Identification and Reporting of Anal Pathology during Routine Colonoscopies

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Abstract

Keywords
► anal fissures
► anal polyps
► anal squamous cell carcinoma
► condylomas
► hemorrhoids

The gold-standard procedure for anal canal examination is anoscopy. Nonetheless, patients are referred for a colonoscopy for many reasons, and a routine exam might provide an opportunity to diagnose anal pathologies, such as hemorrhoids, anal fissures, anal polyps, condylomas, and anal squamous cell carcinoma. It is important to know the main features of these conditions and relevant information to report in order to help guide patient treatment and follow-up.

Introduction

Colonoscopies are one of the most commonly performed endoscopic procedures, with several indications for a referral to this examination.[1] Colonoscopy is not the gold standard for an anal canal evaluation, as a complete evaluation of the anal canal is not possible due to the limited distention during this procedure. Anoscopy is the gold-standard examination for the anal canal and cannot be replaced by colonoscopy.[2,3] However, a proper examination of the perianal area, a digital ano-rectal examination (DARE), and a careful evaluation of the squamocolumnar junction during colonoscopy might help detect undiagnosed pathologies that can have an impact on patient care. An early detection of anal cancer improves patient survival, as the tumor diameter impacts the prognosis.[4] In a study by Gomes et al.[5] including 12,151 patients submitted to routine colonoscopy with anoscopy, 77% were diagnosed with anal pathology. The most common were hemorrhoids, with internal grade-I hemorrhoids being identified in 48.6% and internal grades-II, III, and IV hemorrhoids observed in 19.4% of patients. Fissures were described in 3.42% of patients, polyps in 0.51%, perianal fistula in 0.35%, and condylomas in 0.15%. There were four cases of anal canal neoplasia, two cases of anal squamous cell carcinoma (SCC), and two cases of adenocarcinoma. In this study, the evaluation of the anal canal during colonoscopy helped detect bleeding sites and diagnose cancer in some patients.

In this paper, the diagnosis and reporting of anal pathology in routine colonoscopies will be discussed, including features and information related to hemorrhoids, anal fissures, anal polyps, condylomas, and anal SCC, ►**Table 1**.

Digital Ano-Rectal Examination (DARE)

Despite the use of new technology, clinical examination will always play a key role in the diagnosis and prevention of anal

Table 1 Relevant information regarding anal pathology

Hemorrhoids
Classification
Diagnosis of thrombosed hemorrhoids
Anal fissures
Classification
Number
Location
Anal polyps
Location
Differential diagnosis
Condylomas
In case of perianal condylomas > evaluation of the anal canal
Biopsies if anything suspicious or refractory to therapy
Anal squamous cell carcinoma
Identification of high-risk groups
Digital ano-rectal examination
Retroflexion

pathology. The DARE is the first step of a colonoscopy and may detect any abnormalities of the perianus, anal canal, distal rectum, prostate, in men, and rectovaginal septum, in women. If the colonoscopy is performed in left lateral position, it is possible to inspect the perinanus after a gentle traction of the buttocks, which can expose the entire anal margin; thus, having good lighting is essential. The DARE is performed in the same way with or without general anesthesia. A gloved, lubricated index finger should be gently applied to the anal verge and inserted in the rectum once the anal sphincter is relaxed. A gentle lateral pressure between the thumb and the index finger in all four quadrants may detect any mass, induration, thickness, granulation, depression, or palpable abnormalities.[6] The palpation of the entire anal canal is assessed during slow withdrawal of the finger. Any abnormalities in terms of location (proximal, mid canal, or distal canal), position (anterior/posterior/left/right), type of lesion, size, contour, and tenderness should be described in the medical colonoscopy report. The examining finger should be inspected for blood, mucus, and feces after it is withdrawn. The procedure is short, usually taking no more than 1 minute, and it can detect palpable masses as small as 3 mm.[7] Since teaching DARE is challenging, accuracy may be improved with an appropriate teaching process and standardization, as the one used for prostatic evaluation by digital rectal examination.[8]

