

National Colorectal Cancer Screening Network  
**Classification of Benign  
Polyps**

Pathology Working Group Report  
June 2011

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The views expressed herein represent the views of the Pathology Working Group Members.

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## 1.0 Introduction

As of late 2010, colorectal cancer (CRC) screening programs have been introduced in all Canadian provinces. This has led to enhanced opportunities for detection and management of patients with CRC precursor lesions, as screening programs allow the use of formal guidelines, quality standards and audits. An important role of screening programs is to detect precursor lesions (primarily adenomas and serrated polyps), and thereby identify patients at increased risk for the development of CRC. The management of patients within these programs depends on an accurate diagnosis of colorectal polyps. The use of a standardized set of diagnostic terms by pathologists from all jurisdictions in Canada would enhance the quality of diagnosis, and would facilitate subsequent national quality audits. Furthermore, a set of uniformly applied diagnostic standards would be helpful, given that some CRC precursor lesions may be difficult to diagnose and their natural history and clinical implications are not yet fully elucidated.

With the above factors as drivers, a Pathology Working Group was assembled in September 2010 under the auspices of the National Colorectal Cancer Screening Network (NCCSN) of the Canadian Partnership Against Cancer (CPAC). The primary objective of the Working Group for the first phase of its work was the creation of a set of consensus-driven guidelines for the classification and reporting of colorectal polyps. These guidelines must meet Canadian needs, reflect international guidelines where appropriate, and be evidence-based.

This report presents the outputs of the Working Group's activities, from its inception in September 2010 until June 2011, at which time the Chair, Dr. David Driman, delivered the draft recommendations of the Group in the form of "Guidelines for Reporting Colorectal Polyps" at the annual meeting of the Canadian Association of Pathologists (CAP) in Vancouver. This report documents the approach followed by the Working Group, describes the guidelines that were developed and recommendations regarding specimen handling and processing, and proposes a high level plan for the Group's implementation activities.

Note that the presentation material delivered at the 2011 Annual Meeting of CAP provide pathological images and are intended as a companion document to these proceedings.

## 2.0 Approach

The Pathology Working Group was initially convened in September 2010, with an invitation from the NCCSN to key stakeholders across the country to attend a half-day workshop in Fredericton, New Brunswick. Workshop participants included pathologists, gastroenterologists, and representatives from provincial cancer agencies and CPAC itself. At the conclusion of the workshop, all participants were invited to become members of the ongoing Working Group, with all but one opting to become members. Three additional members were invited to become members to ensure appropriate geographic representation. Membership of the Working Group is included in the Appendix.

Prior to the session in Fredericton, invited participants were contacted and asked about their most significant concerns related to the current classification and reporting of colorectal polyps.

These concerns helped to define the focus of workshop discussions and the requirements of the new guidelines, and are summarized as follows:

- Classification of polyps:
  - Variable terminology in use
  - Information provided by endoscopist is sometimes incomplete, vague and of unknown clinical relevance
  - Lack of definite criteria for diagnosis of polyps
  - Some polyps are problematic to identify, e.g., sessile serrated adenoma vs. hyperplastic polyp
- Variable patterns of practice:
  - Collection and adequacy of polyp specimens
  - Wide range of clinical expertise among pathologists
  - Varied understanding of clinical implications, e.g., adenomatous vs. serrated polyps
- Pathology service workloads:
  - Heavy and increasing
  - Large volumes of polyps reported in large hospitals; limits ability to provide detailed reporting
- Reporting issues:
  - Accurate reporting of certain polyps that are difficult to classify
  - Timeliness of reporting is variable
  - Lack of consistency in format
  - Uncertainty regarding importance of specific reporting parameters, e.g., degree of dysplasia
  - Existing approach not always representative of leading practice
- Achieving consensus on standards and reporting:
  - Desire among provinces to maintain unique standards
  - Relative low priority of national standards among pathologists; getting pathologists' commitment to standards
- Monitoring compliance with standards:
  - No serious consequences if pathologists do not comply with standards

With presentations delivered by Drs. David Owen and David Driman setting the stage as a starting point, the Group discussed classification guidelines during the workshop. In addition, the Group identified initial requirements related to reporting, education and quality assurance. These elements will be further defined and implemented during the next phase of work.

Following the workshop, subsequent email discussions and a teleconference/webinar were held through the fall and winter of 2010/11. All Working Group members were invited to participate and reviewed various drafts of the guidelines. An interim update on the development of the guidelines was presented to the NCCSN in February 2011 and received much support. Through a final series of email exchanges consensus guidelines were developed and are presented herein (section 3.0).

## 3.0 Guidelines for Classification and Reporting of Colorectal Polyps

Presented in this section are the Working Group’s diagnostic guidelines for adenomatous polyps and serrated polyps, which constituted the focus of the Group’s discussions and efforts. This report aims to offer practical guidelines for the pathological diagnosis of these CRC precursors. Early in the Working Group’s discussions, the Group decided that other CRC precursors are more uncommon and deemed them beyond the scope of its work.

Specific recommendations of the Working Group are interspersed throughout the following three subsections (3.1 – 3.3). Key recommendations are outlined within each subsection for ease of reference.

Lastly, the Working Group acknowledges that these guidelines will require updating over time, as new data accumulates on the pathology and clinical implications of many of these lesions. However, the guidelines are supported by existing evidence in the literature today and are reflective of the collective best practices of Working Group members.

### 3.1 Classification of Adenomatous and Serrated Polyps

Table 1, below, presents the recommended classification system for adenomatous and serrated polyps. Morphological defining features will be discussed further in sections 3.2 and 3.3 for adenomatous and serrated polyps respectively.

**Table 1: Classification of Adenomatous and Serrated Polyps**

Category	Polyp Type	Qualification re Dysplasia
Conventional Adenomas	Tubular adenoma	± high -grade dysplasia/invasive adenocarcinoma
	Tubulovillous adenoma	
	Villous adenoma	
Serrated Adenomas	Sessile serrated adenoma/polyp	± dysplasia (low/high-grade)
	Traditional serrated adenoma	± high -grade dysplasia
	Serrated polyp, unclassified	
Hyperplastic Polyps		

All conventional adenomas (tubular, tubulovillous and villous) have by definition, at least low-grade dysplasia. Pathologists must report whether there is associated high-grade dysplasia and/or invasive adenocarcinoma. With narrative reporting, the appendix “negative for high-grade dysplasia and malignancy” is preferred over “with low-grade dysplasia” to avoid potential confusion and over-treatment by physicians who may not be aware that all adenomas have at least low-grade dysplasia.

