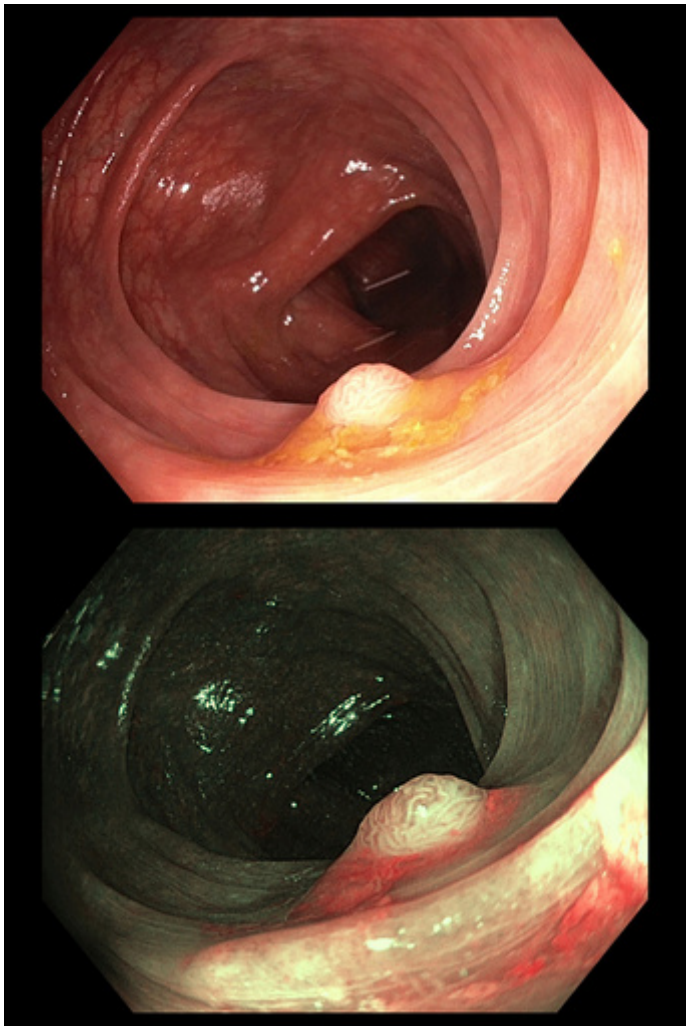
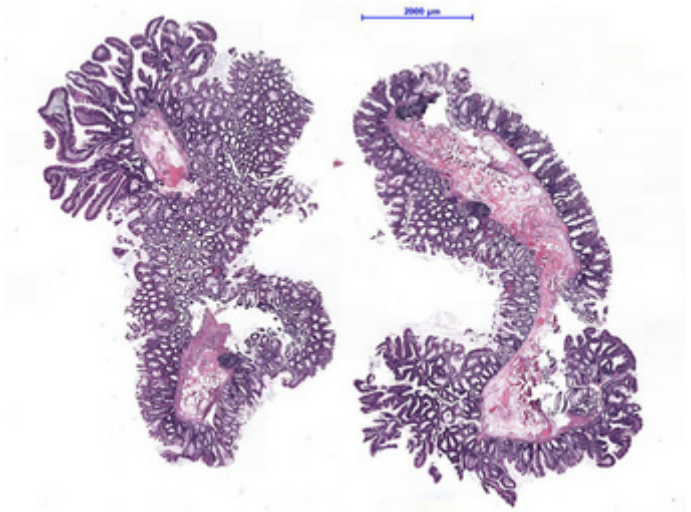
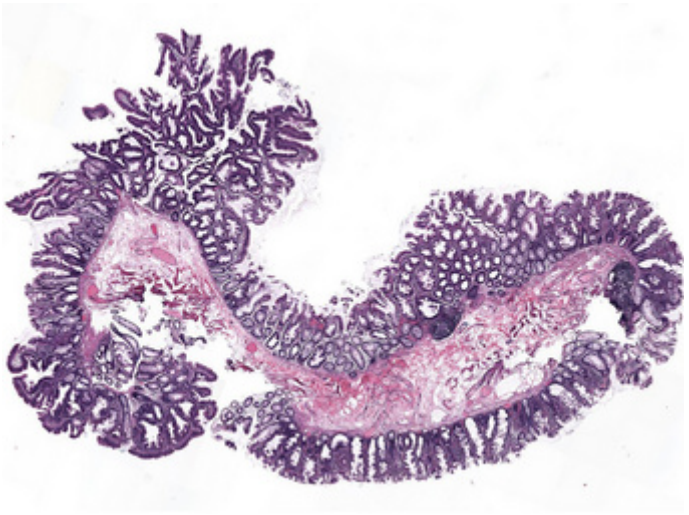
August 2021