Retroflexion During Colonoscopy

Retroflexion should allow the visualization of the proximal anal canal and the distal 3 to 4 cm of rectal mucosa.[9]

Some studies have reported an increased detection of adenomatous polyps when this maneuver is performed.[10,11]

A large study by Varadarajulu et al.,[10] which included 600 patients, evaluated whether retroflexion increased the diagnostic yield compared with straight view examination of the distal rectum. In this study, 30 patients were found to have lesions in the anorectum, with more than 50% of lesions in the rectal vault only identified by retroflexion. There are also case reports in the literature describing missed neoplastic lesions in the anorectal area due to lack of retroflexion.[12,13] However, in a large study including 1,502 patients performing a routine rectal retroflexion after a forward examination of the rectum did not detect clinically important neoplasia.[14] In addition, in a study by Cutler et al.,[15] retroflexion was performed successfully in 445 of 453 patients, and in 9 cases, retroflexion did identify additional cases, but none was an adenomatous polyp (3 inflammatory pseudopolyps, 5 hyperplastic polyps, and 1 case of erosions/ulcerations). The same conclusions were drawn in a study by Reddy et al.[16] that included 1,513 total colonoscopies with retroflexion and antegrade viewing. In this study, 9 lesions were visible only during retroflexion (8 hyperplastic polyps and 1 benign inflammatory polyp), but none of these polyps were adenomatous. The differences between studies may be due to the fact that in the later studies, a systematic forward-viewing examination to the dentate line before retroflexion was always performed.[17]

Some cases of rectal perforation when performing retroflexion have been described,[18–20] and, in some of these cases, successful closure was achieved with clips.[20] In a large multicenter study including 39,054 consecutive colonoscopies, there were 4 cases of rectal perforation during rectal retroflexion (0.10 per 1,000).[21] Cases of severe proctitis or a contracted rectal vault should be excluded from this maneuver.[22] In unsedated procedures, retroflexion was impossible in 3.5% of the examinations due to discomfort.[11]

Some guidelines, such as the UK quality standards for colonoscopy, recommend attempting retroflexion in all cases.[23] In contrast, French guidelines do not make any recommendation about retroflexion, but emphasize that DARE and careful low rectal examination are necessary during colonoscopies.[24]

Hemorrhoids

Hemorrhoids are masses of vascular tissue in the anal canal and can be classified as internal or external. They are present at birth in three discrete masses, and internal hemorrhoids may help occlude the anus, contributing to continence.[25]

A variety of anorectal complaints are diagnosed as hemorrhoids by providers who have initial contact with the patients, but bleeding and prolapse are the cardinal symptoms. Blood appears as a bright red spot on the toilet tissue or on the surface of the stools or may be abundant during the first few minutes after the stool has been expelled. A mass protruding from the anus may develop and become symptomatic with mucoid soiling when the hemorrhoids prolapse permanently.[25] Internal hemorrhoids arise from the superior hemorrhoidal vascular plexuses above the dentate line in three primary positions (right anterior, right posterior, and

left lateral); they are covered by mucosa, bulge into the lumen, and are not palpable unless they are thrombosed. Internal hemorrhoids may be classified by grade, based on size and the presence of prolapse.[26] Grade-I hemorrhoids project a short way into the anal canal, and the only symptom is occasional bleeding. Grade II hemorrhoids prolapse with defecation but reduce spontaneously. Grade-III hemorrhoids prolapse with defecation, but must be reduced manually, and grade-IV hemorrhoids are irreducible. Grade-IV prolapse can be visible prior to colonoscopy, but anoscopy with and without straining of the patient is necessary to evaluate the anus thoroughly. Treatment should be adapted to symptoms and hemorrhoid grade. Conservative medical treatment with increased fiber intake and avoiding constipation is usually sufficient for grade-I hemorrhoids. Rubber band ligation is an efficient office procedure and is most commonly performed for bleeding grade-II or -III hemorrhoids. Various surgical procedures may be recommended when medical or instrumental treatment has failed, or immediately for symptomatic grade-IV hemorrhoids or in the case of anemia with iron deficiency.[27]

