

OP17.03

Outcomes of leiomyomas with variant ultrasound morphology “differentiating apples from apples”L. Kaur¹, M. Preet², G. Randhawa¹, S. Arjun³¹Prime Diagnostic Centre, Chandigarh, India; ²Fetal Medicine, Prime Diagnostic Centre, Chandigarh, India; ³Government Medical College and Hospital, Chandigarh, India

Objectives: Leiomyomas exhibit typical morphological features on ultrasound. Variant ultrasound morphology poses diagnostic challenges due to overlap in imaging findings of benign and malignant leiomyomas. It's not apples and oranges, but it's a fruit salad! We must pick the cherries from this salad. The aim was to evaluate the outcomes of leiomyomas with variant ultrasound morphology.

Methods: Retrospective analysis of 1059 patients with sonographic diagnosis of leiomyomas done. Patients with variant ultrasound morphology were compared to typical leiomyomas. As per MUSA criteria, the following sonographic pointers were used. Benign-pointers: well-defined lesions with regular margins, perilesional-vascularity, shadowing and calcification. Malignant-pointers: inhomogeneous margins, cystic changes, absent shadowing, calcification, colour score of 3-4. Patients were categorised into two groups benign and malignant pointers on ultrasound. Outcomes were based on HPE.

Results: Out of 1059 patients with leiomyomas, benign pointers on ultrasound were seen in 1049 cases (99.01%) and malignant pointers in 10-cases (0.94%). 10 cases showed Irregular margins (n = 6) colour score 3-4 (n = 8) cystic areas (n = 7) absent calcification (n = 10) and absent shadowing (n = 7). 11 (1.04%) out of the 1049, preoperatively having benign pointers had features suggestive malignancy on HPE, 10 (100.00%) patients having malignant pointers in pre-op ultrasound had malignancy on HPE out of which 5 had leiomyosarcoma, 3 low-grade endometrial sarcomas and 2 undifferentiated endometrial sarcomas.

Conclusions: Study helps in defining morphology of leiomyoma variants. This helps optimising management strategies thereby facilitating the differentiation of “apples from apples”.

Supporting information can be found in the online version of this abstract

OP17.04

Validation of the revised MUSA criteria for sonographic detection of adenomyosisS. Dosunmu¹, E. Lee¹, A. Sarno¹, C. Mitchel², J. Wang², K. Shaak²¹Obstetrics and Gynecology, Lehigh Valley Health Network, Allentown, PA, USA; ²Lehigh Valley Health Network, Allentown, PA, USA

Objectives: This study aims to assess the diagnostic accuracy of the revised Morphologic Uterus Sonographic Assessment (MUSA) criteria for adenomyosis. Secondary objectives include evaluating interrater reliability of the revised MUSA criteria between two physician reviewers.

Methods: A retrospective review was conducted on 96 patients who underwent hysterectomy following ultrasound assessment between 1/3/2020 – 11/30/2023. Ultrasound images were independently reviewed in a blinded manner by two physician reviewers using the modified MUSA criteria. The sensitivity, specificity, PPV, NPV, and interrater reliability of the modified MUSA criteria were determined using histological examination of hysterectomy specimens as the reference gold standard.

Results: The modified MUSA criteria was found to have a sensitivity of 63.2% and a specificity of 65.5% compared to histology. The positive predictive value of the modified MUSA criteria was 54.5%

and the negative predictive value was 73.1% using histology as the gold standard. Cohen's kappa statistic was used to analyse the interrater agreement utilising the modified MUSA criteria. There was a 72.9% agreement between the two ultrasound examiners.

Conclusions: The modified MUSA criteria were published in 2022 and there are few studies showing the clinical utility or diagnostic accuracy of this criteria. This study shows that there is a moderate level of sensitivity and specificity in utilising the modified MUSA criteria for the evaluation of adenomyosis. The interrater agreement of the modified MUSA criteria is moderate with both ultrasound examiners agreeing about 72.9%. Thus, the modified MUSA criteria can serve as a useful tool in the diagnosis and management of adenomyosis but is not highly specific or sensitive in the diagnosis of adenomyosis.