In the literature and amongst members of the Working Group there was no consensus on the best terminology for sessile serrated lesions. While “sessile serrated adenoma (SSA)” is the preferred term due to its growing acceptance in clinical practice and its more widespread use in the literature, “sessile serrated

polyp (SSP)” is an acceptable alternative; we note that recent European guidelines have suggested “sessile serrated lesion” as the preferred term.[1] The term “serrated polyp, unclassified” is reserved for those serrated polyps with features indeterminate between one type and another, e.g. between hyperplastic polyp and SSA/P (sessile serrated adenoma/polyp), or between SSA/P and TSA (traditional serrated adenoma).

Both SSA/Ps and TSAs may be associated with dysplastic features that are beyond the definitional features of each lesion; such polyps are also referred to as “advanced” SSA/Ps or TSAs because the acquisition of such dysplastic features is a morphological indicator that the polyp is advancing toward malignant transformation. There is no consensus in the literature around the best terminology for such lesions.[2] Snover, in a recent review article, advocates the term “SSA with cytological dysplasia” for those SSA/Ps that contain frankly recognizable dysplasia of the type morphologically associated with conventional adenomas.[3] He prefers “cytological” rather than “conventional” dysplasia because at a molecular level, these advanced SSA/Ps show microsatellite instability rather than the molecular changes associated with conventional adenomas. For the more unusual advanced TSAs that have recognizable areas of conventional dysplasia, Snover advocates use of the term “TSA with conventional dysplasia”. The molecular features of advanced TSAs are not well characterized. The Group’s recommendations include:

- For all SSA/Ps, the pathologist should assess whether morphologically recognizable dysplasia of the type seen in conventional adenomas is present. This should be reported as “negative for dysplasia” or “with dysplasia”. Use of alternative terms such as “conventional dysplasia” or “cytological dysplasia” is acceptable but not recommended.
- For TSAs, it is recommended that because all TSAs have some degree of conventional dysplasia, the presence or absence of high-grade dysplasia should be reported, as for conventional adenomas. Note that lesions that have been previously referred to as “mixed SSA/P – tubular adenoma” are in most cases, SSA/Ps with dysplasia.
- For any serrated polyp in which there is associated dysplasia, a comment should be included in the report to address the clinical significance of the diagnosis. The following is an example of such a comment, which could be modified to suit local circumstances:

“Sessile serrated adenomas with dysplasia are considered to be advanced lesions that have an increased propensity to transform to adenocarcinoma. Complete endoscopic removal is recommended. If complete endoscopic removal cannot be achieved, short-term re-endoscopy and biopsy, or surgical resection should be considered.”

## 3.2 Adenomatous Polyps

### General Features

Conventional adenomas are polyps composed of dysplastic epithelium. Adenomas may be pedunculated, sessile, flat or depressed. Key features to report include the amount of villosity present (tubular vs tubulovillous vs villous), the presence or absence of high-grade dysplasia or malignancy, and in some examples, the status of the polyp margin, as these features bear on subsequent surveillance intervals or the need for resection. For example, patients with “high-risk” adenomas (a term used in screening programs for tubulovillous or villous adenomas or any adenoma with HGD or  $\geq 10$  mm in size) have shortened recommended surveillance intervals than patients with non-high-risk adenomas.[4] Polyp size can be

obtained from gross measurements but endoscopically assessed size may be more reliable.

### Assessment of Villosity

Designation of adenomas as tubular, tubulovillous or villous is based on the relative proportions of tubular and villous components present. Recommended classification is as follows:

- Polyps in which less than 20-25% of the polyp is villous are classified as tubular
- Polyps in which greater than 75-80% is villous are classified as villous
- All other polyps are tubulovillous

This assessment is subjective and criteria can only be used reliably in polypectomy and complete resection specimens or when there are tissue fragments large enough to assess the various proportions present. Use of the term "at least tubulovillous" is recommended when the polyp is known to be large, and at least one villus is present in a biopsy that is small or fragmented.

Three different types of villi may be identified in adenomas: classical, palmate and foreshortened.[5] Classical villi are long, slender, upgrowths with thin stromal cores, little branching, usually parallel sides and sometimes with bulbous tips; they often appear to extend down to muscularis mucosae. Palmate villi are broader, branching and leaf-like; there may be tubular glands at the base or within the stromal cores of the villi. Foreshortened villi are slender non-branching outgrowths with a thin stromal core that clearly protrude beyond the overall surface contour of an otherwise well-developed tubular lesion.

It may be difficult to distinguish "true" villi from exaggerated, axially sectioned crypts. In general, it is better to err on the side of under-diagnosis of villous change, especially in small (<1 cm) adenomas.

### Grading of Dysplasia and Terminology of Dysplasia

In the gastrointestinal tract, a two-tiered grading system is used for assessing the degree of dysplasia, LGD (low-grade dysplasia) and HGD (high-grade dysplasia). The term "carcinoma in-situ" or "intraepithelial carcinoma" is not used, HGD being used instead. Conventional adenomas have by definition, at least LGD.

The diagnosis of HGD is based primarily on architectural features, supplemented by appropriate cytology. HGD can often be identified on low-power, as the architecture appears complex and the epithelium lining the crypts looks blue, disorganized, and "dirty". The abnormal architecture includes cribriform formations with "back to back" glands, prominent glandular budding and intraluminal papillary tufting. Glandular crowding alone is not a feature of HGD.

These architectural features are usually accompanied by cytological features, such as loss of cell polarity, nuclear stratification through the entire thickness of the epithelium, markedly enlarged nuclei, often with open, dispersed chromatin and prominent nucleoli, atypical mitotic figures, dystrophic goblet cells and prominent apoptosis imparting the "dirty" appearance.

The following caveats should be considered when diagnosing HGD:

- **Over-reliance on cytological abnormalities:** Cytological abnormalities should not be used alone for the diagnosis of HGD, except when the cytological abnormalities are particularly marked or in the case of a small biopsy when there is insufficient tissue for accurate assessment of architectural abnormalities.

- **Over-calling architectural complexity:** There is often a minor degree of budding in tubular adenomas which does not constitute HGD.
- **Over-calling surface changes:** Surface changes in small adenomas, such as loss of nuclear polarity and nuclear stratification, without architectural complexity should not be over-interpreted; these usually stem from trauma, erosion or prolapse.
- **Insufficient extent of abnormalities:** In order to diagnose HGD, typical abnormalities should usually involve more than two crypts.