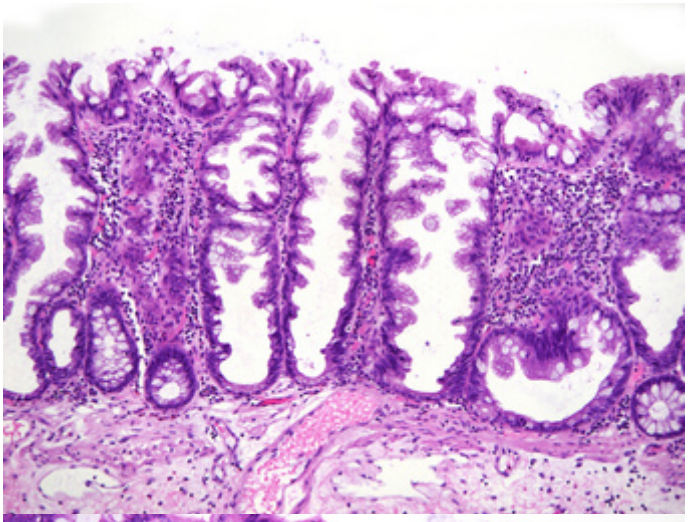
Polypoid lesion in the descending colon of a 30-year-old female with serrated polyposis.

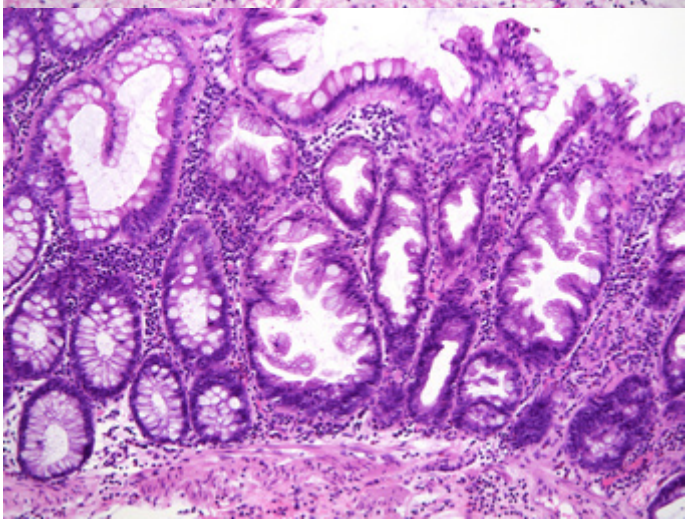
What is your diagnosis?