External hemorrhoids are dilatations of the inferior hemorrhoidal plexuses lying below the dentate line that are covered by anoderm and perianal skin; visible to examination in the subcutaneous tissue, particularly in the case of thrombosis, with a blood clot appearing as a tender, blue spherical mass from a few millimeters to several centimeters in diameter; and responsible for acute pain. The overlying skin is tense and edematous, or sometimes thin and ulcerated, with partial extrusion of the clot. Medical treatment is often sufficient; however, excision may be an option within the first 48 hours. Skin tags may be residue of resolved thrombosed external hemorrhoids. Surgery could be considered in recurrent acute thrombosis or persistent symptoms.[25]

A colonoscopy with retroflexion does not enable a complete proctologic evaluation for hemorrhoids, and an anoscopy is needed.

Anal Fissure

Fissures are defined as anal lacerations in the anal mucosa below the dentate line.[28] Patients normally present with pain (a sharp sensation during or immediately after evacuation)[29] and bleeding (bright red and scanty).[30] Fissures typically occur in young or middle-aged adults and are equally common in both genders.[29]

Anal fissures can be acute or chronic, and these different types of fissures have distinct features. An acute fissure appears as a regular laceration, while chronic fissures have an external skin tag (sentinel tag), a hypertrophied anal papilla, and a white base of linear exposed fibers (►Figs. 1a and –1b).[28]

The number and location of the fissures should be reported. Fissures most commonly occur first in the posterior midline, followed by the anterior midline.[29] Off-midline fissures can be associated with other conditions, namely Crohn disease, human immunodeficiency virus (HIV), syphilis, and tuberculosis, and appropriate follow-up to check for these conditions might be needed.[30]

Anal Polyps

Though more commonly found higher in the colon and rectum, polyps can also be seen in the anal canal or protruding from the anus. Adenomatous polyps (tubular, tubulovillous, and villous) or hyperplastic polyps have the same characteristics as those higher in the digestive tract and should be considered colonic polyps. Adenomatous polyps should be removed, and potential malignancy should be considered before resection.[31] The finding during an anoscopy of an adenomatous polyp, regardless of size, is an indication for a total colonic examination.[32]

Many benign anal polypoid lesions can be seen at the end of a colonoscopy during the withdrawal of the colonoscope or during the retroflexion if performed. A hypertrophied anal papilla is a whitish fibrous polypoid anal structure with a
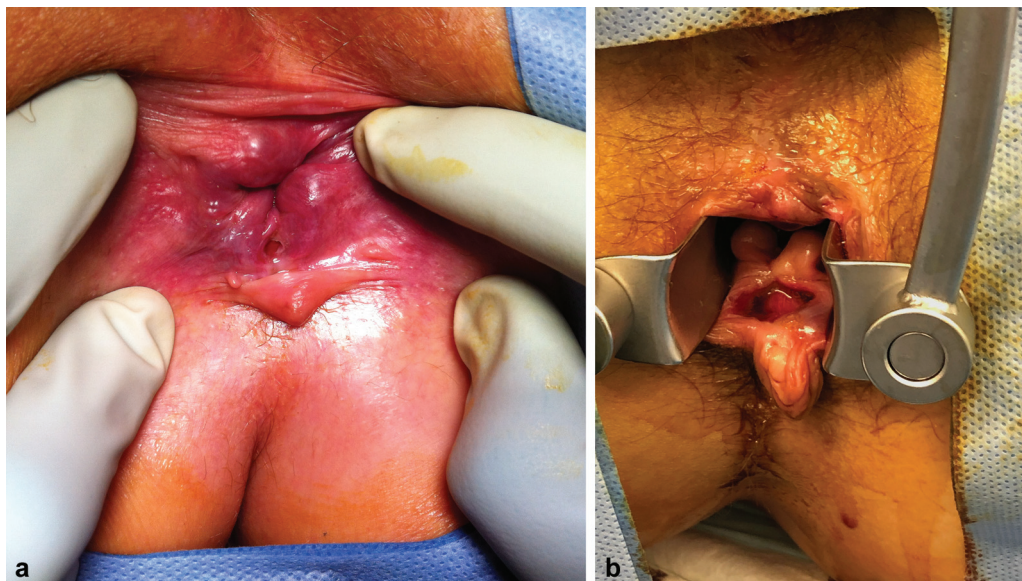

Fig. 1 (a) Acute anal fissure. (b) Chronic anal fissure.

