AUTOMATICALLY OPTIMIZED RADIOMICS MODELING SYSTEM FOR SMALL GASTRIC SUBMUCOSAL TUMORS (<2CM) DISCRIMINATION BASED ON ENDOSCOPIC ULTRASOUND IMAGES

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A machine learning model using endoscopic ultrasound images demonstrated stable performance for diagnosing gastrointestinal stromal tumors and stratifying malignant risk in small gastric submucosal tumors under 2cm, outperforming experienced endoscopists in a prospective multicenter validation.

KEY POINTS

- The automatically optimized radiomics modeling system achieved an AUC of 0.770 and accuracy of 0.742 for diagnosing GIST versus non-GIST in a prospective validation cohort of 178 patients from different centers.
- For risk stratification distinguishing group 1 and group 4 GIST, the model achieved an AUC of 0.750 and accuracy of 0.872 in the validation set.
- The model outperformed five experienced endoscopists whose diagnostic accuracy ranged from 0.449 to 0.531 for GIST diagnosis and 0.702 to 0.809 for risk stratification.
- The development cohort included EUS images from 205 small gastric submucosal tumor patients under 2cm analyzed using three-fold cross-validation.
- This work is most relevant to endoscopists and gastroenterologists managing small gastric submucosal tumors requiring differentiation of GIST from other entities and assessment of malignant potential.

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