Gastric Polyps and Dysplasias

10

Jae Young Jang

Contents

10.1 Principles of Endoscopic Diagnosis of Gastric Polyps

10.1.1 Definitions

Gastric polyps can be defined broadly as luminal lesions projecting above the plane of the mucosal surface. It is recommended that discrete protrusions identified on radiology or endoscopy be referred to as polypoid lesions until histological diagnoses are made. Various subtypes of gastric polyps are recognized; they are generally divided into nonneoplastic and neoplastic. About 80–90% of gastric polyps are nonneoplastic. They can be divided into epithelial and nonepithelial types (Table 10.1).

10.1.2 Clinical Manifestations

Gastric polyps are detected in 2–3% of upper gastrointestinal endoscopic examinations, often incidentally. They only rarely produce symptoms, such as gastrointestinal bleeding and delayed gastric emptying. Rarely, a prolapsing antral polyp may obstruct the gastric outlet.

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H. J. Chun et al. (eds.), *Clinical Gastrointestinal Endoscopy*, https://doi.org/10.1007/978-981-10-4995-8_10

Table 10.1 Classification of gastric polyps

	Epithelial polyp	Nonepithelial polyp
Nonneoplastic polyps	Hyperplastic polyp Fundic gland polyp Inflammatory fibroid polyp Hamartomatous polyp Cronkhite-Canada syndrome	
Neoplastic polyps	Adenoma/dysplasia Low grade High grade Carcinoma (primary or secondary) Carcinoid tumor	
Miscellaneous lesions		Xanthelasma Lymphoid hyperplasia/lymphoma Mesenchymal stromal tumors Gastrointestinal tumors Smooth muscle tumors Glomus tumor Neural tumors Schwannoma/neuroma Ganglioneuromas Granular cell tumor Other rare tumors Lipoma/liposarcoma Rhabdomyosarcoma Fibrous histiocytoma Vascular Hemangioma/lymphangioma Hemangiosarcoma

10.1.3 Endoscopic Features

They are usually small, with a diameter of less than 1–2 cm. The endoscopic appearance of gastric polyps is variable, ranging from slightly raised plaques to soft multilobulated nodules to, more rarely, broad-based or sessile lesions. In noninvasive neoplastic lesions and carcinomas with invasion of the lamina propria, called superficial lesions, flat or even depressed morphologies below the contour of the mucosa may be observed. In pedunculated polyps, the base is narrow; in sessile polyps, the base and the top of the lesion have the same diameter. Intermediate and broad-based forms are called semi-pedunculated. Non-protruding or non-polypoid neoplastic lesions include ulcers and the so-called flat lesions. In the latter situation, the lesion, compared with the adjacent mucosa, is either slightly elevated, or completely flat, or depressed (Table 10.2, Fig. 10.1) [1].

Table 10.2 Neoplastic lesions with superficial morphology (Paris endoscopic classification)

	Morphology	
Polypoid	Ip	Pedunculated
	Is	Sessile
Non-polypoid	IIa	Slightly elevate
	IIb	Flat
	IIc	Slightly depressed
	III	Excavated (ulcer)

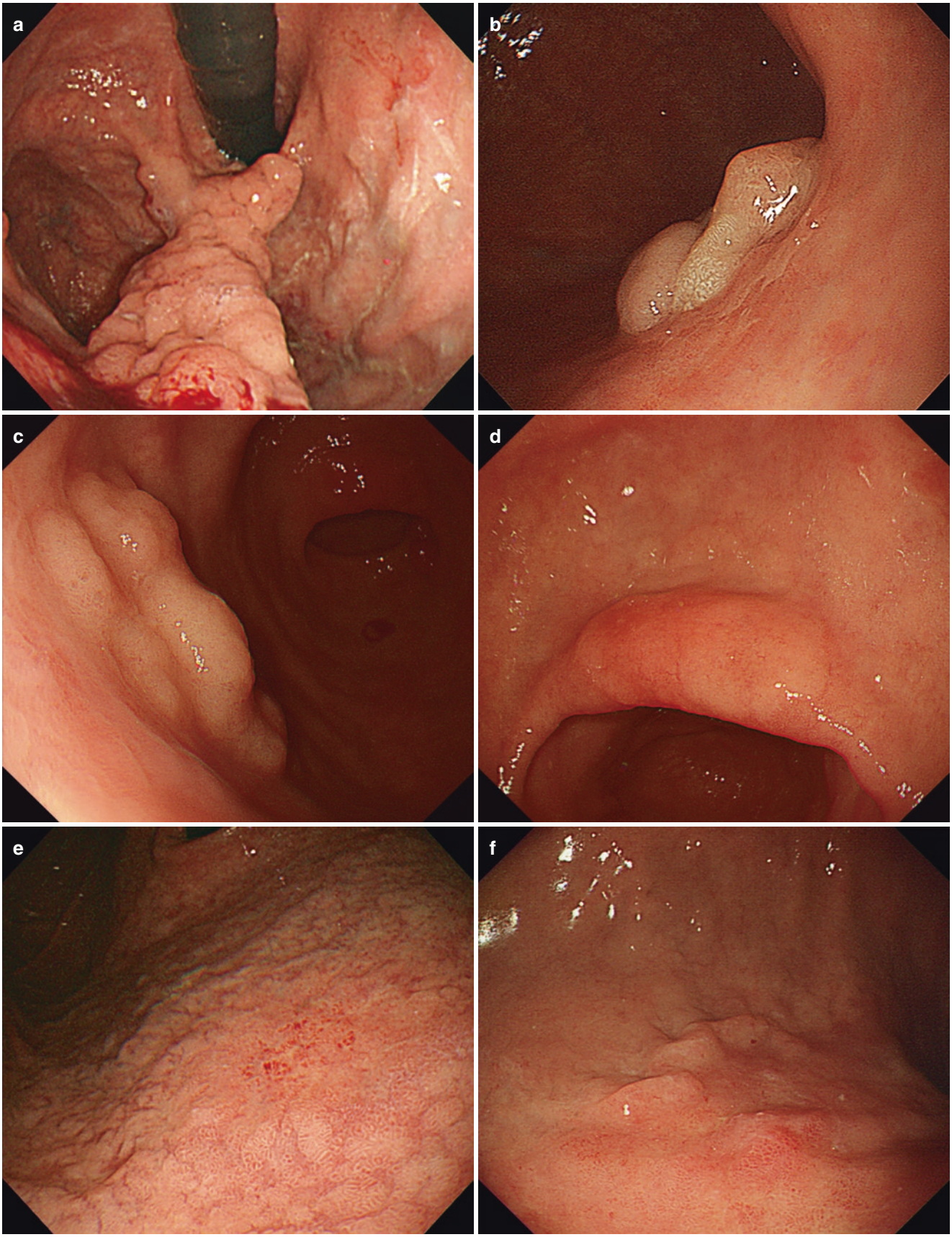


Fig. 10.1 Morphological classification of gastric polyps. (**a**) Ip polyp, (**b**, **c**) Is polyp, (**d**) IIa polyp, (**e**) IIb polyp, (**f**) IIc polyp