OP17.05

Improving outcomes in hysteroscopic surgery using intraoperative ultrasound: current evidenceL. Ferreira de Castro³, I. Santos⁴, A. Simone Laganà^{5,6}, B. De Vree^{7,8}, B. Van Herendael^{8,9}, D. Djokovic^{1,2}¹Maternidade Dr. Alfredo da Costa, Unidade Local de Saude Sao Jose EPE, Lisbon, Portugal; ²Obstetrics and Gynecology, Universidade NOVA de Lisboa NOVA Medical School, Lisbon, Portugal; ³Obstetrics and Gynecology, Centro Hospitalar Universitario do Porto EPE Centro Materno-Infantil do Norte Dr Albino Aroso, Porto, Portugal; ⁴Gynecology Department, Hospital Professor Doutor Fernando Fonseca, Unidade Local de Saude de Amadora/Sintra, Amadora, Portugal; ⁵Unit of Obstetrics and Gynecology, Department of Health Promotion, Mother and Child Care, Internal Medicine and Medical Specialties (PROMISE), Paolo Giaccone Hospital, Palermo, Sicily, Italy; ⁶Obstetrics and Gynecology, School of Medicine and Surgery, University of Palermo, Palermo, Sicily, Italy; ⁷Obstetrics and Gynecology, Ziekenhuis Netwerk Antwerpen, Antwerp, Belgium; ⁸Gynecology Services, University Hospital Antwerpen, Edegem, Belgium; ⁹Endoscopic Training Center Antwerp, Antwerp, Belgium

Objectives: To comprehensively review the published information and evaluate the available evidence on the application and usefulness of intraoperative ultrasound (IOUS) in hysteroscopic surgery.

Methods: A literature review was conducted by searching 4 databases (MEDLINE, EMBASE, The Cochrane Library and Web of Science), using the keywords “intraoperative ultrasound” and “hysteroscopy”. The selection was restricted to the papers published in English, spanning from the inception of these databases up to September 1st, 2023. From 145 potentially relevant articles, 20 publications focused directly on IOUS in hysteroscopic surgery. Relevant data were extracted from these articles and their references. The GRADE approach was used to determine the evidence quality.

Results: Many hysteroscopic interventions can be effectively and safely executed via direct hysteroscopic visualisation. In hysteroscopic myomectomy, IOUS significantly reduces the risk of uterine perforation and subsequent complications, particularly in submucosal FIGO 2 myomas with substantial intramural involvement (evidence quality: grade 1B). By augmenting the feasibility of single-step hysteroscopic myomectomy, IOUS may reduce overall treatment costs and the inconvenience associated with multiple procedures. In hysteroscopic metroplasty, IOUS decreases incomplete uterine septum resection (evidence quality: grade 1B). In hysteroscopic management of severe Asherman syndrome, IOUS reduces the risk of uterine perforation or false passage (evidence quality: grade 1C). In patients with Caesarean scar pregnancy (CSP), ultrasound is crucial to define the most appropriate surgical approach and effective to guide hysteroscopic treatment of endogenous CSP (evidence quality: grade 1C).

Conclusions: Although the routine use of IOUS in hysteroscopic surgery may not be imperative, it appears to be a valuable adjunct,

especially in complex cases where the risk of uterine perforation or incomplete lesion resection is increased.

OP17.06

Diagnosing adenomyosis using transvaginal contrast-enhanced ultrasound: a pilot study

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Objectives: Heavy menstrual bleeding, dysmenorrhea and subfertility are common symptoms that are associated with adenomyosis. However, diagnosing adenomyosis remains challenging, leading to insufficient treatment options. Angiogenesis plays a pivotal role in adenomyosis, which is underlined by histological findings of abnormal microvasculature. Diagnosis may be improved by imaging the uterine microvasculature using contrast-enhanced ultrasound (CEUS). Besides visual assessment, quantitative contrast-ultrasound dispersion imaging (CUDI) can add insight into angiogenic processes. Our goals were 1) to determine the feasibility of uterine CEUS, and 2) to visualise and describe the adenomyotic uterus using CEUS qualitatively and quantitatively.

