

MUSA terminology in the evaluation of myometrial lesions: descriptive features, inter-observer agreement and correlation with histology

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Introduction

Ultrasound assessment of mesenchymal uterine lesions is challenging because benign and malignant entities often share heterogeneous and overlapping features. MUSA terms and definitions provide standardized descriptors to harmonize reporting and support reproducible assessment across examiners.

Aim

This single center, **retrospective** study aimed to compare agreement between two examiners with different levels of experience in assessing myometrial lesions with transvaginal ultrasound, and to evaluate each observer’s agreement with histology after surgery.

Material and Methods

45	Consecutive patients with myometrial lesions selected for surgery
2D/3D	transvaginal ultrasound images retrospectively reviewed
MUSA	descriptive features assessed: <i>shape, borders, echogenicity, cystic areas, acoustic shadows/ calcifications, central necrosis, Doppler color score, and vascularization</i>
2 observers	expert and junior ultrasound examiners independently reviewed images blinded to histology
Agreement	was assessed using percentage agreement and Cohen’s κ

Results

Histopathological diagnosis was available for all 45 cases. Overall, 32 lesions (71.1%) were benign, 2 (4.4%) were STUMPs, and 11 (24.4%) were malignant. Among benign lesions, typical leiomyoma was the most frequent diagnosis (25/32), followed by cellular leiomyoma (4/32); angioleiomyoma, adenomyoma and atypical leiomyoma accounted for one case each. Among malignant lesions, leiomyosarcoma was the most common diagnosis (4/11, 36.4%), followed by undifferentiated uterine sarcoma and endometrial stromal sarcoma (2/11 each, 18.2%). One GIST, one endometrial carcinoma and one carcinosarcoma were also identified.

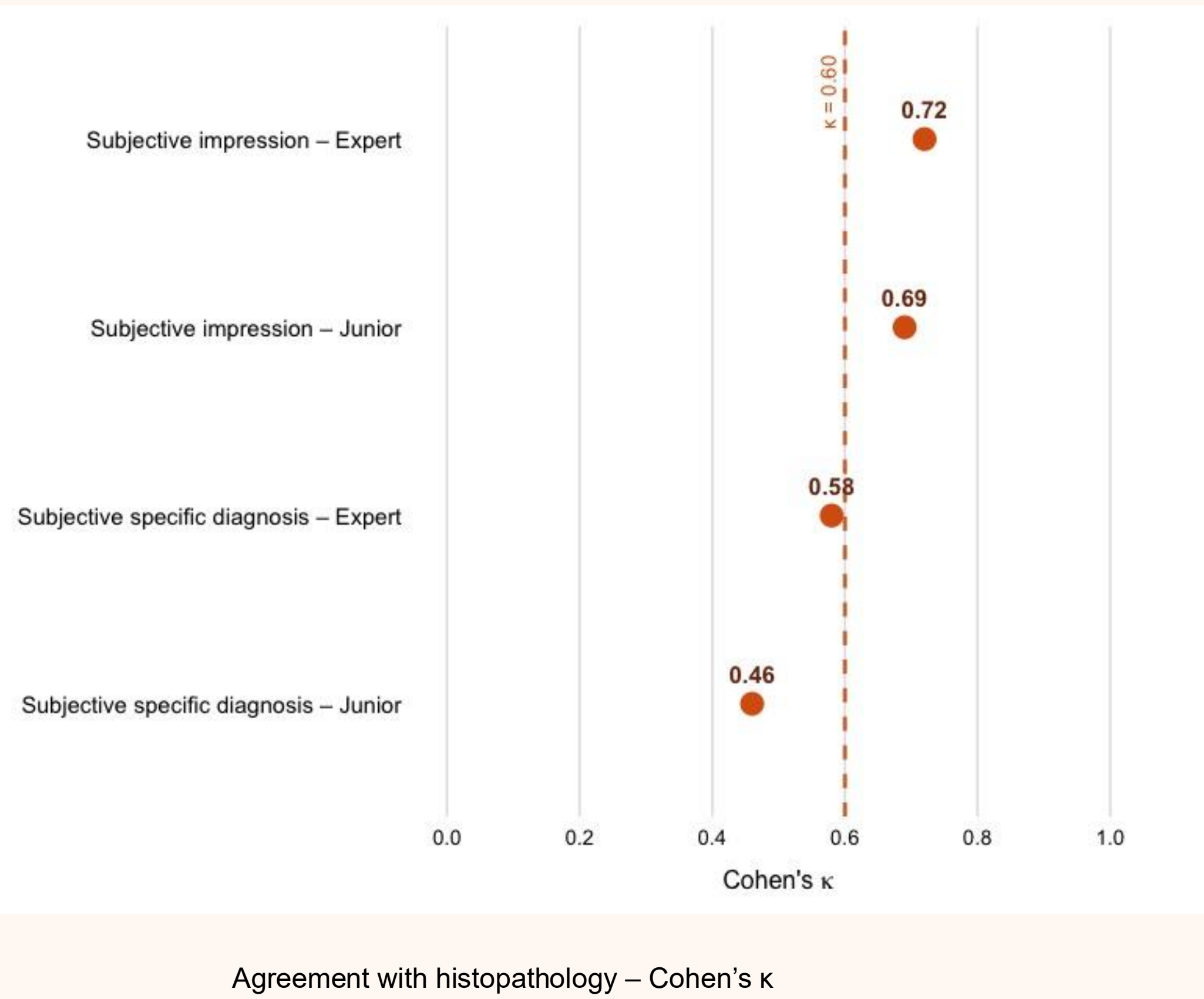
Inter-observer agreement between the expert and junior observer was generally high for objective MUSA features. Exact agreement was consistently high across most morphological and Doppler parameters, with Cohen’s κ indicating substantial to almost perfect agreement for the majority of features. Tumor border showed the lowest reproducibility among the objective parameters. Agreement about the color score was also high when assessed using quadratic weighted Cohen’s κ .

Conclusion

MUSA terms demonstrated good reproducibility between 2 examiners, despite expertise level. Higher agreement was achieved in objective parameters when compared to more subjective assessments such as tumor border and detailed vascular pattern characterization. Regarding subjective assessment and subjective specific diagnosis agreement was generally lower probably related to different experience level between the examiners

Correlation with Histology

Subjective impression of lesion nature showed substantial agreement with histology for both observers ($\kappa = 0.69\text{--}0.72$), whereas specific diagnosis showed moderate agreement ($\kappa = 0.46\text{--}0.58$).



References

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Inter-observer agreement