10.2 Nonneoplastic Polyps

10.2.1 Hyperplastic Polyps

These benign lesions are among the most frequently observed gastric polyps and comprise 28–75% of all gastric polyps [2]. They are more common with increasing age. They are generally thought to result from excessive regeneration following mucosal damage and, consequently, commonly occur in chronic *Helicobacter pylori*-associated gastritis, in pernicious anemia, adjacent to ulcers and erosions, or at gastroenterostomy sites. Hyperplastic polyps can occur throughout the stomach. They are usually less than 1.5 cm in diameter, may be single or multiple, and may be sessile or pedunculated. Usually, the pits of polyp surface are enlarged and hyperemic in color. With larger polyps, the overlying mucosa is often red and friable, and there may be a small erosion or ulceration on the tip of the polyp (Fig. 10.2).

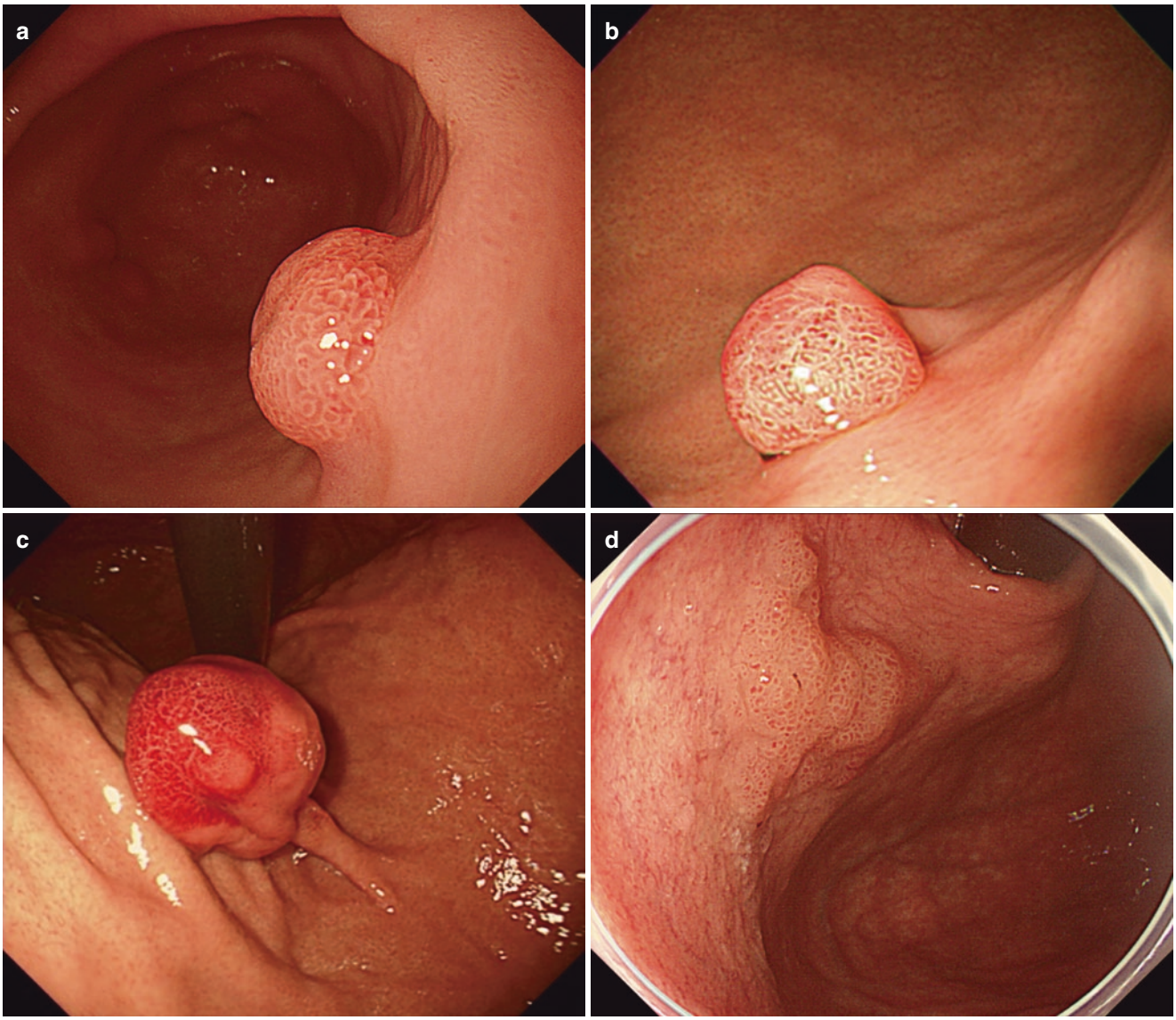


Fig. 10.2 Hyperplastic polyps. (**a**) Is-type polyp, (**b**) a 7-mm, Ip-type polyp, (**c**) a 2-cm, Ip-type polyp with hemorrhagic change, (**d**) a 1.8-cm, IIa-type polyp, (**e**) a 2-cm, Ip-type polyp with erosion, (**f**) Ip-type polyps with erosions covered with exudate and/or hemorrhagic changes, (**g**) Ip-type polyp with exudate in gastrectomy patient, (**h**, **i**) multiple hyperplastic polyps