As per World Health Organization recommendations, the term “HGD” should be used instead of “intramucosal carcinoma” for adenomatous polyps in which there is mucosal invasion (ie. invasion of lamina propria ± muscularis mucosae). The rationale for this is that mucosal invasion alone (i.e without submucosal invasion) is associated with a negligible risk of malignant biological behaviour (lymph node spread); therefore in the majority of cases, these lesions do not require further surgery. In cases where there is mucosal invasion, it is recommended that a comment be inserted to explain the use of the term “HGD” and to expand on the findings and significance.

### **Malignant Polyps**

Malignant polyps are polyps with invasive adenocarcinoma, defined as invasion through the muscularis mucosae into the submucosa (pT1). This excludes polyps in which there is invasion into the lamina propria or muscularis mucosae (reported as HGD). In almost all malignant polyps, submucosal invasion is accompanied by a desmoplastic stromal reaction which can be used as a marker of invasion; mucosal invasion alone is not typically associated with stromal desmoplasia.

The following pathological features must be reported in malignant polyps as they predict adverse outcome (residual carcinoma or lymph node spread at subsequent colectomy or in 5-year clinical follow-up):[6]

1. Presence or absence of any amount of poorly differentiated adenocarcinoma
2. Presence or absence of angiolymphatic invasion
3. Distance of invasive adenocarcinoma from margin of resection (a distance of 1 mm or less is considered to represent a positive margin)

Optional features to report in malignant polyps include presence/absence of tumour budding, and Haggitt level in pedunculated polyps.

Invasive adenocarcinoma in an adenomatous polyp must be distinguished from pseudoinvasion or misplaced/herniated adenomatous glands in the submucosa. This is frequently seen in pedunculated polyps in the sigmoid colon, because of the tendency for polyps in this location to undergo torsion. There are several clues to the presence of pseudoinvasion rather than true invasion: the submucosal glands are surrounded by lamina propria and do not have cytoarchitectural features of malignancy; there is hemorrhage and hemosiderin in the surrounding submucosa and no desmoplastic stroma. Admixed normal glands may also be present in the submucosa and there may be acellular mucin pools. Ischemic changes (granulation tissue, erosions, exudate) are often present at the surface of the polyp due to polyp torsion. Finally, invasive adenocarcinoma is usually associated with HGD elsewhere in the polyp, so if this is absent, malignancy should be diagnosed with caution.

## Reporting Completeness of Excision

Because of the implications for post-polypectomy management, a statement regarding completeness of excision is required for all malignant polyps (polyps with invasive adenocarcinoma) to state the measured distance of the malignant component from the margin, and all polyps with high-grade dysplasia to state specifically whether HGD is present or absent at the margin. In many cases, this will not be assessable due to fragmentation, and this should be stated in the report.

A statement regarding the completeness of excision is optional for adenomas without HGD, and generally not recommended. Statements such as "may not be completely excised" or "completeness of excision cannot be assessed" can lead to confusion amongst treating physicians and unnecessary re-referrals in situations where the endoscopist is not attempting to obtain a margin of normal tissue when removing a polyp, and is using electrocautery to destroy any residual lesional tissue.

## 3.3 Serrated Polyps

### Hyperplastic Polyps

Hyperplastic polyps are most frequently found in the distal colon and rectum, and have serrations that are prominent in the luminal halves of crypts, with crypt bases that are straight and narrow. Because the normal crypt proliferative zone is in the lower third-half of the crypts, crypt lining cells in this location have a more immature appearance with the presence of mitoses. Cells in the upper half of the crypts show maturation. Hyperplastic polyps may be subdivided based on their mucin characteristics, although at the present time, routine diagnostic subclassification of hyperplastic polyps is not recommended. Microvesicular hyperplastic polyps have cells with predominantly microvesicular mucin, goblet cell rich hyperplastic polyps have their mucin localized to goblet cells with little microvesicular mucin, and mucin poor hyperplastic polyps have little to no mucin. Microvesicular hyperplastic polyps are found throughout the colon whereas goblet cell rich hyperplastic polyps are found almost exclusively in the left colon. Mucin poor hyperplastic polyps have not been well studied.

### Sessile Serrated Adenomas/Polyps

SSA/Ps occur throughout the colorectum but are more common on the right side, where they outnumber hyperplastic polyps.[7] They are often larger than 10 mm and may be difficult to see at endoscopy because of their tendency to be flat, ill-defined lesions that occur on the crests of mucosal folds; their colour is similar to the background mucosa.[8] SSA/Ps are characterized by both architectural and cytological abnormalities. [2][3] Architectural abnormalities predominate and are the most recognizable feature of these polyps, particular at low power. In contrast to hyperplastic polyps, there are deep crypt abnormalities with exaggerated deep crypt serration, abnormally located differentiated cells (goblet or gastric in type), horizontally spreading boot or anchor-shaped crypt bases or dilated crypt bases. Upper crypt abnormalities are present and comprise enlarged vesicular nuclei with prominent nucleoli and upper crypt mitoses. Submucosal fat is often present underneath SSA/Ps.

When examining SSA/Ps, pathologists must exclude dysplasia, which is typically in the form of conventional dysplasia i.e. resembling that type of dysplasia found in conventional adenomatous polyps. The presence of dysplasia in a SSA/P is an indication that the lesion is advanced, with an increased, and probably more rapid propensity to develop into adenocarcinoma.[9][10][11] See Section 3.1 for a discussion of the terminology of these lesions.

## Traditional Serrated Adenomas

TSAAs are the least well studied member of the serrated polyp group. These polyps are most apt to be misdiagnosed as tubulovillous or villous adenomas as TSAAs are protuberant (not sessile), and usually have recognizable villi or papillary projections, with prominent and rigid serrations. TSAAs typically contain slender cells with eosinophilic cytoplasm that have thin, elongated “pencil-like” nuclei; the nuclei are often centrally located within the cell and mitoses are rare in these cells. A defining feature is the presence of ectopic budding crypts that appear to bud into the underlying lamina propria.[16] TSAAs usually also have areas within them that are similar to conventional tubular adenoma. Advanced TSAAs are those lesions that have a greater degree of dysplasia, akin to HGD in conventional adenomas. We recommend that pathologists report the presence or absence of HGD in all TSAAs.

## 4.0 Specimen Handling and Processing

The Working Group discussed several concerns and guidelines related to specimen handling and processing. Recommendations are presented below for the endoscopy suite, the pathology laboratory, and tissue sectioning and processing.

