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Summary

EXPLORING THE CHALLENGE OF EARLY GASTRIC CANCER DIAGNOSTIC AI SYSTEM FACE IN MULTIPLE CENTERS AND ITS POTENTIAL SOLUTIONS

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An AI system for diagnosing early gastric cancer maintained sensitivity but showed sharply decreased specificity when tested on multi-center versus single-center videos, though an upgraded version with more training data and novel algorithms partially recovered specificity.

KEY POINTS

- ENDOANGEL AI was retested on videos from 12 institutions (46 early gastric cancers, 54 non-cancers) after initial single-center testing
- For early gastric cancer diagnosis, ENDOANGEL maintained sensitivity (97.83% vs. 100.00%) but specificity dropped from 82.54% to 61.11% on multi-center videos
- The upgraded ENDOANGEL-2022 achieved significantly higher specificity of 79.63% ($p < 0.01$) and made fewer mistakes on typical lesions
- Both AI systems outperformed endoscopists in competitions despite the specificity challenges
- The authors conclude that increased false positives from high heterogeneity of negative cases across centers is a key challenge, and that adding training samples with novel algorithms is a promising solution

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