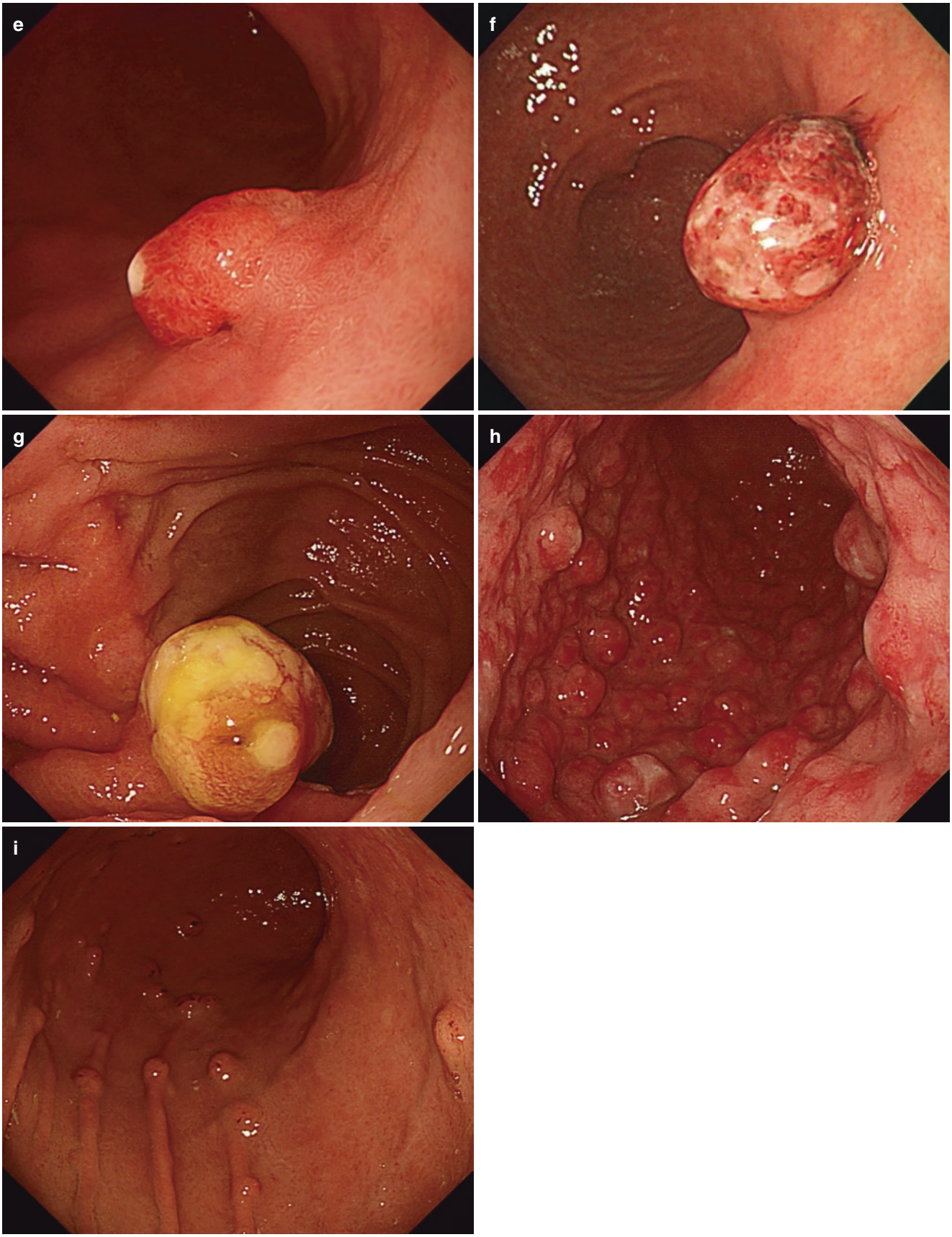


Fig. 10.2 (continued)

10.2.2 Fundic Gland Polyps

Fundic gland polyps comprise up to 47% of all gastric polyps. The use of proton pump inhibitors (PPI) was associated with an increased risk of fundic gland polyps. Fundic gland polyps are seen as single, multiple, sessile lesions that occur uniquely in the fundus and upper body of the stomach. The morphology is characteristic, with cystic transformation of the gland lined by parietal cells and chief cells. Endoscopically, they appear as glassy, transparent, sessile polyps, less than 1 cm in diameter (Fig. 10.3). These are usually multiple and may be found in males and females of any age [3]. Most sporadic fundic gland polyps are not premalignant. Thus, endoscopic treatment for patients with sporadic fundic gland polyps is not necessitated.