Fig. 2 Hypertrophied anal papilla seen during retroflexion.

slender base at the pectinate line (►**Fig. 2**) and can be differentiated from an adenomatous polyp by its white appearance and its origin from the lower squamous aspect of the dentate line in the anal canal.[33] Generally, when not symptomatic, a hypertrophic papilla should be ignored and differentiated from fibrosed-hypertrophied papillae, which are frequently found in the upper part of a chronic fissure. Inflammatory pseudopolyps associated with inflammatory bowel disease should be dismissed.[34] Rare melanoma, presenting as a dyschromic lesion, should be recognized and managed according to extension.[35] Due to histologic variations in the anal canal and margin, a variety of common and rare benign lesions might present as anal polyps, with varied implications: cysts, lipomas, papillary hidradenomas, melanocytic nevi, hamartomas, xanthogranulomas, seborrheic keratosis, fibrous histiocytomas, granular cell tumors, and lymphangiomas have all been described.[36] Most of these lesions were clinically asymptomatic, and

in a few cases were incidentally discovered during routine colonoscopy.[36]

Anal and Perianal Condylomas

Condylomas are cauliflower-type lesions associated with anal HPV infection that can occur in the anogenital area, including the perianal area and/or anal canal (►**Figs. 3a and –3b**).[37]

Recommendations state that atypical lesions that do not respond or worsen during treatment or those with an uncertain diagnosis should be sent for histological analysis.[38]

Condylomas have been considered benign lesions, but a recent meta-analysis by Albuquerque et al.[39] showed that the prevalence of anal high-grade squamous intraepithelial lesions (HSILs) in anal condylomas from immunocompromised patients was 24.0% (16.4% – 33.7%), and high-risk HPV infection was present in 40.2% (21.0–63.1%) of these patients. Patients, especially men, with a history of anal condylomas have a high risk of anal SCC. The standardized incidence ratio of anal SCC in patients with a history of anal condylomas was 10.7 (8.5 – 13.5), with a standardized incidence ratio of 20.1 (14.4 – 28.2) in men and 7.7 (5.6 – 10.5) in women. The overall incidence rate of anal SCC in individuals with a history of anal condylomas was 6.5 per 100,000 person-years (3.6 – 11.7), 12.7 (9.1 – 17.8) in men and 4.7 (1.7 – 13) in women.[39]

