

Ultrasound features suggestive of adenomyosis in adolescents with dysmenorrhoea: a retrospective review

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 **Objectives**

Can MUSA features of adenomyosis be identified on retrospective review of ultrasound scan images in adolescents with dysmenorrhoea?

 **Methods**

- Inclusion: pubertal females <18 years scanned for dysmenorrhoea (transabdominal, TAS; transvaginal, TVS; or both) in general radiology, Imperial College Healthcare NHS Trust, 2021–2025
- Original assessment derived from the clinical report, which routinely described the myometrium — typically smooth or homogeneous with no lesions identified
- Stored transverse and sagittal uterine views reviewed according to MUSA criteria by two of the authors (M.A.P., EFSUMB Level 2; M.A-M., EFSUMB Level 3)
- **Suspected adenomyosis:** multiple indirect features, no direct feature. **Adenomyosis-compatible:** at least one direct feature
- Original examiner and retrospective MUSA assessments compared using McNemar's exact test

 **Results**

- 196 scans from 191 patients were reviewed; mean age 15.3 years (range 10–17). TAS in 193/196 (98.5%) scans; an additional TVS was performed in 3/196 (1.5%).
- All 191 patients had dysmenorrhoea. Co-existing symptoms included heavy menstrual bleeding 106/191 (55.5%), irregular cycles 26/191 (13.6%) and chronic pelvic pain 17/191 (8.9%).
- Primary operator: radiologist 122/196 (62.2%), sonographer 72/196 (36.7%), 2/196 (1.0%) gynaecology registrar
- MUSA review: no features 148/196 (75.5%); isolated indirect 18/196 (9.2%); multiple indirect 2/196 (1.0%); at least one direct feature 11/196 (5.6%)
- Not assessable on retrospective review 17/196 (8.7%), leaving **179 assessable scans**

7.3%

— 13/179 retrospectively assessable scans were classified as suspected adenomyosis or adenomyosis-compatible, compared with 1/179 (0.6%) on original reporting (p=0.0018)

 **Imaging**

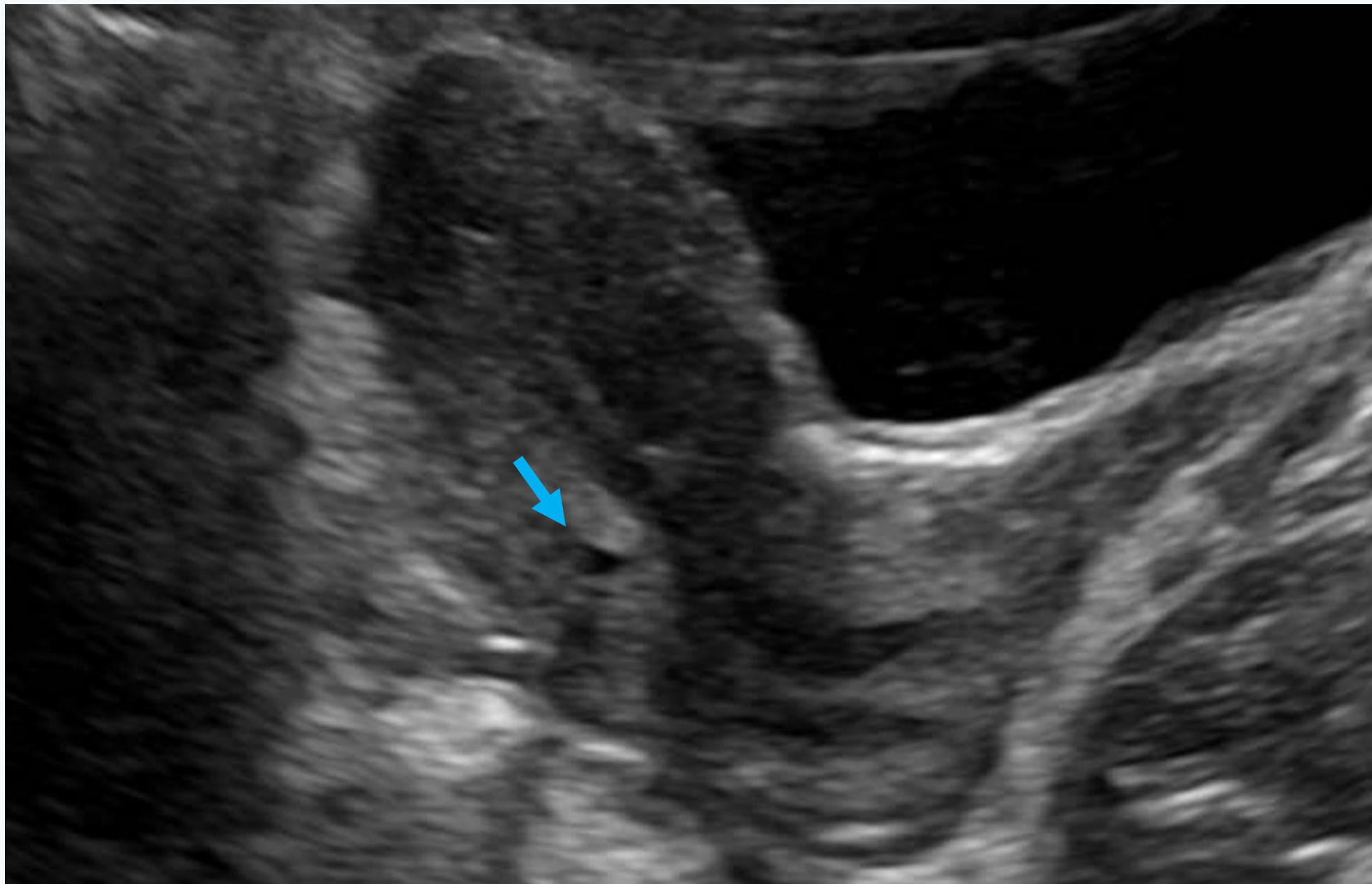


Figure 1. Transabdominal sagittal view of the uterus showing a myometrial cyst (arrow).