### Endoscopy suite:

- Polyps from different locations in the colorectum should be submitted in separate containers and labeled as to their site of origin.
- Multiple small polyps from the same location can be submitted in the same specimen container.
- The endoscopist should indicate, on the requisition form, whether the submitted specimen represents a biopsy of a polyp or a polypectomy specimen.

### Pathology laboratory:

The following information should be recorded by the pathology laboratory:

- Number and size of polyps or tissue fragments (or range in size if multiple).
- Presence or absence of a stalk in intact polyps.
- Length and diameter of stalk, if present.

### Tissue sectioning and processing:

Polyps should be submitted in their entirety and must be sectioned to demonstrate the polyp stalk in the most optimal manner. Ink should be applied to the base of the stalk. If a stalk is not present and the polyp is large enough to be sectioned (as per Table 2, below), pale tissue at the base of the polyp should be sought and ink applied to this area. The method of sectioning depends on the diameter of the head of the polyp, not the size of the stalk, as depicted in Table 2.

**Table 2: Guidelines for Gross Sectioning of Colorectal Polyps**

Diameter of Head of Polyp	Sectioning Protocol	Levels (50µM)
<0.4 cm	no sectioning required	2-3
0.4 cm - 0.8 cm	bisect and place in 1 cassette	2-3
0.9 cm - 1.2 cm	trisect by shaving two sides off central section with stalk, place central section in separate cassette	2-3 (on central section)
>1.2 cm	cut as many sections as appropriate to submit the central stalk area and submit in separate cassettes	2-3 (on stalk sections)

If biopsies of a polyp fail to show any evidence of a lesion in the standard 2-3 initial sections, consideration should be given to cutting deeper levels, as small tubular adenomas can be detected in deeper levels in around 10% of cases. [13][14]

Aside from endoscopically derived specimens, the pathologist may also receive surgically resected transanal excisions of rectal polyps. These specimens should be oriented and pinned to avoid curling of the edges with fixation. Ink should be placed on all the resection margins: deep (radial) margin, proximal margin, distal margin, and lateral margins (if the transanal resection was non-circumferential). Perpendicular sections of all margins should be taken. The specimen should be submitted in its entirety in a manner that allows completeness of excision to be documented.

## 5.0 Implementation of Recommended Guidelines

With the completion of the first phase of work and the required consensus around the guidelines, the Working Group has initiated plans for implementation. Implementation will focus on i) dissemination and education, ii) support to ensure adoption and uptake of the guidelines, and iii) quality assurance and measurement.

Proposed plans for implementation of the guidelines are presented in Table 3, below. At a high level, this implementation plan defines the activities to be undertaken in the coming twelve months by the Working Group and in collaboration with the Canadian pathology community. This plan will be further defined and finalized by September 2011.

**Table 3: High Level Implementation Plan**

Activities	Target Audience	Timelines
<ul style="list-style-type: none"> <li>Distribution of this report via email</li> <li>Creation of a microsite on <a href="http://cancerview.ca">cancerview.ca</a> to serve as a portal and discussion forum for interested parties to view this report, CAP presentation and various pathological images</li> </ul>	<p>Members of the Canadian pathology community</p> <p>Other interested clinicians</p>	Summer 2011
<ul style="list-style-type: none"> <li>Presentation of guidelines at scheduled meetings of key non-pathology stakeholder groups</li> </ul>	NCCSN, Canadian Association of Gastroenterologists, General Surgeons, Other	Fall 2011
<ul style="list-style-type: none"> <li>Publication of guidelines in the Canadian Journal of Pathology</li> </ul>	Members of the Canadian pathology community	Fall 2011/ Winter 2012
<ul style="list-style-type: none"> <li>Identification of jurisdictional clinician champions/peer leaders to guide implementation at the provincial and/or regional level, respond to pathologists' questions and concerns, and lead quality assurance (QA) processes etc.</li> </ul>	Leaders in the Canadian pathology community	Fall 2011
<ul style="list-style-type: none"> <li>Development of preferred reporting templates that reflect the guidelines and leverage any synoptic formats (NB: templates may differ by jurisdiction)</li> </ul>	Members of the Canadian pathology community	Fall 2011
<ul style="list-style-type: none"> <li>Development of an educational plan, required training methods and materials</li> <li>Development of "train-the-trainer" approach to deploy training across jurisdictions</li> </ul>	<p>Members of the Canadian pathology community</p> <p>Other interested clinical groups</p>	Fall 2011
<ul style="list-style-type: none"> <li>Identification of indicators to assess quality of reporting</li> </ul>	Members of the Canadian pathology community	Fall 2011
<ul style="list-style-type: none"> <li>Development of an approach to capture data for desired quality indicators</li> <li>Assess information systems' capacity for data collection</li> </ul>	Members of the Canadian pathology community	Fall 2011/ Winter 2012
<ul style="list-style-type: none"> <li>Deployment of educational program, inclusive of QA approach</li> </ul>	<p>Members of the Canadian pathology community</p> <p>Other interested clinical groups</p>	Winter/ Spring 2012

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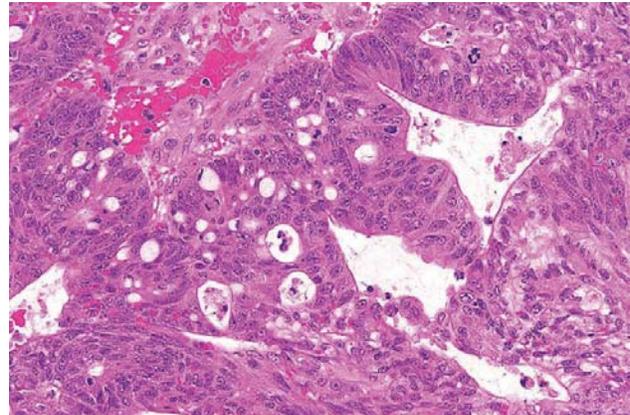
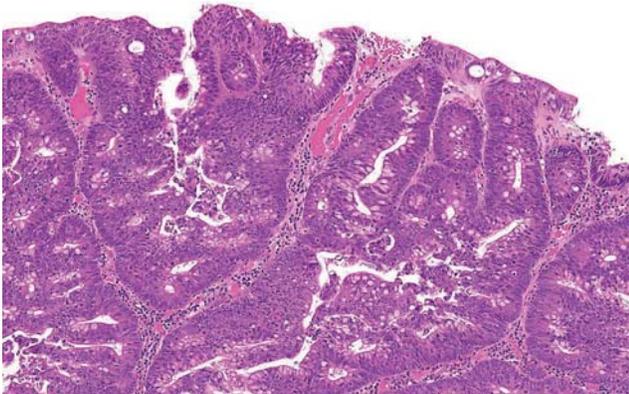
# Appendix B: Classification of Benign Polyps

