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Summary

EFFECT OF BOWEL PREPARATION QUALITY ON COLONOSCOPIC LESION DETECTION USING COMPUTER-AIDED DETECTION AND MUCOSAL EXPOSURE DEVICES

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In a prospective cohort of 3,661 colonoscopies, computer-aided detection (CADe) and mucosal exposure devices (MED) independently improved adenoma detection across all bowel preparation quality levels, but colonoscopic detection plateaued above Boston Bowel Preparation Scale (BBPS) score 5.

KEY POINTS

- At BBPS 5, adenoma detection rate was 38.4% with CADe versus 28.6% without, and 38.7% with MED versus 28.6% without, with parallel benefit curves across all BBPS levels suggesting no interaction with preparation quality.
- MED nearly doubled sessile serrated lesion detection (OR 1.97, 95% CI 1.38–2.81), while CADe did not significantly improve sessile serrated lesion detection rate (OR 1.21, 0.87–1.67).
- Adenoma detection improved numerically up to BBPS 5, then plateaued or declined; advanced adenoma detection rate and adenomas per colonoscopy declined significantly above BBPS 5 (OR 0.63, 95% CI 0.19–0.89; RR 0.66, 0.46–0.93).
- Neither CADe nor MED compensated for inadequate bowel preparation, and detection remained lower at the lowest BBPS scores.
- The findings suggest that achieving adequate preparation (BBPS ≥6) rather than excellence is the key quality target, and that CADe and MED support routine use in clinical practice.

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