

Detection of Anal Intraepithelial Neoplasia and Anal Squamous Cell Carcinoma on Colonoscopy

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ABSTRACT

The purpose of this case series is to review the endoscopic detection of anal intraepithelial neoplasia and anal squamous cell carcinoma including the role of rectal retroflexion and narrow-band imaging. Four cases of anal intraepithelial neoplasia were incidentally discovered in women aged 55–71 years. Anal lesions identified included sessile polyps, nodular mucosa, and circumferential polyps. A fifth patient, who presented with abdominal pain, was found to have a 3 cm anal squamous cell carcinoma on diagnostic colonoscopy, despite a negative colonoscopy 21 months earlier. In the absence of contraindications, retroflexion should be performed on all patients. Suspicious anal mucosa warrants biopsy.

INTRODUCTION

The incidence of anal cancer has increased over 2-fold since 1975 with an estimated 8,590 new cases and 1,350 deaths in 2020.¹ Anal squamous cell carcinoma (ASCC) arises from anal intraepithelial neoplasia (AIN), a precursor lesion resulting from infection with high-risk strains of human papillomavirus (HPV). Given that ASCC arises from a precursor lesion that is amenable to intervention and eradication, it is an attractive target for early detection. Although randomized studies assessing the survival benefit of screening for anal cancer are lacking, several societies and organizations have recommended anal cytology for screening in high-risk individuals.^{2,3}

Colonoscopy provides an important opportunity for the detection of AIN through rectal retroflexion (RR) views of the anal canal. Retroflexion is performed by flexing the colonoscope tip with the application of torque in an adequately insufflated rectum. RR provides a more adequate inspection of the anorectal junction, allowing for the detection of the subtle findings of AIN, which can be missed on antegrade forward view.⁴ Given the relatively low diagnostic yield of routine retroflexion with rare inherent risks of hemorrhage or perforation, the maneuver has been the subject of debate among endoscopists including on social media recently. In this case series, we review the endoscopic detection of AIN and ASCC including the role of RR and narrow-band imaging (NBI).

CASE REPORT

Case 1: A 55-year-old woman with family history notable for cervical cancer in the patient's mother was referred for colonoscopy because of chronic constipation and hematochezia. Digital rectal examination (DRE) was normal. Colonoscopy revealed hypertrophied anal papillae and a 6 mm sessile polypoid lesion in the rectum on retroflexion view (Figure 1). Pathology revealed high-grade squamous intraepithelial lesion (AIN 3).

Case 2: A 66-year-old woman with a history of high-risk HPV (not 16 or 18) of the cervix underwent surveillance colonoscopy for a history of adenomatous polyps detected 3 years earlier. DRE was normal. On retroflexion, nodular anal mucosa was suggestive of AIN. This lesion was subtle and was better visualized on NBI (Figure 1). Histopathology revealed high-grade squamous intraepithelial neoplasia (AIN 2-3). Previous colonoscopies at age 48 and 63 years were negative for findings on retroflexion.

