# Anal Dysplasia

Craig A. Messick, MD*, Miguel A. Rodriguez-Bigas, MD

**KEYWORDS**

• Anal dysplasia • HSIL • HGAIN • Anal cytology • High-resolution anoscopy • LSIL • LGAIN • Squamous cell carcinoma

**KEY POINTS**

- Recognition of high-grade from low-grade dysplasia is paramount because low-grade dysplasia is not believed to progress to cancer and high-grade dysplastic lesions can be targeted for treatment during high-resolution anoscopy (HRA).
- Treatment strategies vary with multiple options for intra-anal canal and external perianal lesions with high-grade dysplasia all with similar efficacy and recurrence rates.
- HRA is a specialized procedure best suited to identify and treat anal canal and perianal areas with dysplasia; unfortunately, there not enough practitioners using the technique.

Anal dysplasia is a cytopathology term describing specific squamous cell morphology and represents a varying degree of benign changes. Often a source of confusion, the current iteration includes two types, low-grade and high-grade, and carries significant clinical implications. This article updates readers on the current definition of anal dysplasia; describes its incidence and prevalence; defines high-risk populations; and highlights diagnostic, treatment, and long-term management strategies for patients with anal dysplasia.

## DEFINITION

In 2001, the Lower Anogenital Squamous Terminology Project, sponsored by the College of American Pathologists and the American Society for Colposcopy and Cervical Pathology, was convened to formalize and uniform a definitive, descriptive definition for anal dysplasia. The group was to formulate a definition using a nomenclature system that would streamline multiple different terms for dysplasia previously derived from a variety of specialties that have accumulated over the preceding century, a source of much confusion among clinicians and specialties. The results were then presented at the Bethesda Consensus Conference to standardize the terminology and ultimately improve diagnostic capability and patient outcomes.[1–3] As a result

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Section of Colon and Rectal Surgery, Surgical Oncology, University of Texas MD Anderson Cancer Center, 1515 Holcombe Blvd, Houston, TX 77030, USA
* Corresponding author.
*E-mail address:* Cmessick@mdanderson.org

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of the conference, anal dysplasia has been simplified into two groups, low-grade and high-grade dysplasia, removing all previously used terminology. Previous terms including anal intraepithelial neoplasia (AIN) I, low-grade dysplasia, mild dysplasia, and condyloma (with appropriate architectural background), are now collectively termed low-grade squamous cell intraepithelial lesions (LSIL), and are not considered precancerous.[1,4] These lesions described by Darragh and colleagues[1] are listed **Table 1**.

The American Society of Colon and Rectal Surgeons recommends using the term low-grade AIN (LGAIN) because the other terms more commonly reflect cytology and not true histologic findings.[5] Terms including Bowen disease, carcinoma in situ, AIN II, AIN III, moderate dysplasia, and high-grade dysplasia are now collectively termed high-grade squamous cell intraepithelial lesions (HSIL) and are considered precursor lesions to cancer, or squamous cell carcinoma (SCC).[4] Likewise, the American Society of Colon and Rectal Surgeons recommend using high-grade AIN (HGAIN) for this group of lesions for the aforementioned reason.[5] As the authors understand current definitions, LSIL and HSIL are used to represent cytology specimens (brushings from the anus) and LGAIN and HGAIN for biopsy or resected tissue specimens.

With the refined consensus definitions, it is anticipated that diagnostic and treating clinicians will have improved accuracy and management outcomes. However, subjective interpretation remains a potential problem with decreased interobserver reproducibility leading to biased specimen diagnoses.[3] Additionally, sampling in the anal canal is challenging because of inherent anatomic constraints. This often results in smaller sample size increasing the likelihood of inadequate tissue for diagnoses, or perhaps even worse, underrepresentation of actual disease.[6]

**Table 1**
**Descriptions of different types of lesions**

| Name | Description |
|---|---|
| Low-grade squamous cell intraepithelial lesion (cytology)<br>Low-grade anal intraepithelial neoplasia (tissue) | Proliferation of squamous or metaplastic cells with abnormal nuclear features including increased nuclear size, irregular nuclear membranes, and increased nuclear-to-cytoplasmic ratios. There is little cytoplasmic maturation in the lower third of the epithelium, but maturation begins in the middle third and is relatively normal in the upper third. Mitotic figures are limited to the lower one-third of the epithelium. The presence of diagnostic cytopathic effect of human papilloma virus (koilocytosis) including multinucleation, nuclear enlargement, and pleomorphism accompanied by perinuclear halos without the features of a high-grade lesion. |
| High-grade squamous cell intraepithelial lesion (cytology)<br>High-grade anal intraepithelial neoplasia (tissue) | Proliferation of squamous or metaplastic squamous cells with abnormal nuclear features including increased nuclear size, irregular nuclear membranes, and increased nuclear-to-cytoplasmic ratio accompanied by mitotic features. There is little or no cytoplasmic differentiation in the middle third and superficial thirds of the epithelium. Mitotic figures are not confined to the lower third of the epithelium and may be found in the middle and/or superficial thirds of the epithelium. |

*Data from* Darragh TM, Colgan TJ, Cox JT, et al. The Lower Anogenital Squamous Terminology Standardization Project for HPV-Associated Lesions: background and consensus recommendations from the College of American Pathologists and the American Society for Colposcopy and Cervical Pathology. J Low Genit Tract Dis 2012;16:205–42.