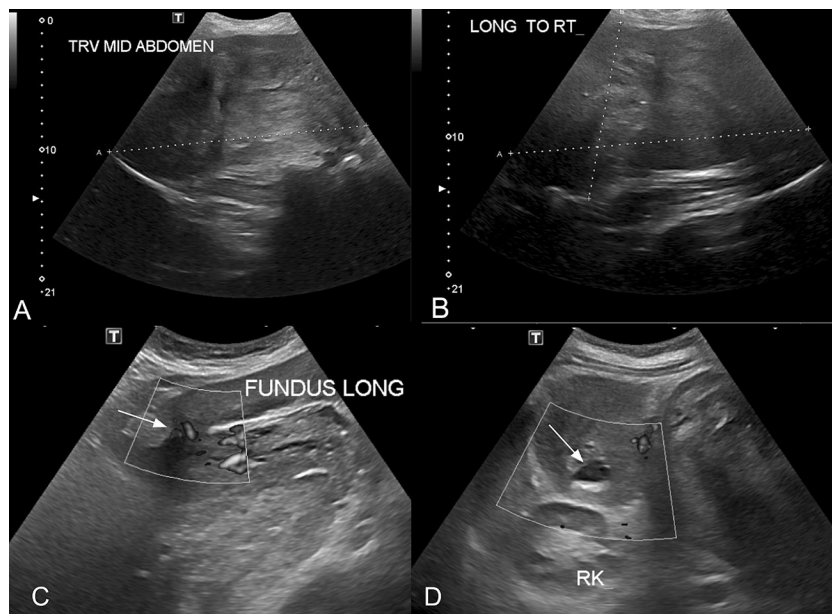
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**Figure 1.** Magnetic resonance imaging (MRI) findings. Coronal (A) T2-weighted and coronal (B) and axial (C) T2-weighted fat-saturated images show intermediate/low signal intensity of a large mass compressing the bladder (B; arrow) and displacing the uterus leftward (C; arrow). Coronal post-contrast T1-weighted image (D) shows variable enhancement. Focal areas of increased T2/decreased T1 signal intensity are observed within the right superior portion (A, D; arrows), representing areas of cystic degeneration.

Before the patient's surgery, a specialist from the Radiology Department reassessed the mass using a transabdominal US (TAUS). A mass with a heterogeneous, echogenic texture and internal cystic components was described. Further evaluation evidenced a stalk that was more than 2.0 cm wide at the right fundus, with internal bridging vessels and positive bidirectional flow on color Doppler (Figure 2). As for tumor marker screening, there was an elevated level (4.9 ng/mL) of carcinoembryonic antigen. Cancer antigen 125, cancer antigen 19.9, inhibin A, and inhibin B levels were found to be within normal ranges.

The mass was identified as a large pedunculated myoma; hence, the surgical approach was modified for a total abdominal hysterectomy, a bilateral salpingectomy, and an oophorectomy. A vertical incision was performed, running from 2 cm above the pubic symphysis to 5 cm above the umbilicus and carried down to the fascia and subsequently opened with electrocautery.



**Figure 2.** Findings of reassessment by transabdominal US (TAUS). Images show a large pelvic mass with heterogeneous echogenic texture (A, B). A stalk measuring approximately 2.2 cm and with internal bridging vessels (C; arrow) is identified within the rightmost section of the uterine fundus. Cystic components are also observed (D; arrow). The mass measures approximately 13 (AP) x 20 (TRV) x 22 (CC) cm.

The uterus was displaced leftward and cephalad, as the mass occupied most of the abdominopelvic cavity. An *en bloc* removal of the mass as well as the uterus and fallopian tubes was performed. Both ovaries were left, intra-abdominally. No complications presented during surgery. The estimated blood loss was 500 mL. The patient was discharged 2 days later and remained complication-free during inpatient and outpatient care.

The Pathology report described the mass as a multilobulated, pedunculated, subserosal myoma measuring 30 x 21 x 7 cm. Areas of cystic degeneration were also documented (Figure 3C, 3D).

## Discussion

The absence of a system addressing tumor size challenges the evaluation of large myomas (5,6). The current guidelines favor US as the first-line modality for evaluating pelvic masses, despite its limited acoustic window and depth of penetration (2,7). As the second-line modality, MRIs enhance images with their high contrast and tissue characterization yet involve a higher cost for patients (7). Our report highlights the role

of US-specialized radiologists in evaluating pelvic masses and the potential of these individuals to reduce the costs involved with higher-resolution imaging.

