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Summary

DEVELOPMENT AND VALIDATION OF ARTIFICIAL INTELLIGENCE ALGORITHM FOR AUTOMATED BOWEL PREPARATION SCORING

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UEG Week Copenhagen 2023 | Poster

Colorectal

October 15, 2023

A deep learning algorithm developed to objectively assess bowel preparation using the Boston Bowel Preparation Scoring system demonstrated high accuracy in distinguishing adequate from inadequate preparation across still images and full colonoscopy videos.

KEY POINTS

- The algorithm achieved 93.9% accuracy for binary classification of adequate versus inadequate bowel preparation in still colonoscopy images.
- In full colonoscopy video testing across 80 colon segments, the algorithm demonstrated 91.3% overall accuracy with 86.7% sensitivity for detecting inadequate bowel preparation.
- The convolutional neural network was trained on 1400 still images from 346 procedures, with annotations by three experts using the Boston Bowel Preparation Scoring system.
- Current bowel preparation scoring systems are limited by inter-observer variability because assessment is performed by operating endoscopists.
- This work addresses the need for objective bowel preparation assessment to support qualified colonoscopy and improved adenoma detection.

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