## Image Resource

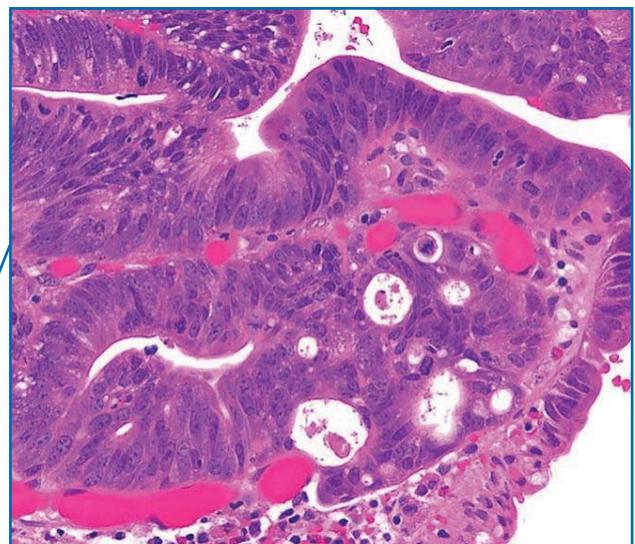
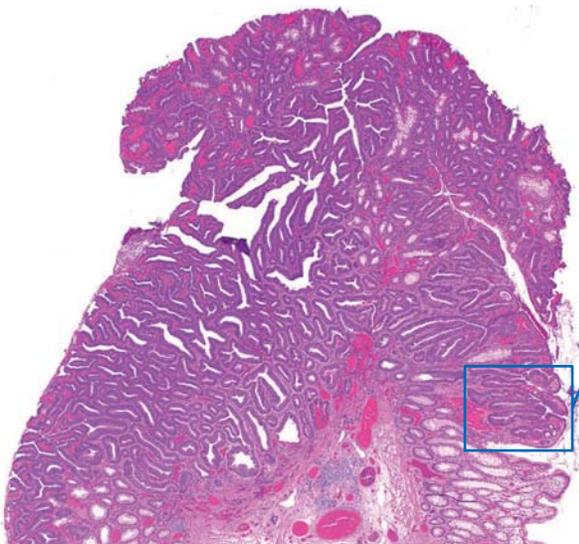
### Low-Grade Dysplasia



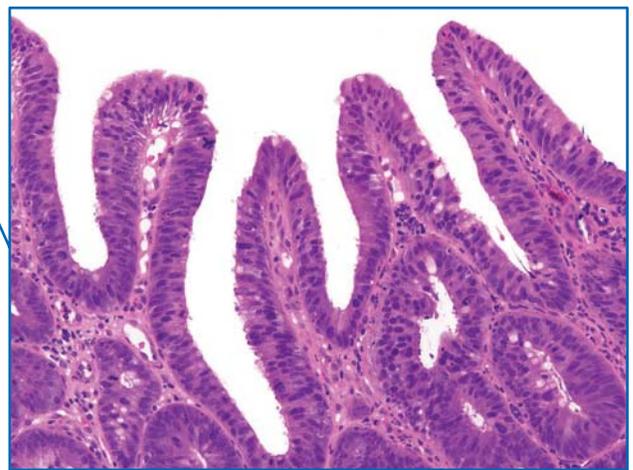
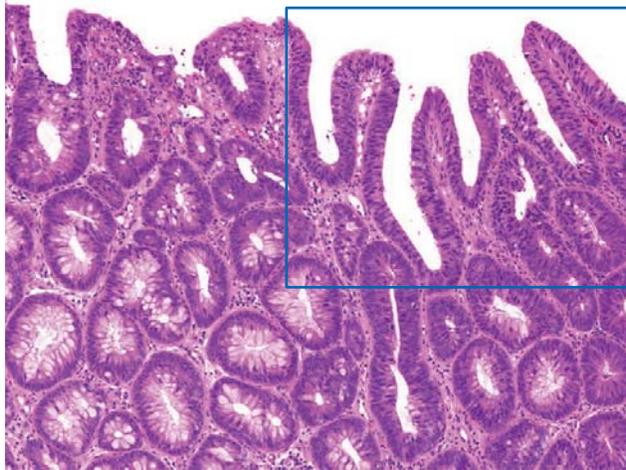
### High-Grade Dysplasia



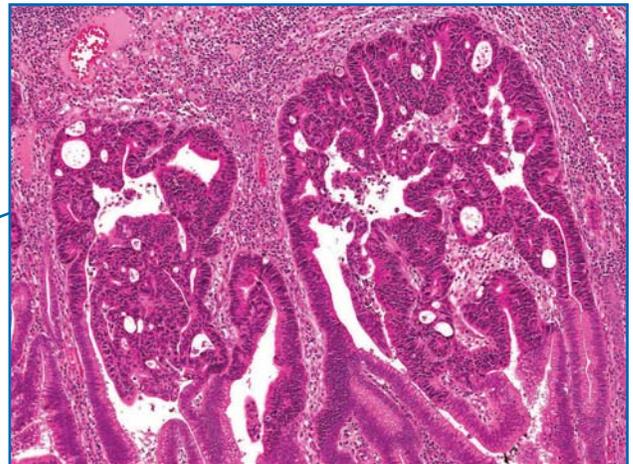
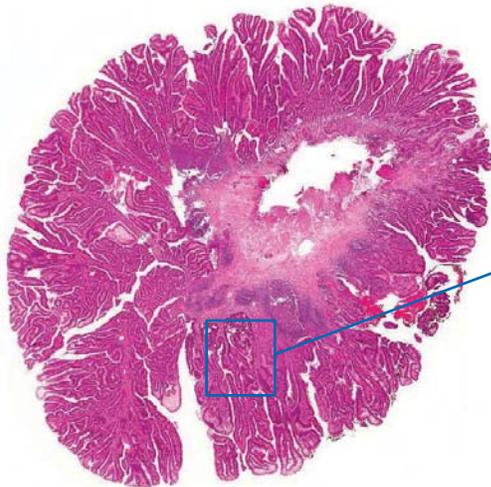
### Very Focal cribriforming only; this is LGD