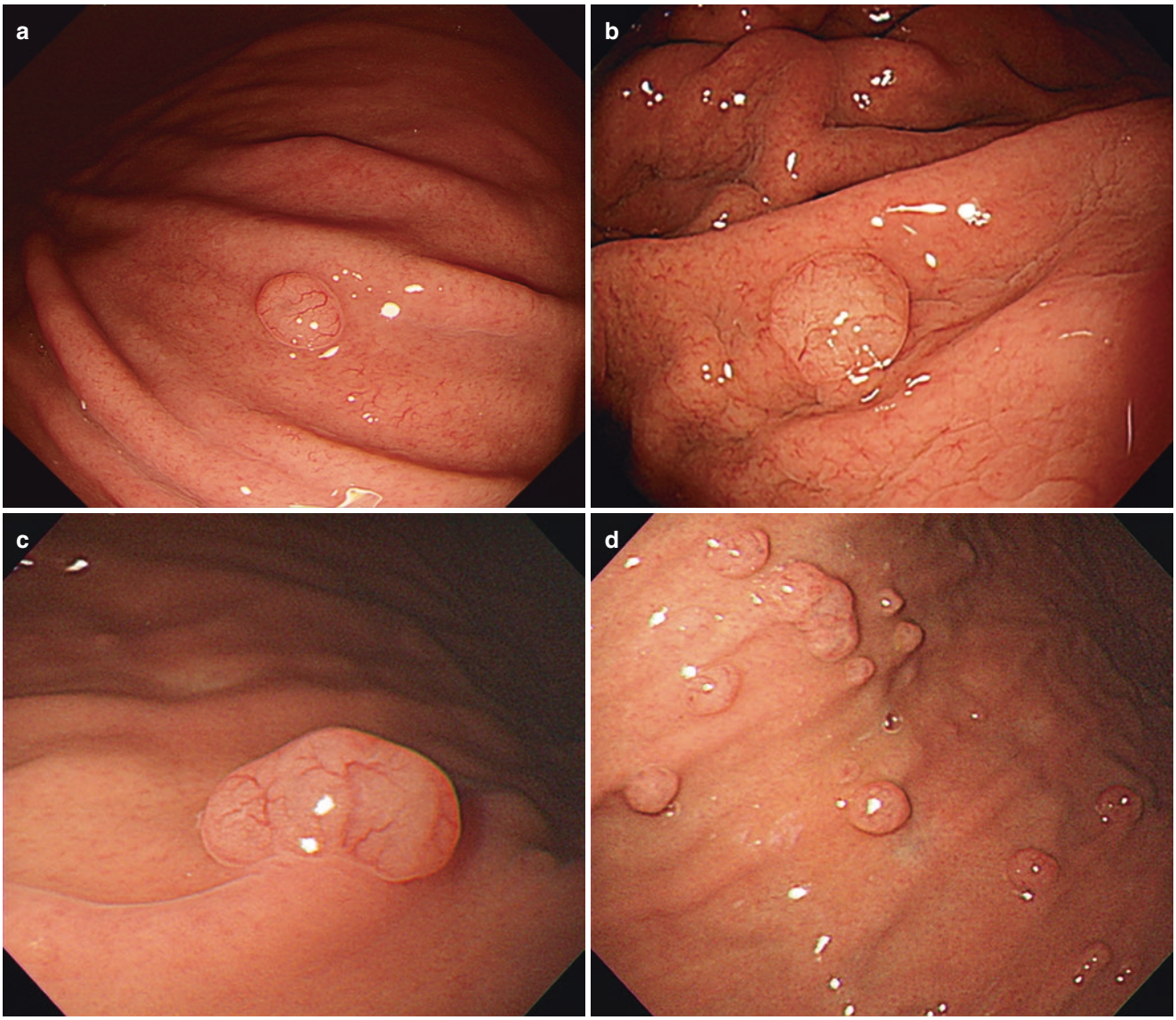


Fig. 10.3 Fundic gland polyp. (**a**, **b**) Several 2–3-mm diminutive, glassy, transparent, sessile polyps, (**c**) a 5-mm subpedunculated, transparent polyp at the gastric body. (**d**) Multiple fundic gland polyps

10.2.3 Inflammatory Fibroid Polyp

Inflammatory fibroid polyps may be found throughout the gastrointestinal tract, but they are most common in the antrum and pyloric region. These polyps are characterized by the proliferation of spindle cells, small blood vessels, and inflammatory cells, often dominated by eosinophils. Endoscopically, they are well-circumscribed, solitary, small sessile, or pedunculated lesions with regular pit patterns. With larger polyps, there may be erosions on the surface of the lesion, and they are often observed as subepithelial tumors with bridging folds (Fig. 10.4). Most patients are asymptomatic and are incidentally diagnosed; furthermore, these polyps usually do not recur after resection. Therefore, local excision is an adequate treatment.

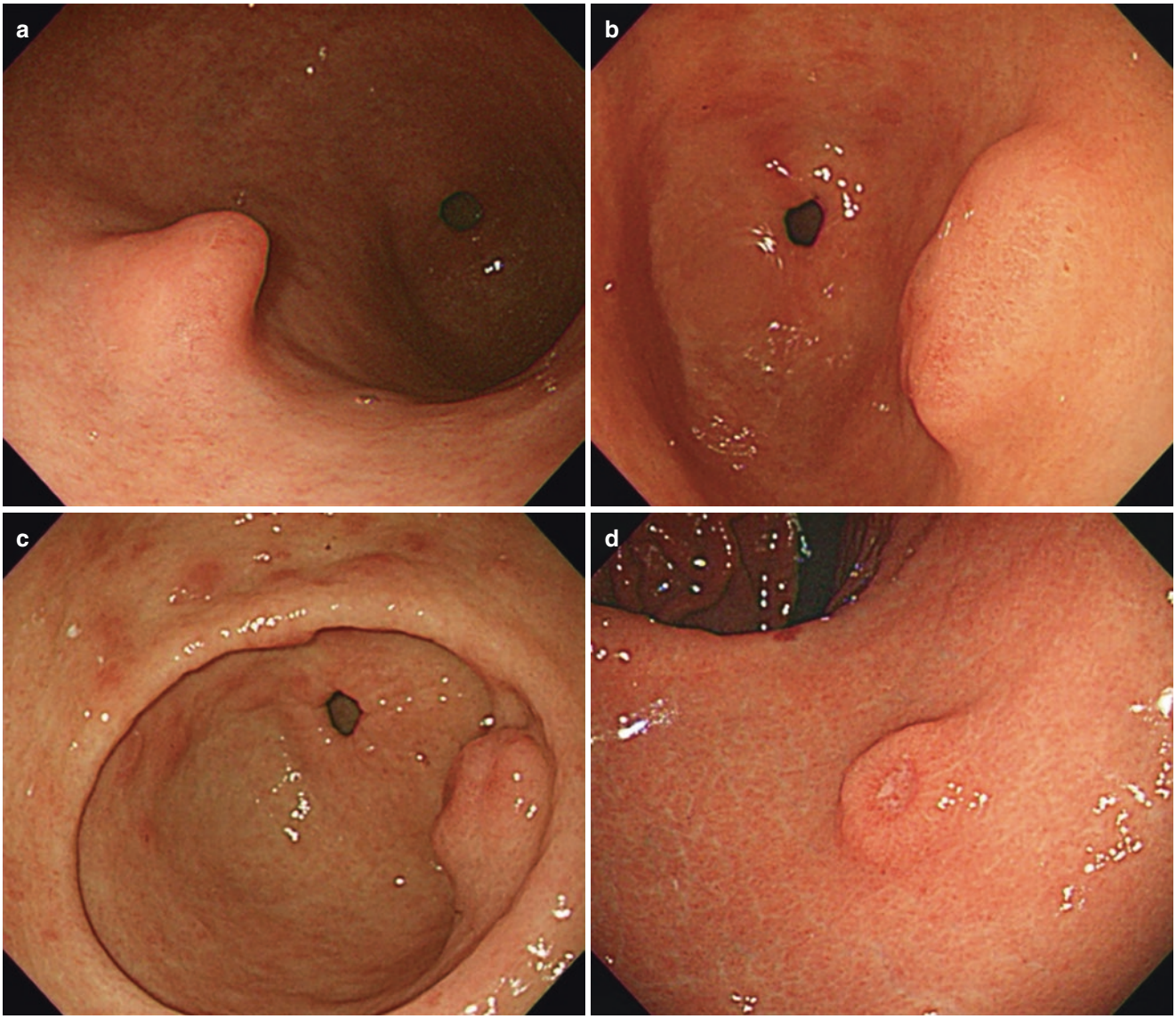


Fig. 10.4 Inflammatory fibroid polyp. (**a**–**c**) Is-type, round polyp of similar surface color as the surroundings, (**d**–**g**) round polyps with surface erosion or ulcer