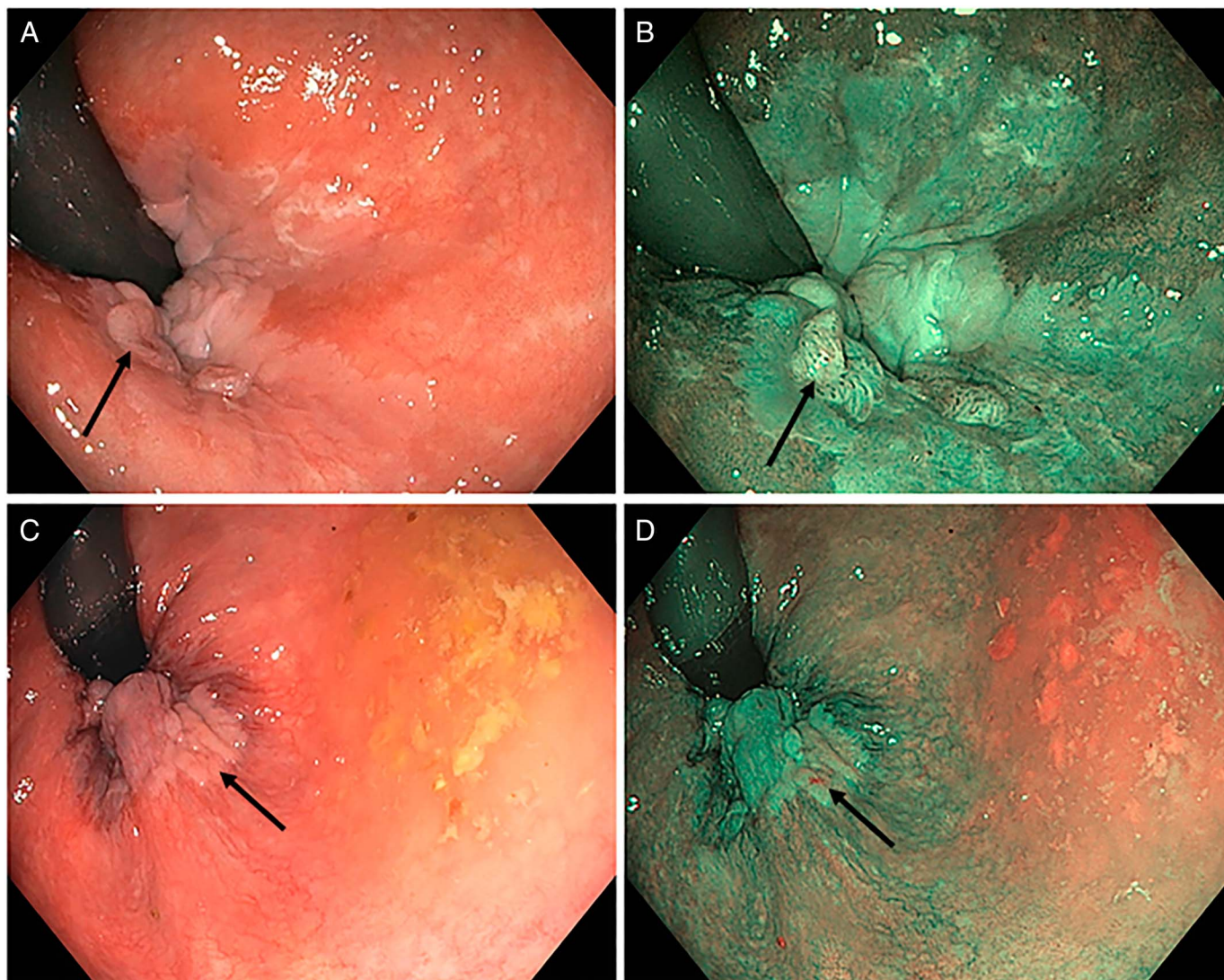


Figure 1. High-grade squamous intraepithelial lesions (arrows) (AIN 2-3) on rectal retroflexion view without (left) and with NBI enhancement (right). Images A and B are from case 1, and images C and D are from case 2. AIN, anal intraepithelial neoplasia; NBI, narrow-band imaging.

Case 3: A 70-year-old woman underwent colonoscopy for evaluation of chronic diarrhea. DRE was normal. Retroflexion view revealed a medium-sized, multilobulated, sessile polypoid lesion at the dentate line. Pathology of the anal biopsy revealed low-grade squamous intraepithelial lesion (AIN 1).

Case 4: A 64-year-old woman underwent screening colonoscopy with no documented retroflexion on previous colonoscopy performed 5 years ago. DRE was normal. A large circumferential polyp was identified in the anus on retroflexion. Biopsy revealed a condylomatous lesion with low-grade dysplasia (AIN 1) positive for low-risk HPV (family 6, 11).

Case 5: A 70-year-old woman presented to the emergency department with epigastric pain and generalized weakness. Abdominal computed tomography scan revealed enlarged lymph nodes in the mesorectal plane and inguinal region concerning for metastatic rectal carcinoma. Fine-needle

aspiration of an inguinal lymph node revealed T2N1cM0 squamous cell carcinoma. The patient had undergone several previous colonoscopies for surveillance of adenomatous polyps, most recently at an outside institution 21 months earlier with no lesions noted on RR. DRE and colonoscopy revealed a 2 cm soft anal mass, and RR revealed the noncircumferential polypoid nonobstructing mass (3 × 3 cm) at the anorectum (Figure 2). Biopsies confirmed HPV-associated squamous cell carcinoma staining positive for p40, p16, and CK7. The patient began chemoradiation for Stage II ASCC.