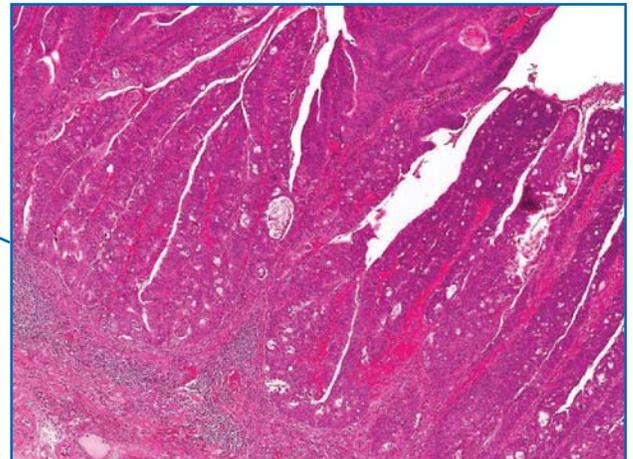
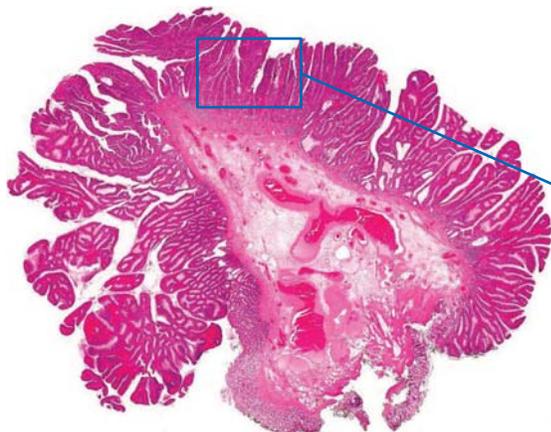
This is LGD. Nuclear stratification through full thickness of epithelium is not a criterion for HGD.



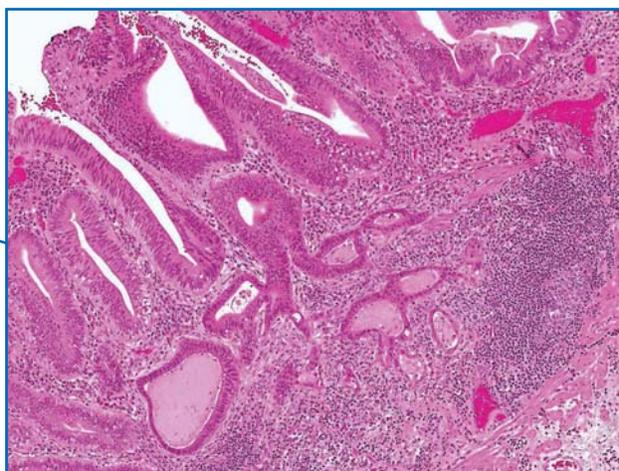
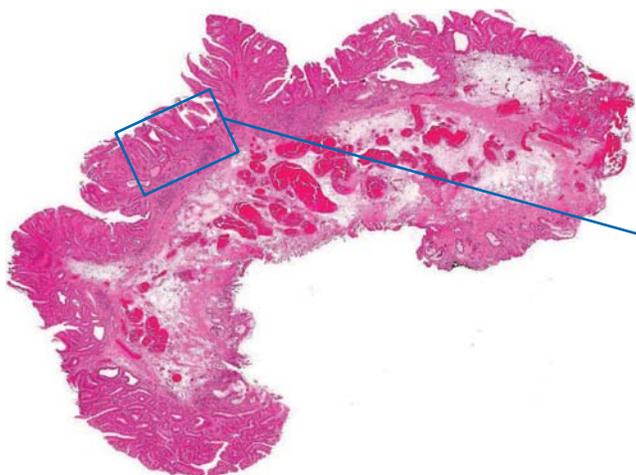
High-Grade Dysplasia



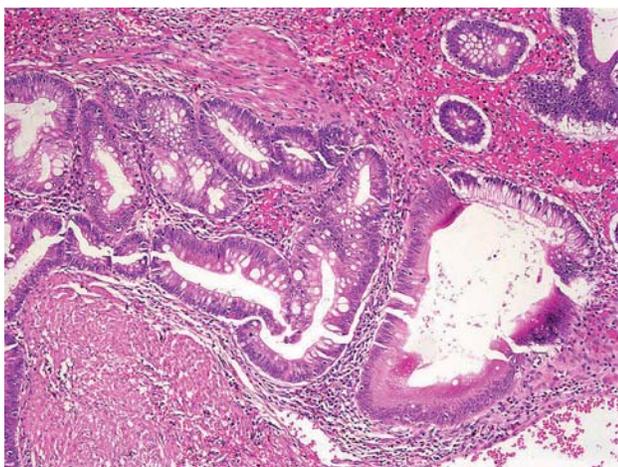
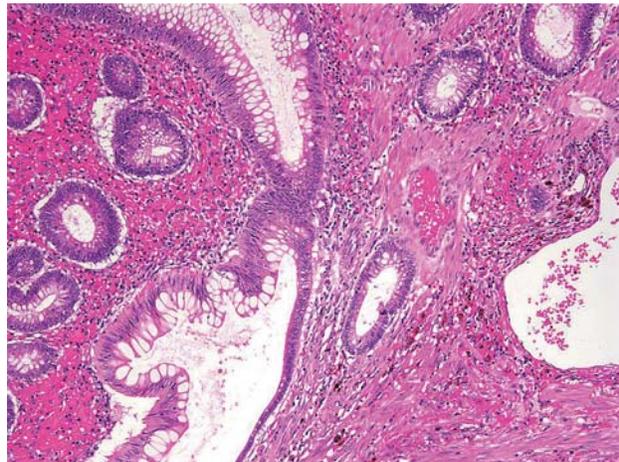
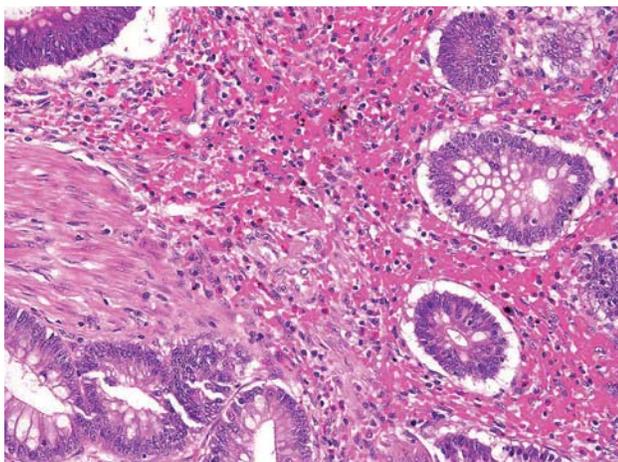
High-Grade Dysplasia