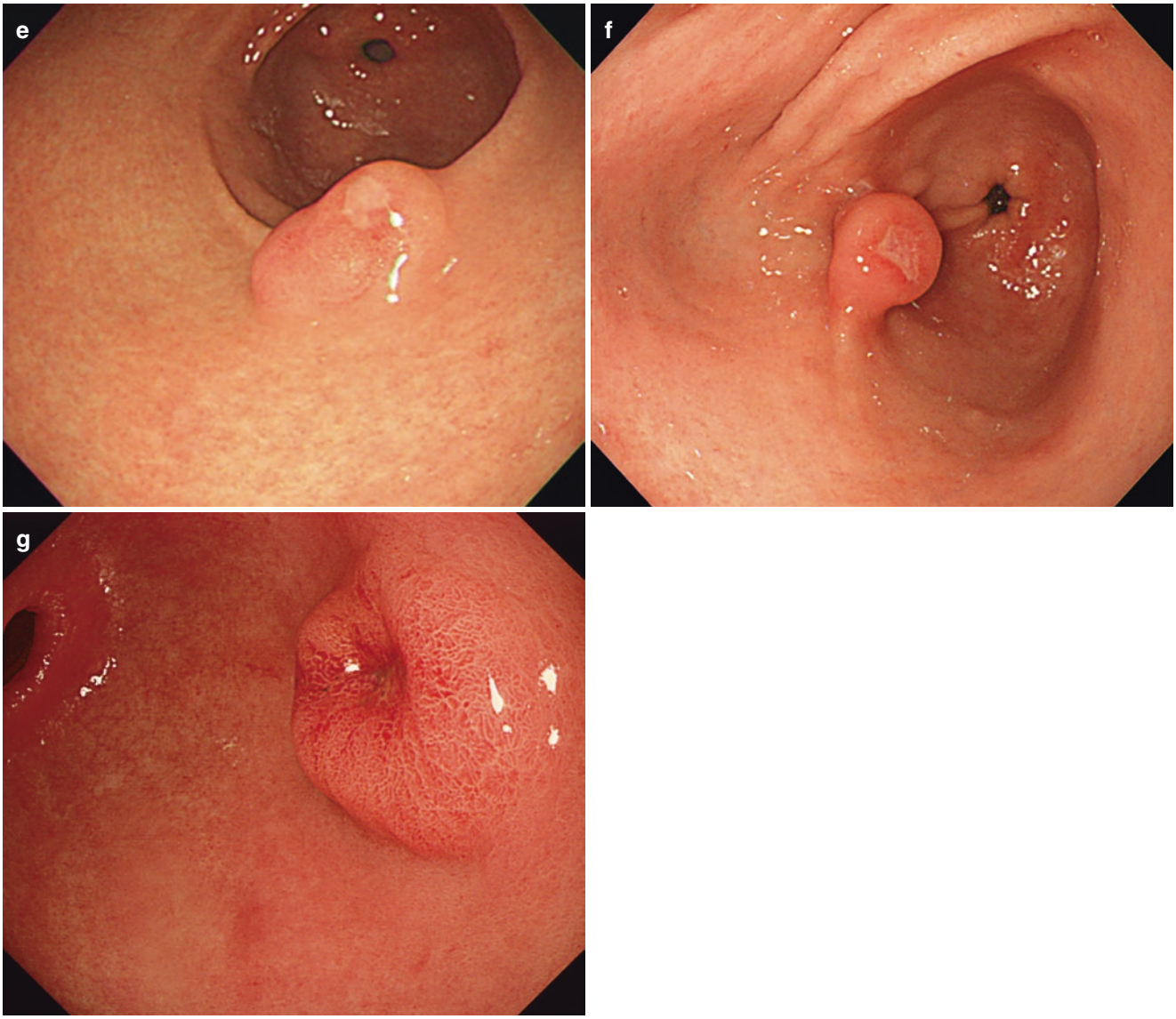


Fig. 10.4 (continued)

10.2.4 Xanthoma

These clinically insignificant lesions are found with increasing age and are often associated with chronic gastritis and intestinal metaplasia. Grossly, they are single or multiple, 1–2 mm in diameter, round or oval, well-circumscribed, yellow, macular, or nodular lesions (Fig. 10.5). They are found most frequently along the lesser curvature.

