Low-grade appendiceal mucinous neoplasms observed by magnifying endoscopy

Appendiceal mucinous neoplasms are the second most common tumors after carcinoid tumors in all excised appendices [1]. Low-grade appendiceal mucinous neoplasms are often found incidentally (~50%), first discovered on radiography, endoscopy, or during surgery [2]. On endoscopy, they often appear as submucosal tumor-like elevations at the appendicular orifice [3]; there are no reports of associated epithelial changes. Herein we report two cases of endoscopically observed epithelial changes in low-grade appendiceal mucinous neoplasms (▶Video 1).

Case 1: A 72-year-old woman underwent colonoscopy for contrast accumulation in the appendix on 18F-fluorodeoxyglucose positron emission tomography-computed tomography (▶Fig. 1a, b, c). Colonoscopy revealed a slightly elevated whitish lesion covered with a mucus cap in the cecum at the appendiceal orifice (▶Fig. 2a, b). Magnifying narrow-band imaging (NBI) showed no vessel pattern and regular, wavy, elongated surface structures (▶Fig. 2c). Using chromoendoscopy with indigo carmine, the boundary of the lesion was clearly visualized (▶Fig. 2d). Magnifying red dichromatic imaging with indigo carmine clearly showed regular, wavy, elongated, branched surface structures (▶Fig. 2e). Magnifying chromoendoscopy using crystal violet showed a wavy, branched pit, although the staining was not as clear as with other methods, probably owing to adherent mucus (▶Fig. 2f). Histopathological examination following ileocecal resection revealed a low-grade appendiceal mucinous neoplasm (▶Fig. 3a, b).

Case 2: A 74-year-old man underwent colonoscopy for appendiceal enlargement on computed tomography that showed a similar lesion as described in case 1 (▶Fig. 4a). Magnifying NBI, chromoendoscopy with indigo carmine, and magnifying chromoendoscopy using crystal violet showed the same findings as in case 1 (▶Fig. 4b, c, d). Following ileocecal resection, histopathology revealed a low-grade appendiceal mucinous neoplasm (▶Fig. 5a, b) with some adenocarcinoma components in the tail of the appendix.

In these cases, low-grade appendiceal mucinous neoplasms were observed as whitish, slightly elevated lesions covered with a mucus cap, and no blood vessels could be identified. The findings were
more similar to serrated lesions than adenomas.

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Competing interests

The authors declare that they have no conflict of interest.

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▶ Fig. 2 Endoscopic images showing a slightly elevated whitish lesion covered with a mucus cap in the cecum near the appendiceal orifice. a, b White light. c Magnifying narrow-band imaging. d Magnifying chromoendoscopy using indigo carmine. e Magnifying red dichromatic imaging with indigo carmine. f Magnifying chromoendoscopy using crystal violet staining.

▶ Fig. 3 Histological examination (hematoxylin and eosin stained). a The distribution of lesions in the resection specimen is shown along with the boundary between normal mucosa and low-grade appendiceal mucinous neoplasm (the green line shows the area of low-grade appendiceal mucinous neoplasm with prominent mucous adhesion). b A magnified view of the area of low-grade appendiceal mucinous neoplasm; the mucinous epithelial cells are filiform with low-grade cytological atypia.
**References**


**Bibliography**

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**Fig. 4** Endoscopic images showing a slightly elevated whitish lesion covered with a mucus cap in the cecum near the appendiceal orifice. a White light. b Magnifying narrow-band imaging. c Magnifying chromoendoscopy using indigo carmine. d Magnifying chromoendoscopy using crystal violet staining.

**Fig. 5** Histological examination (hematoxylin and eosin stained). a The distribution of lesions in the resection specimen is shown along with the boundary between the normal mucosa and low-grade appendiceal mucinous neoplasm (the green line shows the area of low-grade appendiceal mucinous neoplasm). b A magnified view of the area of low-grade appendiceal mucinous neoplasm; the mucinous epithelial cells are villous with low-grade cytological atypia.