DISCUSSION

All 4 cases of AIN presented here were discovered incidentally. The abnormal anal mucosa was detected on RR, rather than antegrade views during scope insertion or withdrawal. The visualization was further enhanced with the use of NBI. The case of

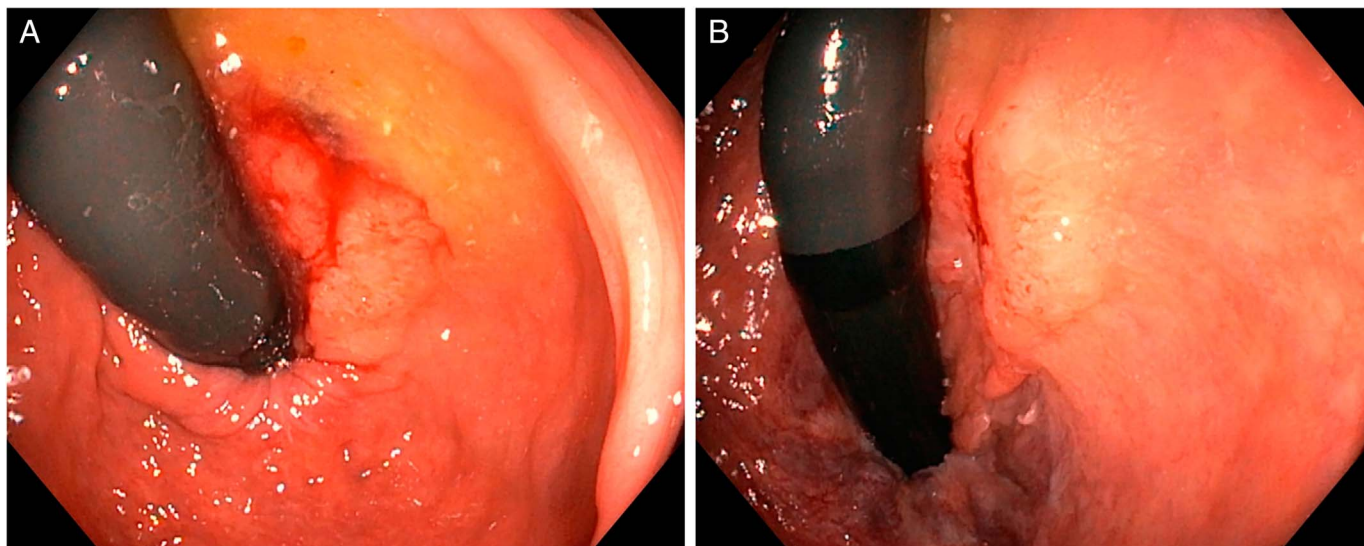


Figure 2. Anal squamous cell carcinoma (case 5). A 3 cm non-circumferential polypoid nonobstructing mass at the anorectum is seen on retroflexion views (A & B).

ASCC (case 5) is of particular importance here because this patient had undergone colonoscopy 21 months before her diagnosis of Stage II ASCC without remarkable findings noted on RR at that time. The median progression time of AIN to ASCC is largely unknown, although a prospective study of 35 patients with AIN III revealed median progression to ASCC in 5 years.⁵ This raises the question as to whether a precursor lesion may have been present and missed at the time of the previous colonoscopy.

We hypothesize that several factors contribute to low AIN detection rates among endoscopists including lack of familiarity with the subtle mucosal changes seen with AIN and concerns over bleeding or pain associated with biopsy below the dentate line. Our patients did not experience any complications associated with biopsies. However, endoscopists should be careful not to biopsy below the dentate line because this is a very sensitive area and can be painful for the patient.

RR with careful DRE supplements forward antegrade viewing and allows the detection of internal hemorrhoids, perirectal polyps, and anal cancers without the addition of significant cost or procedural time.^{4,6} Some providers opt not to perform routine retroflexion because of concerns over patient discomfort or risk of perforation. However, the largest study of rectal perforation in retroflexion reported perforation in only 4 of nearly 40,000 patients (0.01%).⁷

The largest reported cohort of patients to undergo successful RR (1,411 patients) detected polyps in 40 patients, 7 of whose polyps were only visualized by RR.⁸ An adenoma detection rate ranging from 0.3% to 2% has been reported from 4 pooled published studies containing a total of 3,600 patients.⁹ The AIN detection rate among 2,525 patients undergoing colonoscopy was 1 in 261 colonoscopies and was higher among women older than 40 years (1 per 163 colonoscopies).¹⁰

Complementing previous literature findings, the cases presented here underscore the importance of careful evaluation of the distal rectum and anal canal with both antegrade and retroflexion views. The risk of complications from RR may be higher in certain patients with rectal inflammation or in cases where resistance is encountered. In the absence of contraindications, DRE coupled with thorough RR examination and use of NBI is advised to increase detection of AIN.

DISCLOSURES

Author contributions: JK Voss reviewed the literature and wrote and approved the manuscript. AT Kurdi reviewed the literature, provided images, and revised the manuscript for intellectual content. M. Braga Neto provided images and revised the manuscript for intellectual content. XJ Wang provided images and revised the manuscript for intellectual content. VG Chedid provided images, revised the manuscript for intellectual content, edited and approved the manuscript, and is the article guarantor.

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Informed consent was obtained from the patients in this case series.

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