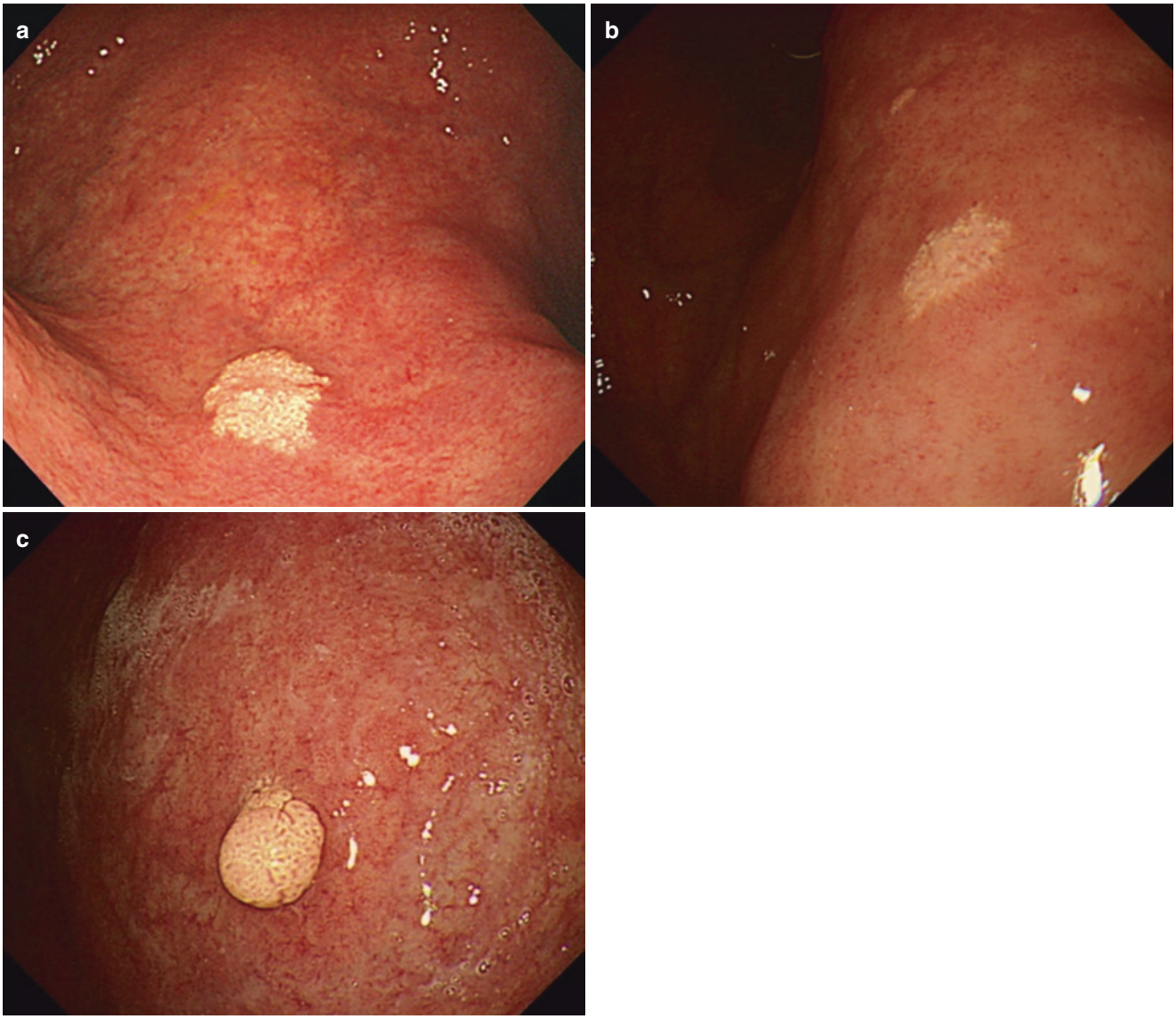


Fig. 10.5 Xanthoma. (**a**, **b**) A 3-mm flat, round, yellowish macular lesion at the body; (**c**) a 5-mm yellowish polypoid lesion

10.2.5 Hamartomatous Polyps and Polyps Associated with Polyposis Syndrome

Gastric hamartomatous polyps are composed of hyperplastic glands lined by foveolar-type epithelium and separated by branching cores of smooth muscle, with atrophy of the deep glandular components. Endoscopic features of hamartomatous polyps are pedunculated round polyps with hyperemic and exudative surfaces (Fig. 10.6).

10.2.5.1 Peutz-Jeghers Polyp

Gastric polyps occur in approximately 49% of Peutz-Jeghers polyposis patients. However, they may also occur sporadically. Rare reports of gastric carcinoma in Peutz-Jeghers polyposis have been described.

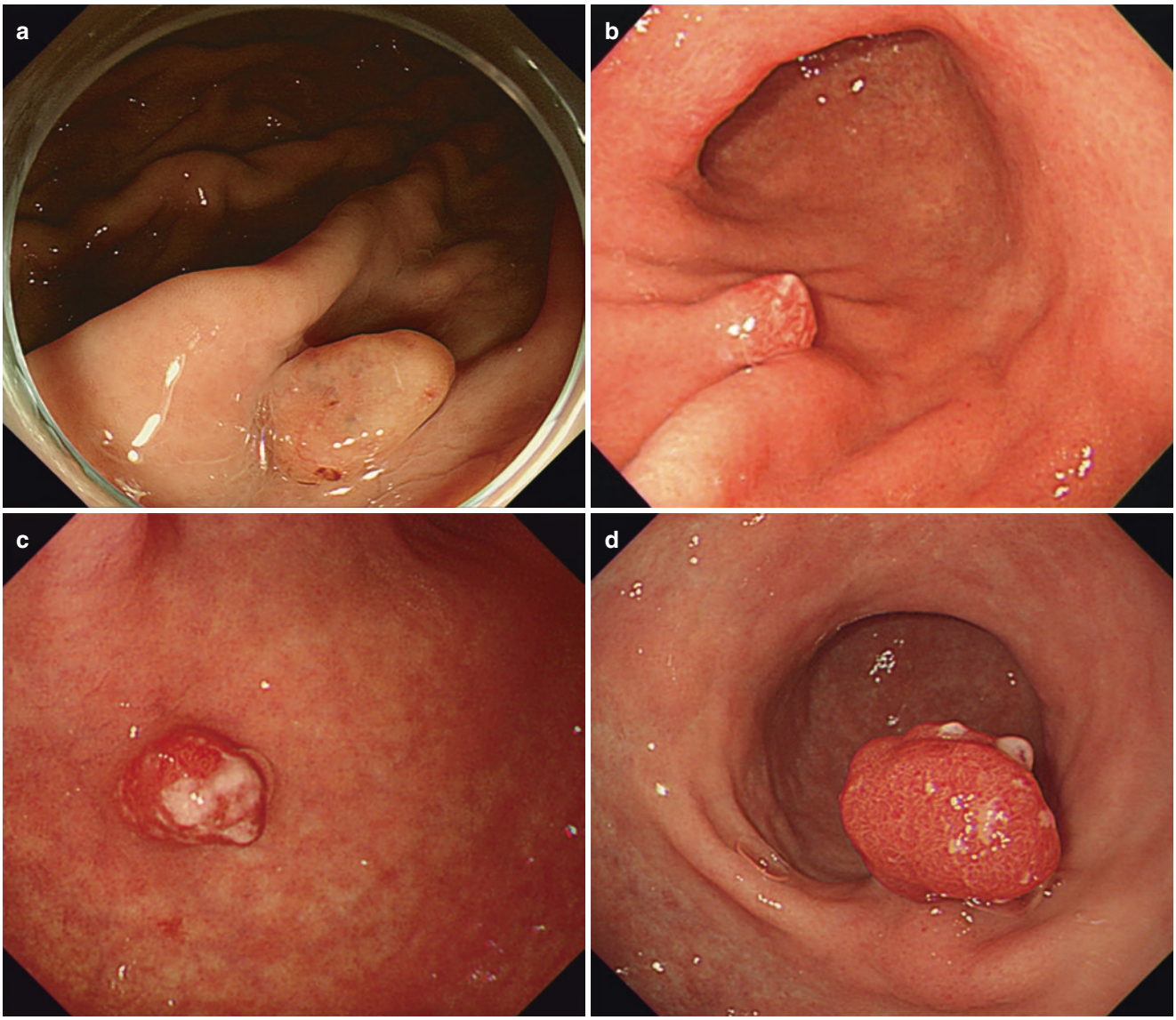


Fig. 10.6 Hamartomatous polyp. (**a**) A 1-cm pedunculated polyp, (**b**, **c**) a 6–8-mm sessile polyps with exudative changes at the body, (**d**) a 1.5-cm hyperemic, exudative, pedunculated polyp at the antrum

10.2.5.2 Juvenile Polyp

Gastric juvenile polyps are rarely observed and often occur within the onset of juvenile polyposis, either of the stomach alone or of the entire gastrointestinal tract. The gastric polyps are usually multiple (Fig. 10.7). They may present at any age. Juvenile polyposis is associated with an increased risk of cancer, particularly in the colon, but the stomach also may be at risk.