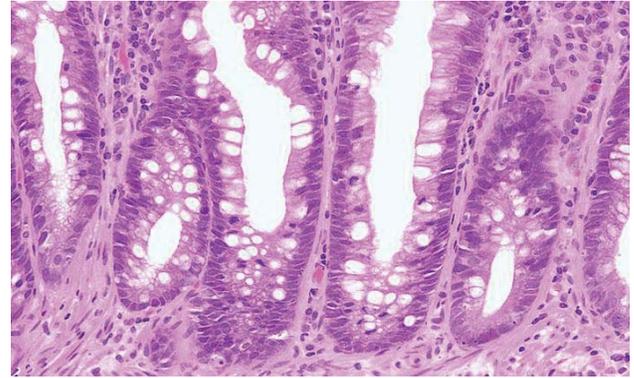
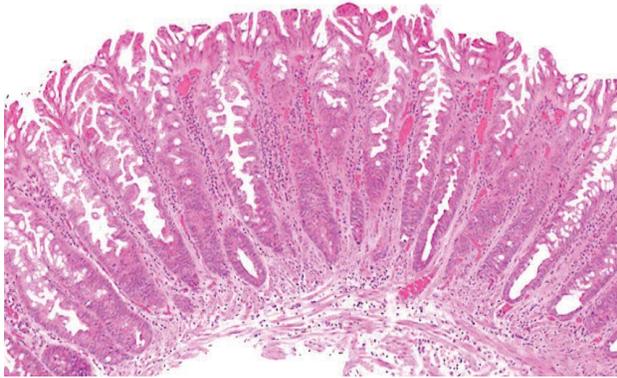
High-grade dysplasia rather than “intramucosal carcinoma”