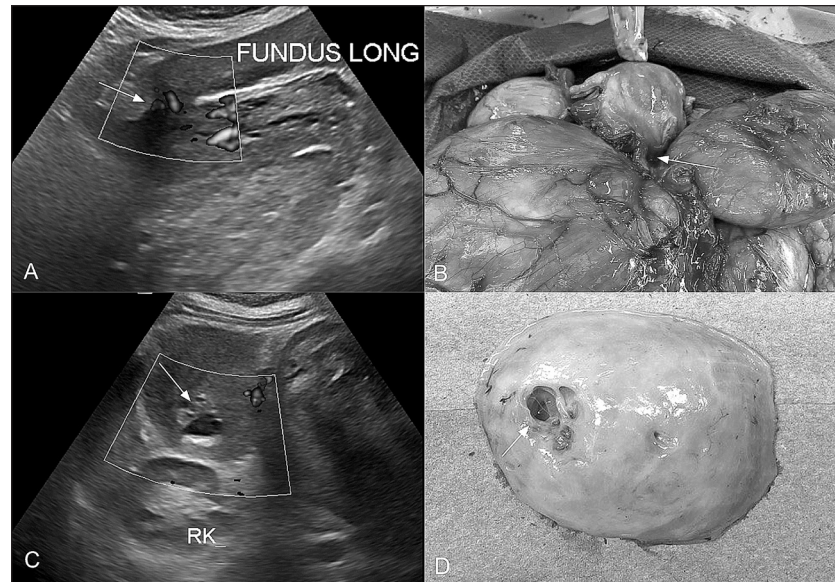
The term “US-specialized radiologist” refers to a radiologist who has completed a fellowship in US after completing his/her/their residency and/or a radiologist who has narrowed his/her/their practice to performing only US evaluations. Nowadays, these studies are performed by numerous professionals, given their accessibility and ease of use. Recall that the quality and preciseness of US images greatly depend on the operator’s technique (8). Hence, US-specialized radiologists possess greater preparation than any other physician for evaluating large masses such as the one detailed in this report. Not only will these professionals complete a targeted assessment based on their expertise, but they will also perform a thorough evaluation, given that their competence is in interpreting findings.

The mass’s complexity and size were not remarkable limitations during the reassessment. However, the cystic components observed within the mass did complicate the differential diagnosis and initial approach. Cystic degenerations are characteristic of ovarian pathologies and present in only 4% of leiomyomas (9). Both pathologies may also present with mixed echogenicity and patterns suggestive of necrosis (10,11). Nevertheless, the accuracy of US images allowed for a definitive diagnosis after the uterine stalk was identified.

A contrast-enhanced US could also have been used for evaluation. Differing from gray-scale US, contrast-enhanced US uses gas-filled microspheres to enhance tissue contrast for optimizing images and performs similarly to MRIs in the characterization of myomas (12-13) contrast-enhanced US has also been described for evaluating myomas and ovarian tumors, although it has not been approved by the United States Food and Drug Administration for use with reproductive structures (12,14). Hence, the potential advantages of US-specialized radiologists employing this modality for pelvic masses are to be explored in future studies.

### Conclusion

A reassessment by a US-specialized radiologist could be beneficial for a patient with a large pelvic mass of unknown etiology. These individuals possess vast knowledge and clinical expertise, potentially allowing US evaluations to be more effective than MRIs. As for this case report, the reevaluation by the US-specialized radiologist led to a definitive diagnosis, which allowed for adequate surgical planning. The approach used for this case was expertise-driven and recommended for cases with a similar clinical presentation.



**Figure 3.** Radio-pathologic correlation. Side-by-side images of the stalk (A, B; arrows) and cystic degeneration (C, D; arrows).

### Resumen

La falta de una clasificación para masas pélvicas según su tamaño dificulta su evaluación. El Colegio Americano de Obstetras y Ginecólogos recomienda el ultrasonido (US) como primera línea seguido por resonancia magnética (MRI). Sin embargo, estos no garantizan una evaluación precisa. Este artículo presenta el caso de una fémina de 36 años con una masa pélvica de etiología desconocida, luego de ser evaluada con US, tomografía computarizada y MRI. El caso fue reevaluado por una radióloga especialista en US, quien identificó un tallo ( $\geq 2.0$  cm) con vasos internos en el fondo del útero vía un estudio transabdominal. La masa se clasificó como un mioma pedunculado y se extirpó mediante una histerectomía abdominal total con salpingectomía bilateral y ooforopexia. Por ende, una reevaluación por un radiólogo especialista en US podría ser beneficioso en casos similares al presentado. Estos especialistas poseen un amplio conocimiento y vasta experiencia, lo que permite que sus evaluaciones sean potencialmente más efectivas que un MRI.

### Acknowledgments

The authors would like to thank the patient for allowing the publication of her case. We would also like to thank the Department of Obstetrics and Gynecology and the Department of Diagnostic Radiology for their support.

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