10.2.5.3 Cowden's Disease Polyps

Cowden's disease is also known as multiple hamartoma syndrome. The patients have an increased risk of breast and thyroid carcinoma. The incidence of gastrointestinal polyps is estimated to be close to 75% of patients.

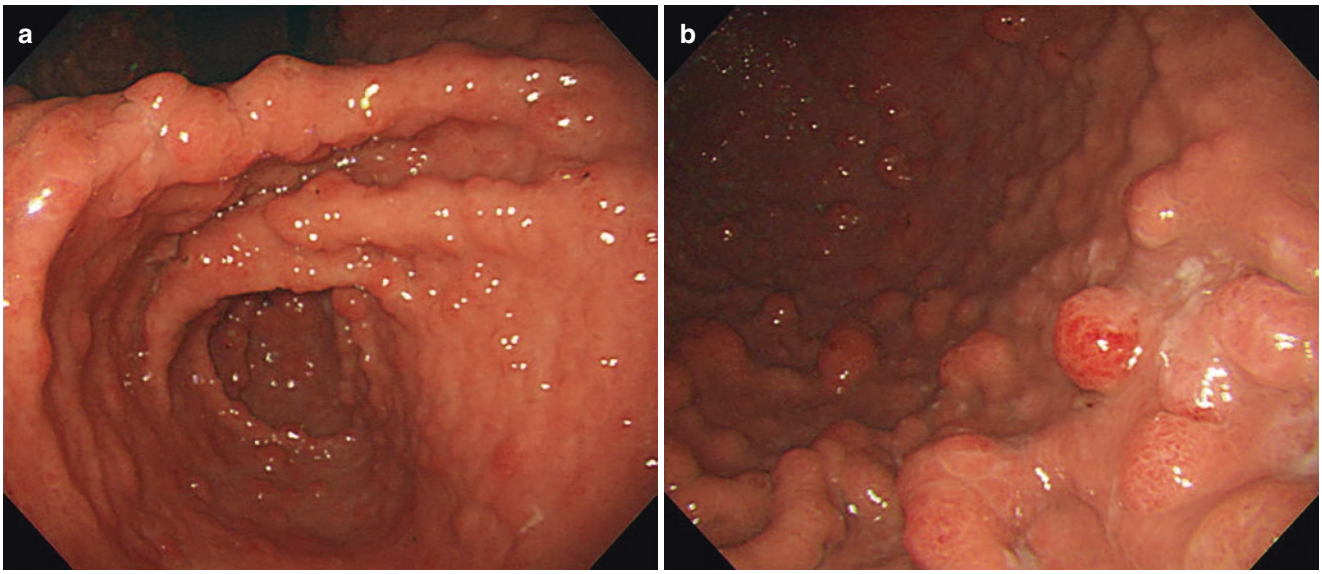


Fig. 10.7 Juvenile polyposis in the stomach. Multiple, variable-sized, and sessile polyps are noted at the whole stomach. (**a**) Antrum, (**b**) Body

10.2.5.4 Cronkhite-Canada Polyps

These polyps occur usually in conjunction with lesions in other parts of the gastrointestinal tract. They are indistinguishable from juvenile and hyperplastic polyps (Fig. 10.8) and can be diagnosed only in the presence of clinical evidence of alopecia, nail atrophy, or hyperpigmentation.

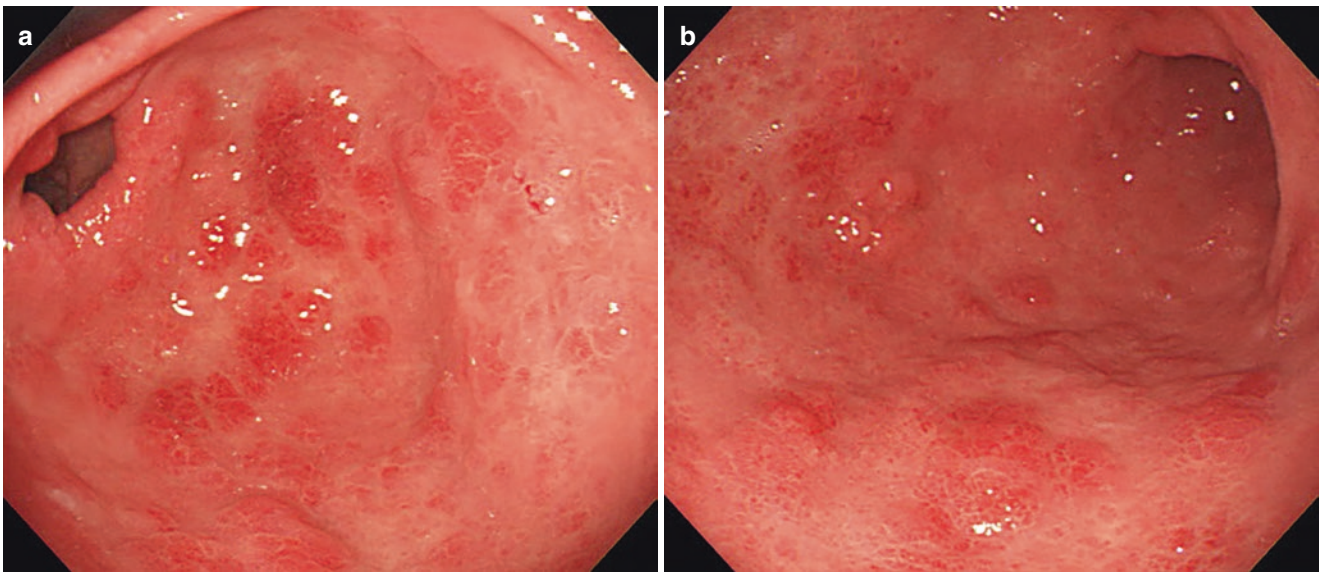


Fig. 10.8 Cronkhite-Canada polyps in the stomach. Multiple, slightly elevated, and hyperemic polyps are noted at the entire stomach. (**a**) Antrum, (**b**) Body

10.3 Neoplastic Polyps

10.3.1 Adenoma/Dysplasia

10.3.1.1 Definition

Dysplastic epithelium is defined as noninvasive, neoplastic epithelium. Gastric adenomas are defined by the World Health Organization as circumscribed, polypoid lesions composed of tubular and/or villous structures, lined by dysplastic epithelium [4]. In Western literature, flat tubular adenomas are frequently called dysplasias. In the Vienna consensus classification [5] for intramucosal neoplasia, the terms adenoma and dysplasia are both replaced by "intraepithelial neoplasia" (Table 10.3).