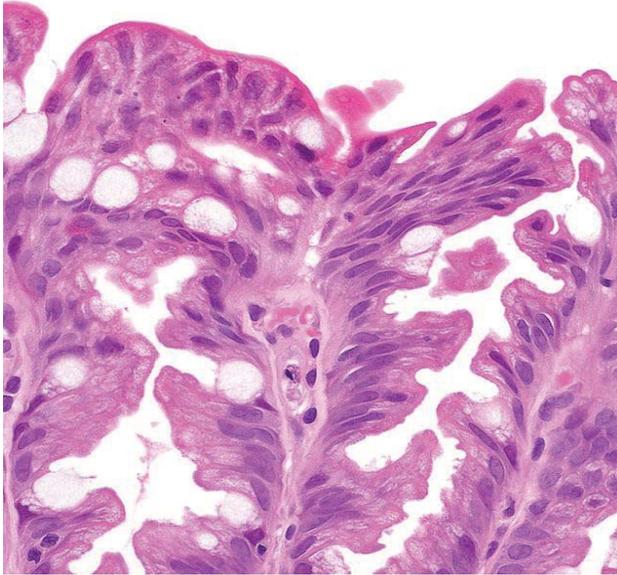
Pseudoinvasion



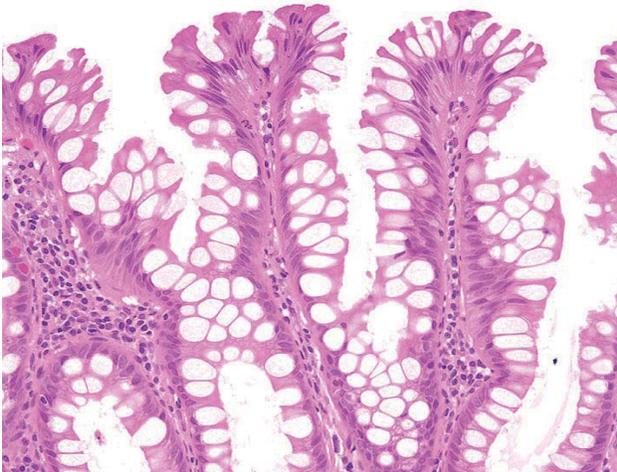
**Hyperplastic polyp**



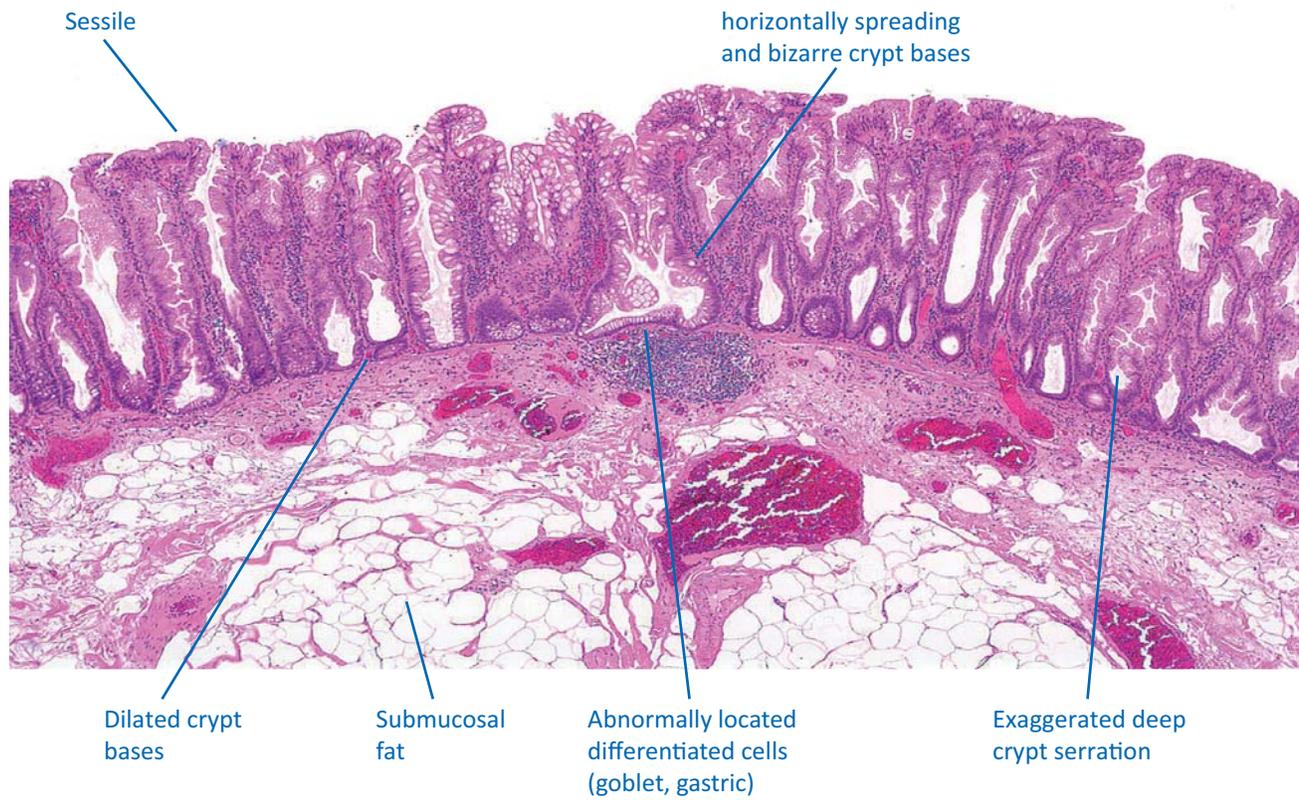
**Microvesicular hyperplastic polyp**



**Goblet cell hyperplastic polyp**



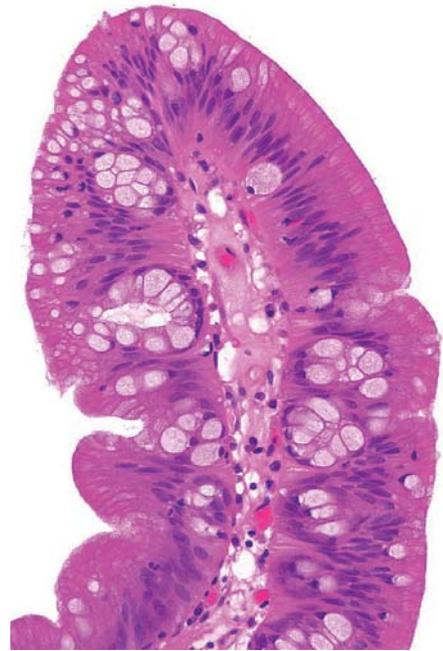
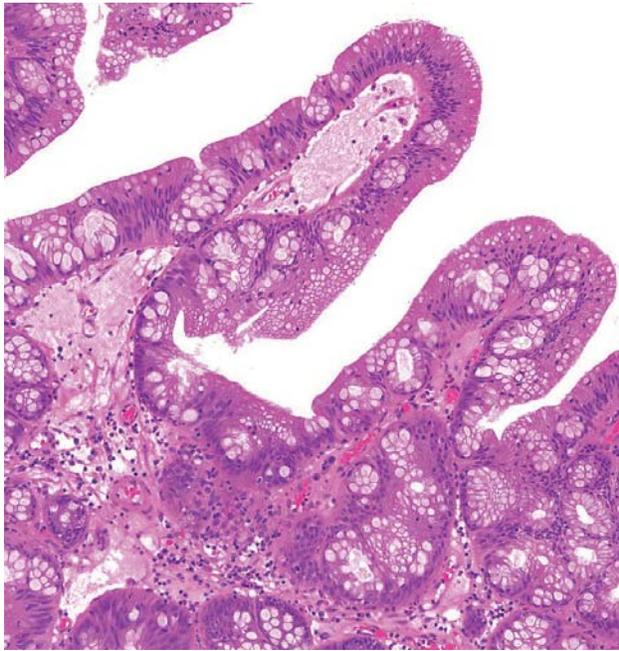
## Sessile Serrated Adenoma



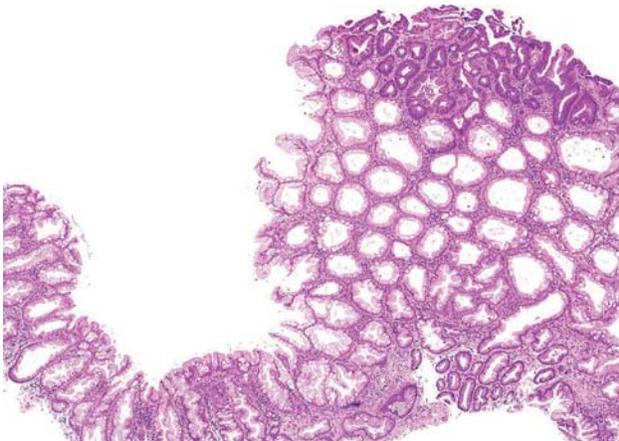
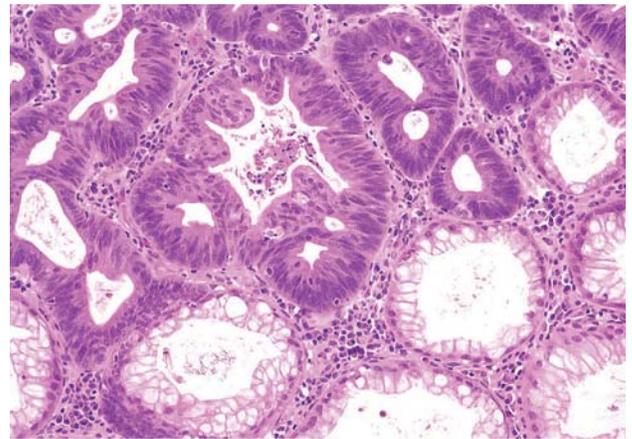
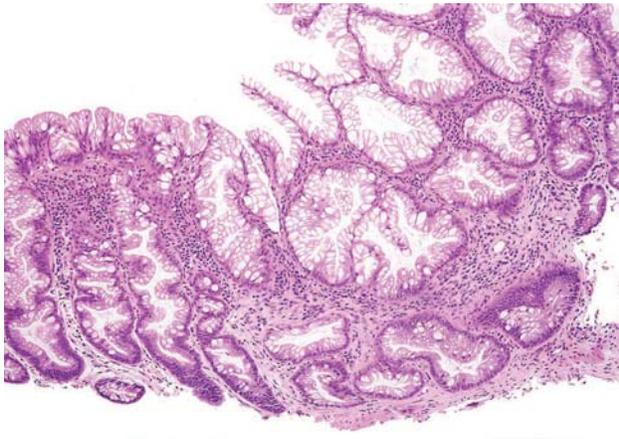
## Traditional Serrated Adenoma



TSA with prominent budded crypts



SSA with dysplasia



SSA with dysplasia and invasive adenocarcinoma