Perianal condylomas can be associated with intra-anal condylomas, and, when present, an evaluation of the anal canal with anoscopy might be needed.[40] Data from the Australian Study of the Prevention of Anal Cancer (SPANC), which included men who have sex with men (MSM) and bisexual men aged 35 years and older, showed that many of the patients with anal condylomas did not have a known history of this condition, suggesting that many were unaware of this diagnosis. In a total of 604 patients with available data, 273 (45.2%) reported a history of anal condylomas. Of the 604 patients, 51 (8%) had perianal condylomas, 23 of whom (45%) also had intra-anal condylomas.[41]
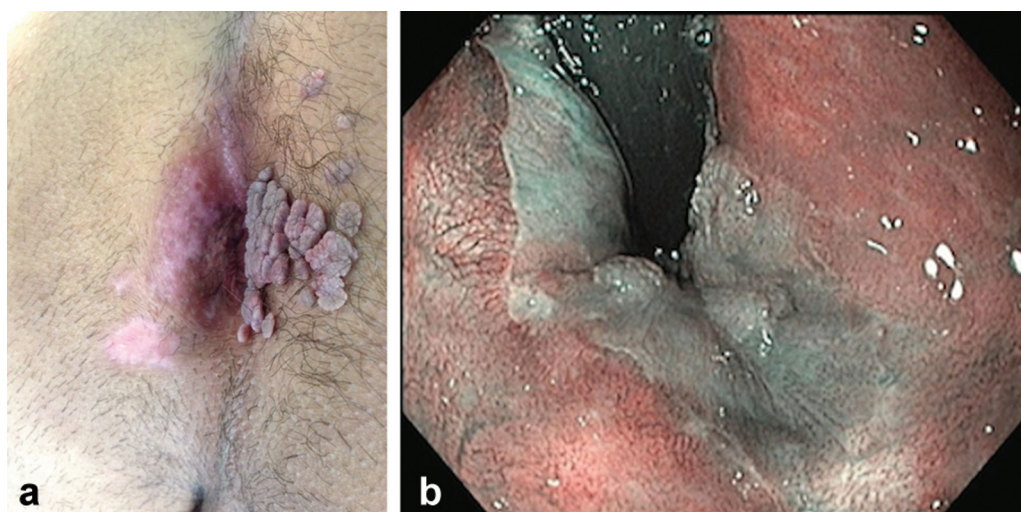

Fig. 3 (a) Perianal condylomas and perianal area after treatment of condylomas with argon. (b) anal condylomas diagnosed during retroflexion with NBI.

Fig. 4 Colonoscopy with retroflexion showing a normal squamocolumnar junction seen with NBI.

Several therapeutic procedures have been described for treatment of anal condylomas, including topical therapies and ablative procedures. In addition, argon plasma coagulation has been described as a possible therapy for anal condylomas.[42,43]

Anal Squamous Cell Carcinoma

Anal cancer and anal SCC are frequently used synonymously, as anal SCC is the most common histological type of anal cancer. Other types of anal cancers, such as adenocarcinoma, melanoma, neuroendocrine tumors, and anal lymphoma, can also occur.[44]

People living with HIV that are MSM comprise the highest risk group for SCC.[45] Solid organ transplant recipients, especially women with more than 10 years post-transplantation; women with genital neoplasia, especially those with vulvar high-grade lesions or cancer; patients with systemic lupus erythematosus; and patients with inflammatory bowel disease are other high-risk groups for anal SCC.[45]

Without a proper evaluation of the perianal area and the anal canal, anal SCC might be missed. In patients with an increased incidence of anal SCC that are referred to colonoscopy, retroflexion should be performed allowing for the visualization of the squamocolumnar junction (►**Fig. 4**) and any lesion that might be suggestive of an anal cancer.[46]

If diagnosed with anal SCC, the patient should be referred to a multidisciplinary team meeting. The first-line therapy for anal SCC is chemotherapy and radiotherapy.[47]

Most of the precancerous lesions, named anal HSILs, occur in the squamocolumnar junction and are not visible to the naked eye.[48] In the high-risk groups, the observation of the squamocolumnar junction with retroflexion might also help detect anal precancerous lesions or cancer. A complete observation of the entire anal canal and of the perianal area is not possible during colonoscopy[46]; in contrast, high-resolution anoscopy is a technique that allows the observation of the anal canal and perianal area under magnification using a colposcope.[49] The application of 5% acetic acid (acid-induced white lesions) helps to reveal a typical pattern including mosaic and punctation.[49,50] Cancers have more disruptive vascular changes[49,50] and can present as an ulcer (►**Fig. 5a**) or a mass (►**Fig. 5b**). Anal HSILs are normally Lugol negative; however, when applying a Lugol solution, the typical pattern is not seen, but it can help in the clear delineation of the margins.[49] The results of one study seem to suggest that acetic acid and narrow-band imaging (NBI) applied together during endoscopy might help detect more lesions.[51]