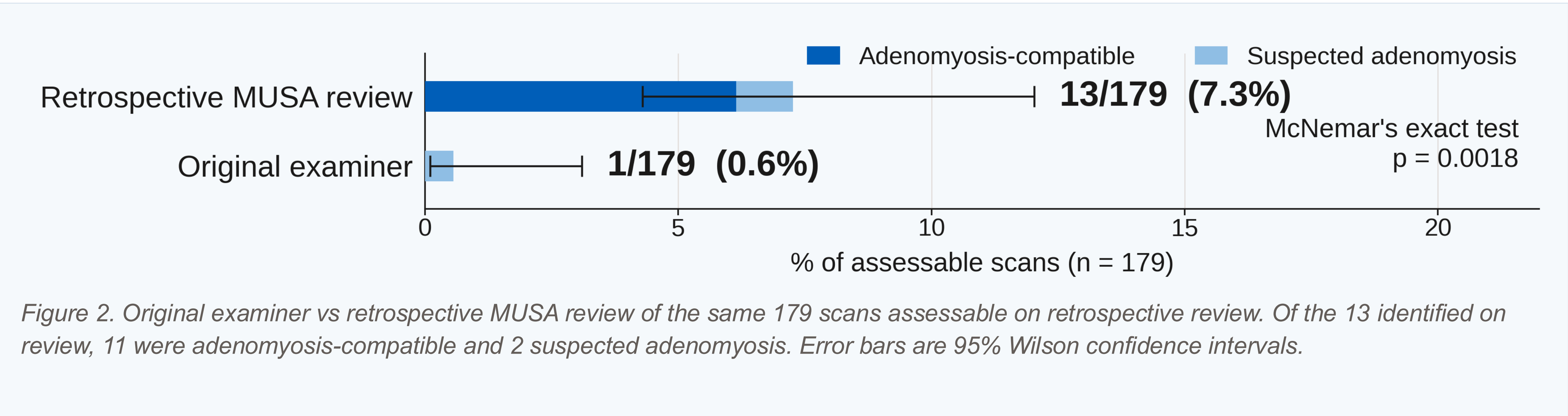


Figure 2. Original examiner vs retrospective MUSA review of the same 179 scans assessable on retrospective review. Of the 13 identified on review, 11 were adenomyosis-compatible and 2 suspected adenomyosis. Error bars are 95% Wilson confidence intervals.

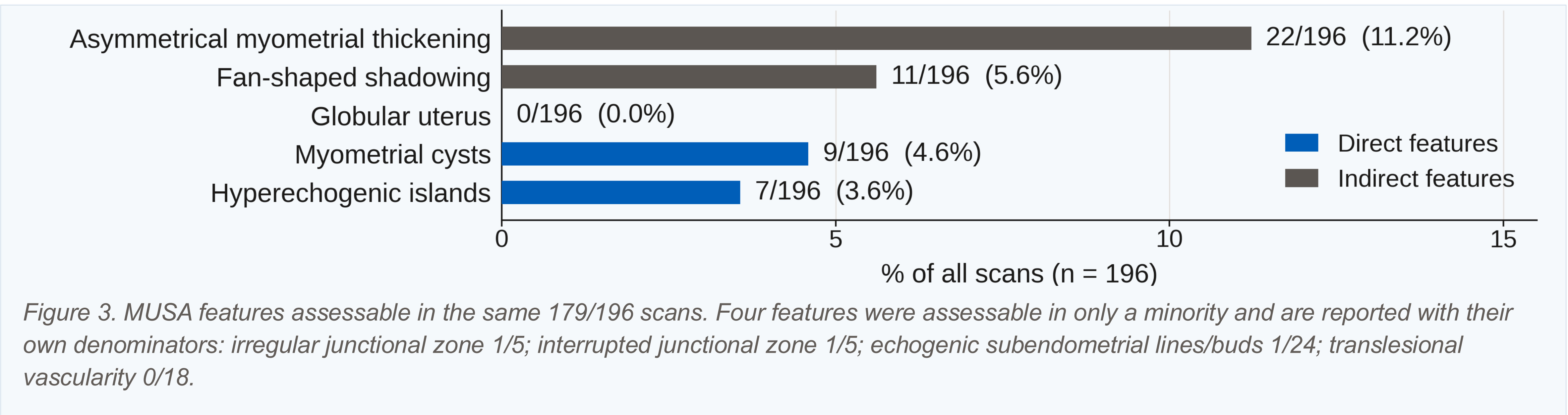


Figure 3. MUSA features assessable in the same 179/196 scans. Four features were assessable in only a minority and are reported with their own denominators: irregular junctional zone 1/5; interrupted junctional zone 1/5; echogenic subendometrial lines/buds 1/24; translesional vascularity 0/18.

 **Conclusions**

- Yes — MUSA features are identifiable on routine transabdominal scans in adolescents
- Targeted review identified them more often than routine reporting, suggesting under-recognition
- Greater awareness and focused MUSA training may improve detection

Limitations: stored still images reviewed retrospectively; assessment was predominantly transabdominal, which may under- or overestimate the observed frequency of MUSA features; colour Doppler performed in only 18/196 scans; junctional zone rarely assessable, as MUSA defines junctional-zone assessment on transvaginal ultrasound, with 3D recommended