Methods: We included 15 adult premenopausal patients with prominent direct adenomyosis features on B-mode ultrasound, and 1 healthy control. A 3-minute transvaginal 2D CEUS scan with a bolus injection of SonoVue™ was performed. The in- and outflow of the contrast agent in the uterus were analysed qualitatively and quantitatively.

Results: CEUS was well-accepted and easy to perform in all participants. The uterine macro- and microvasculature could be visualised. Myometrial vascularity and perfusion were homogeneous in the healthy uterus. Both parameters were heterogeneous in adenomyotic uteri, with interspersed hyper- and unvascularised spots. Compared to the healthy uterus, CUDI analysis of the adenomyotic uteri suggested higher microvascular density, tortuosity and irregularity, indicative of angiogenesis. There was a large variation in appearance on CEUS between adenomyotic uteri.

Conclusions: CEUS is a technically and practically feasible technique for imaging adenomyotic uteri. Differences in the microvascularisation between the adenomyotic and healthy uterus can be visualised using CEUS. These promising results warrant a

large prospective study to confirm our findings and to evaluate the diagnostic value of CEUS in the diagnosis of adenomyosis.

OP17.07

Uterine leiomyosarcoma: the tumour hidden in plain sight

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Objectives: Diagnostic performance of US, CT and MRI in the identification ULMS was assessed over a decade, analysing preoperative imaging in 13 cases. The research addresses the difficulty of differentiating ULMS from leiomyoma due to overlapping imaging characteristics, the limitations of hysteroscopic biopsies, and frequent misdiagnoses of the “multifibroid uterus”. US and CT, when meticulously analysed, can accurately diagnose ULMS, but relies upon the radiologists’ familiarity with ULMS’s typical imaging appearances on US and CT. We propose leveraging US and CT findings to direct clinicians towards structured diagnostic imaging pathways, incorporating MRI and Molecular Imaging. Highlighting the radiologist’s pivotal role in tumour differentiation, we advocate for strategic imaging pathways to aid in surgical planning and mitigate the risk of disseminating the disease.

Methods: A retrospective review was conducted on the medical imaging used for diagnosing ULMS in an Australian state from 2012-2022, identifying 13 cases through a state pathological database. Data collected included imaging modalities used, radiological suspicion, and surgical outcomes, with analysis of imaging usage rates, surgical approach, diagnostic accuracy, and decision-making correlations.

Results: Preoperative imaging largely relied on US (77% of cases), with CT used in 92% and MRI in one case. PET-CT was not utilised. Only 15% received a preoperative LMS diagnosis based on imaging. Incidental diagnoses post-total abdominal hysterectomy (TAH) occurred in 38%, highlighting preoperative detection challenges. Despite 53% having a preoperative malignancy diagnosis, no surgeries were documented as ‘contained’.

Conclusions: The audit reveals reliance on US and CT for ULMS assessment, recommending more integrated use of both standard and advanced imaging techniques in line with guidelines to enhance diagnostic accuracy and patient care. It emphasises the need for continuous education and strategy updates among healthcare professionals for accurate ULMS identification and differentiation from benign leiomyomas.

SUPPORTING INFORMATION ON THE INTERNET

Supporting information for OP01.05, OP01.06, OP02.05, OP03.01, OP04.03, OP04.04, OP04.09, OP05.04, OP05.08, OP08.01, OP08.02, OP08.06, OP08.08, OP10.04, OP10.05, OP10.07, OP10.08, OP11.01, OP11.04, OP12.05, OP13.08, OP14.01, OP14.06, OP15.09, OP16.01, OP17.03 can be found in the online version of these abstracts.