Pathology reports of anal biopsies might look unfamiliar to many endoscopists. For anal precancerous lesions, pathologists can use one of two classifications. One of these is the anal intraepithelial neoplasia (AIN) or perianal intraepithelial neoplasia (PAIN) classification: AIN1 (mild dysplasia), AIN2 (moderate dysplasia), and AIN3 (severe dysplasia). In AIN2 cases, it is important to perform staining for the histochemical marker p16, as AIN2 p16-negative lesions are low-grade and AIN2 p16-positive lesions are considered high-grade. In contrast, in the Lower Anogenital Squamous Terminology classification,[52] lesions are classified as low-grade squamous intraepithelial lesions (LSILs) or HSILs. Anal
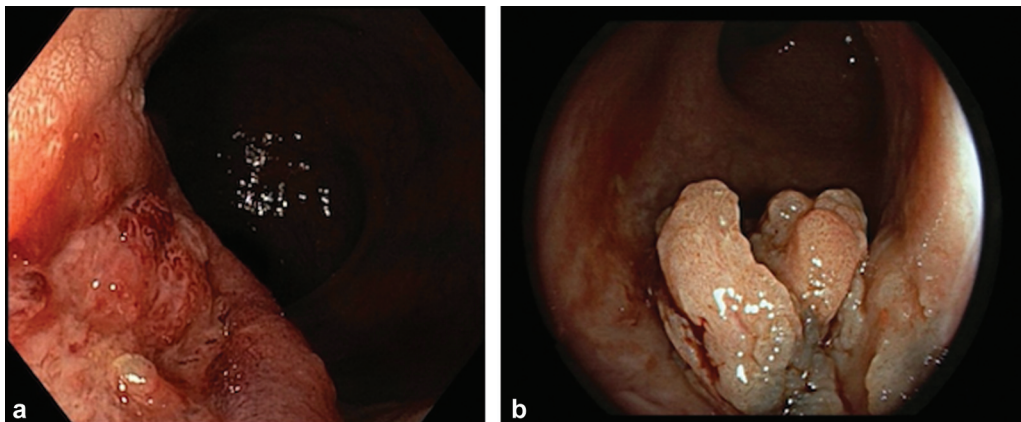

Fig. 5 (a) Anal squamous cell carcinoma presenting as an ulcer in the squamocolumnar junction seen during a colonoscopy. (b) Anal squamous cell carcinoma presenting as a mass during colonoscopy.

intraepithelial neoplasia (AIN)1 and AIN2 p16-negative lesions are LSILs with a very low risk of progression and no treatment needed,[53] while AIN2 p16-positive and AIN3 lesions are HSIL.

A randomized control trial including 4,446 persons living with HIV ≥ 35 years old with anal HSIL randomized patients to receive either HSIL treatment or active monitoring without treatment. The risk of anal cancer was significantly lower with anal HSIL treatment than with active monitoring.[54]

Conclusions

A careful colonoscopy should not replace a proper anal evaluation by anoscopy; however, when patients are referred for a routine colonoscopy and anal pathology is seen, an evaluation should be performed to make a diagnosis. The first step is a careful DARE, which might help detect even small (suspicious) lesions. The second step is a careful examination of the low rectum with a slow withdrawal of the colonoscope and visualization of the squamocolumnar junction. Because some perforations have been described, retroflexion during colonoscopy is not systematically recommended by all endoscopic societies, but it might help in the examination of the low rectum and upper anal canal. Hemorrhoids are one of the most common diagnoses, and a diagnosis and classification should be provided whenever possible, as this can explain patient symptoms (e.g., bleeding) and have implications for therapy. Anal fissures can also be diagnosed with a careful examination, and the type, number, and location can be provided. The endoscopist should be able to perform a differential diagnosis between anal polyps and hypertrophic papillae, the latter of which should be dismissed. Patients with anal condylomas have a higher risk of anal SCC and condylomas might harbor anal precancerous lesions. In high-risk groups for anal SCC referred for colonoscopy, a careful DARE and examination of the squamocolumnar junction might help detect cancer.

Conflict of Interests
The authors have no conflict of interests to declare.

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