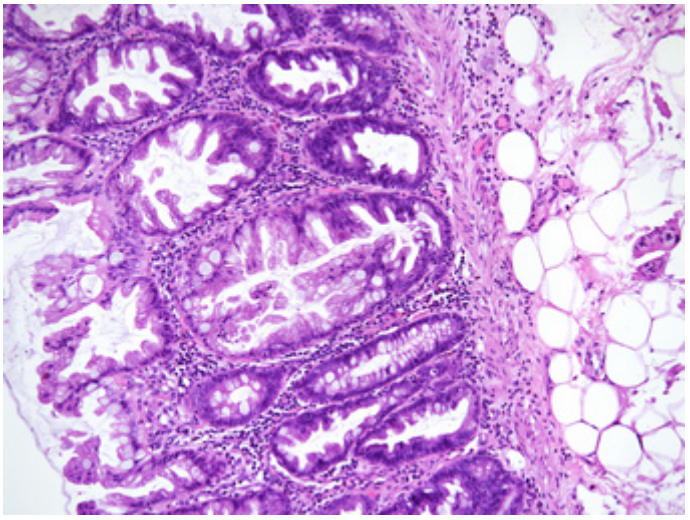


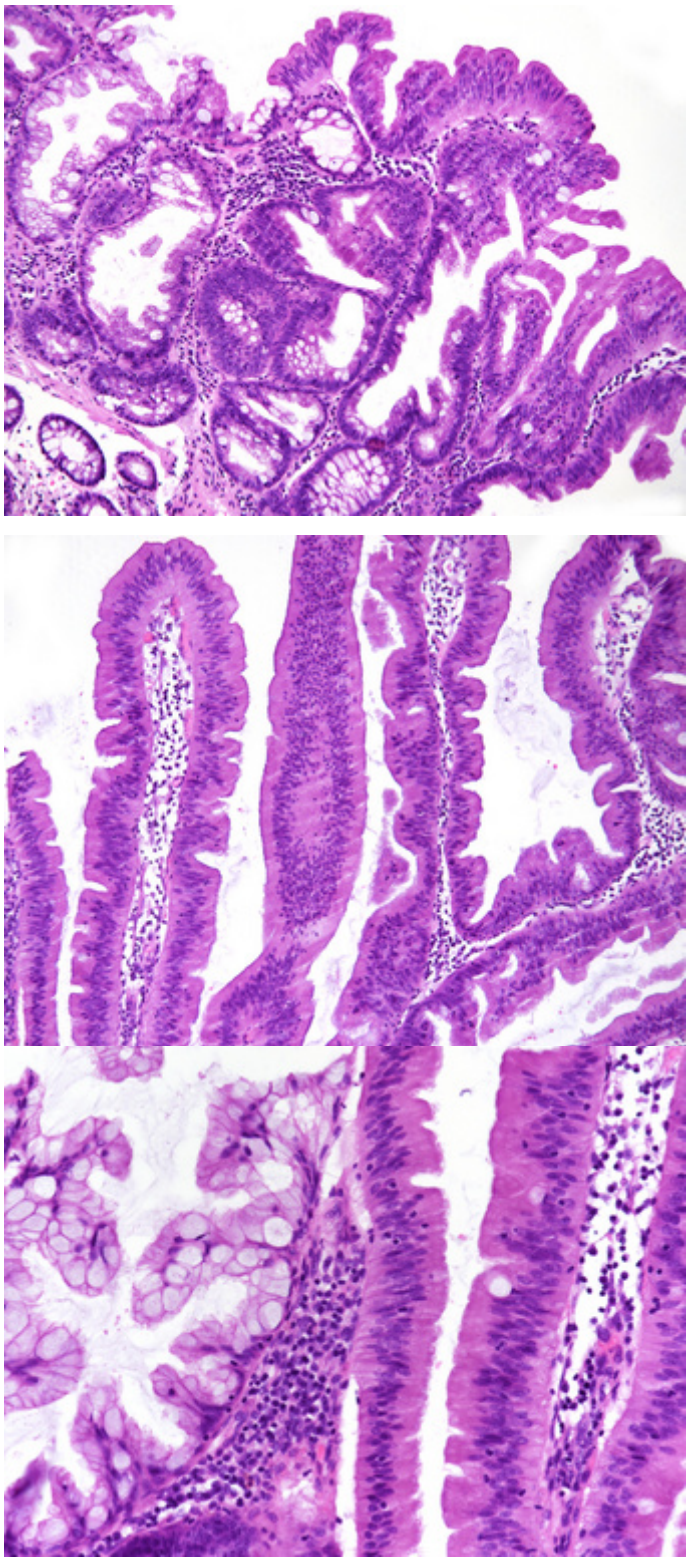












Diagnosis:

Traditional serrated adenoma (TSA) arising within a sessile serrated lesion (SSL; previously sessile serrated adenoma/polyp).

