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Summary

ARTIFICIAL INTELLIGENCE–ASSISTED IDENTIFICATION OF RESIDUAL OR RECURRENT DISEASE IN PATIENTS WITH LOCALLY ADVANCED RECTAL CANCER WITH COMPLETE CLINICAL RESPONSE TO NEOADJUVANT CHEMORADIOTHERAPY

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Colorectal

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A convolutional neural network trained on 1,795 proctosigmoidoscopy frames from 97 patients achieved 92.8% accuracy in detecting residual or recurrent rectal cancer in watch-and-wait surveillance after neoadjuvant chemoradiotherapy.

KEY POINTS

- The deep learning model (Wide ResNet-101-2) achieved 80.0% sensitivity, 97.3% specificity, 90.9% positive predictive value, 94.0% negative predictive value, and 0.886 AUROC on the test set.
- The training dataset comprised 363 frames from 24 patients with histopathologically confirmed residual or recurrent disease and 1,432 frames from 73 patients with normal rectal mucosa.
- Endoscopic detection of residual or recurrent lesions in post-radiotherapy mucosa is challenging due to changes such as friability and neovascularization.
- The authors claim this is the first deep learning model specifically developed for detecting residual or recurrent disease during watch-and-wait surveillance endoscopy.
- This work may be of interest to gastroenterologists and colorectal surgeons managing patients in organ-preservation protocols after neoadjuvant chemoradiotherapy for locally advanced rectal cancer.

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