Comment:

The patient was diagnosed with serrated polyposis, after her sister had developed colorectal cancer at young age. During scheduled surveillance colonoscopy, a sessile lesion with strong mucus adhesion was identified within the descending colon (60 cm from the anus). The lesion showed a smaller polypoid component with adenoma-like pit pattern (Panels A-B).

On low magnification, we can easily follow the idea of two distinct components within a single lesion (Panels C and D).

In the background, there is a flat lesion, specifically a sessile serrated lesion, previously known as sessile serrated adenoma/polyp, with overall distortion of the normal crypt architecture, crypt dilatation with serration extending into the base of the crypts and horizontal growth along the muscularis mucosa. The epithelium contains numerous goblet cells along the entire length of the crypts (Panels E-F). Mature adipose tissue is present underneath the muscularis mucosae (Panel G).

The polypoid (exophytic) component is made up by cells with plentiful, intensively eosinophilic cytoplasm and centrally placed pencillate nuclei. Slit-like serration is widely present, and so-called ectopic crypt foci, that is, epithelial buds with their bases not anchored to or seated on the muscularis mucosae, can be found (Panels H-J).

Immunohistochemistry shows retained MLH1 expression, p53 wild-type pattern and only mildly increased Ki67 staining with accentuation at crypt bases and within the ectopic crypt foci (not shown).

The final diagnosis is that of a traditional serrated adenoma arising within / from a sessile serrated lesion.

Traditional serrated adenomas account for up to 2% of all colorectal polyps. They are characterized by three histological elements: typical eosinophilic cells, slit-like serration, and ectopic crypt formation. The latter is less specific and can be found in other lesions as well. Hence, ectopic crypts foci are not regarded as prerequisite for diagnosis. In contrast, the combination of typical cytology plus slit-like serration makes the diagnosis usually straightforward. Please note that the smaller the polyp, the less well-developed the morphological criteria, which needs to be taken into account when searching for the typical serration in minute lesions. Of note, most lesion exceeding 10 mm in size will display all three histological features.

Approximately 30 to 50% of traditional serrated adenomas arise within a precursor lesion, which can be a hyperplastic polyp or a sessile serrated lesion. These polyps often harbour BRAF mutations, while traditional serrated adenomas arising de novo often are KRAS mutated. It has been a long debate whether the typical eosinophilic cells are “dysplastic” per se. Anyway, traditional serrated adenomas progress developing (superimposed) overt dysplasia, which is usually of high grade and may be of conventional/intestinal or serrated type.

Differential diagnosis mainly includes sessile serrated lesion with dysplasia. Dysplasia in these lesions should only be called serrated when high-grade changes are present. The traditional serrated adenoma-type morphology as described in our case should not be classified as serrated dysplasia and, if present, not be interpreted as proof of dysplastic change within a sessile serrated lesion. This distinction may have clinical implications, since the progression rate of a dysplastic sessile serrated lesion (that often shows loss of MLH1 expression; compare ENGIP case 2/2013) is believed to be faster than that of a traditional serrated lesion (arising in a non-dysplastic precursor polyp).

For further reading:

- Saito S, Tajiri H, Ikegami M. Serrated polyps of the colon and rectum: Endoscopic features including image enhanced endoscopy. World J Gastrointest Endosc. 2015; 7: 860–71.
- Bettington ML, Walker NI, Rosty C, Brown IS, Clouston AD, McKeone DM, Pearson SA, Klein K, Leggett BA, Whitehall VL. A clinicopathological and molecular analysis of 200 traditional serrated adenomas. Mod Pathol. 2015; 28: 414-27.
- Bettington ML, Chetty R. Traditional serrated adenoma: an update. Hum Pathol. 2015; 46: 933-8.
- Liu C, Walker NI, Leggett BA, Whitehall VL, Bettington ML, Rosty C. Sessile serrated adenomas with dysplasia: morphological patterns and correlations with MLH1 immunohistochemistry. Mod Pathol. 2017; 30:

1728-38.

- Pai RK, Bettington M, Srivastava A, Rosty C. An update on the morphology and molecular pathology of serrated colorectal polyps and associated carcinomas. Mod Pathol. 2019; 32: 1390-415.

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