10.3.1.2 Clinical Significance

Gastric adenomas/dysplasias are precancerous lesions, comparable to colonic adenomas. Gastric adenoma/dysplasia can be subdivided according to the degree of dysplasia (low or high grade). The risk of malignancy in gastric adenomas/dysplasias is related to size, degree of dysplasia, and villosity of growth pattern. High-grade dysplasia has been identified in close proximity to 40–100% of early gastric cancers and 5–80% of advanced adenocarcinomas [6].

Table 10.3 The revised Vienna classification of gastrointestinal epithelial neoplasia

Category	Diagnosis
1	Negative for neoplasia
2	Indefinite for neoplasia
3	Mucosal low-grade neoplasia Low-grade adenoma Low-grade dysplasia
4	Mucosal high-grade neoplasia 4.1 High-grade adenoma/dysplasia 4.2 Noninvasive carcinoma (carcinoma in situ) 4.3 Suspicious for invasive carcinoma 4.4 Intramucosal carcinoma
5	Submucosal invasion by carcinoma

10.3.1.3 Endoscopic Features

Adenomas/dysplasias are reddish or whitish discolored, often with a multilobulated surface, contrasting with smooth and atrophic adjacent mucosa. The surface may be smooth or superficially eroded (Figs. 10.9, 10.10, 10.11, 10.12, 10.13, 10.14). Narrow band imaging (NBI) is a novel endoscopic technique that may enhance the accuracy of diagnosis by using rotating filters. In NBI system, color of adenoma is bright brown. And margin of adenoma is more clearly observed (Fig. 10.15). According to a recent study, a characteristic white opaque substance [7] was found along the mucosal surface when an elevated gastric adenoma was observed with magnified endoscopy with NBI (Fig. 10.16). The presence of erosion or ulceration is thought to correlate with an increased risk of cancer. Similarly, superficial erosion and atypia may increase the likelihood of a gastric cancer being present. High-grade adenoma/dysplasia tends to be associated with a more eroded surface, hyperemic changes, and depressed type than low-grade adenoma/dysplasia (Fig. 10.17).

10.3.2 Gastric Polyps and Familial Adenomatous Polyposis

Familial adenomatous polyposis is inherited as an autosomal dominant trait, characterized by the development of multiple adenomatous polyps in the colon. Fundic gland polyps are found in 13–53% of patients; adenomas, which are more common in the antrum, are found in 6–12%.

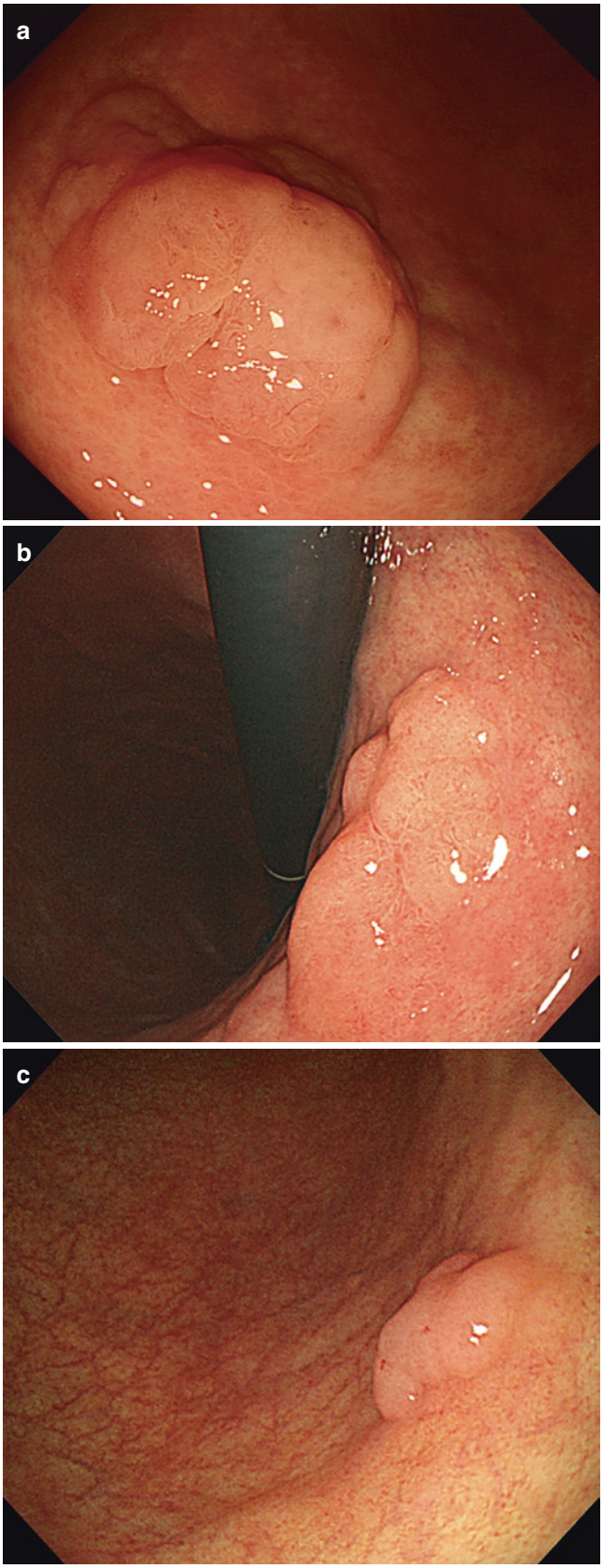


Fig. 10.9 Low-grade adenomas, Is type. (**a**) A 2.5-cm, whitish discolored, elevated lesions, (**b**) A 1.2-cm, flat elevated lesion at the angle, (**c**) A 1.0-cm whitish elevated lesion at the body

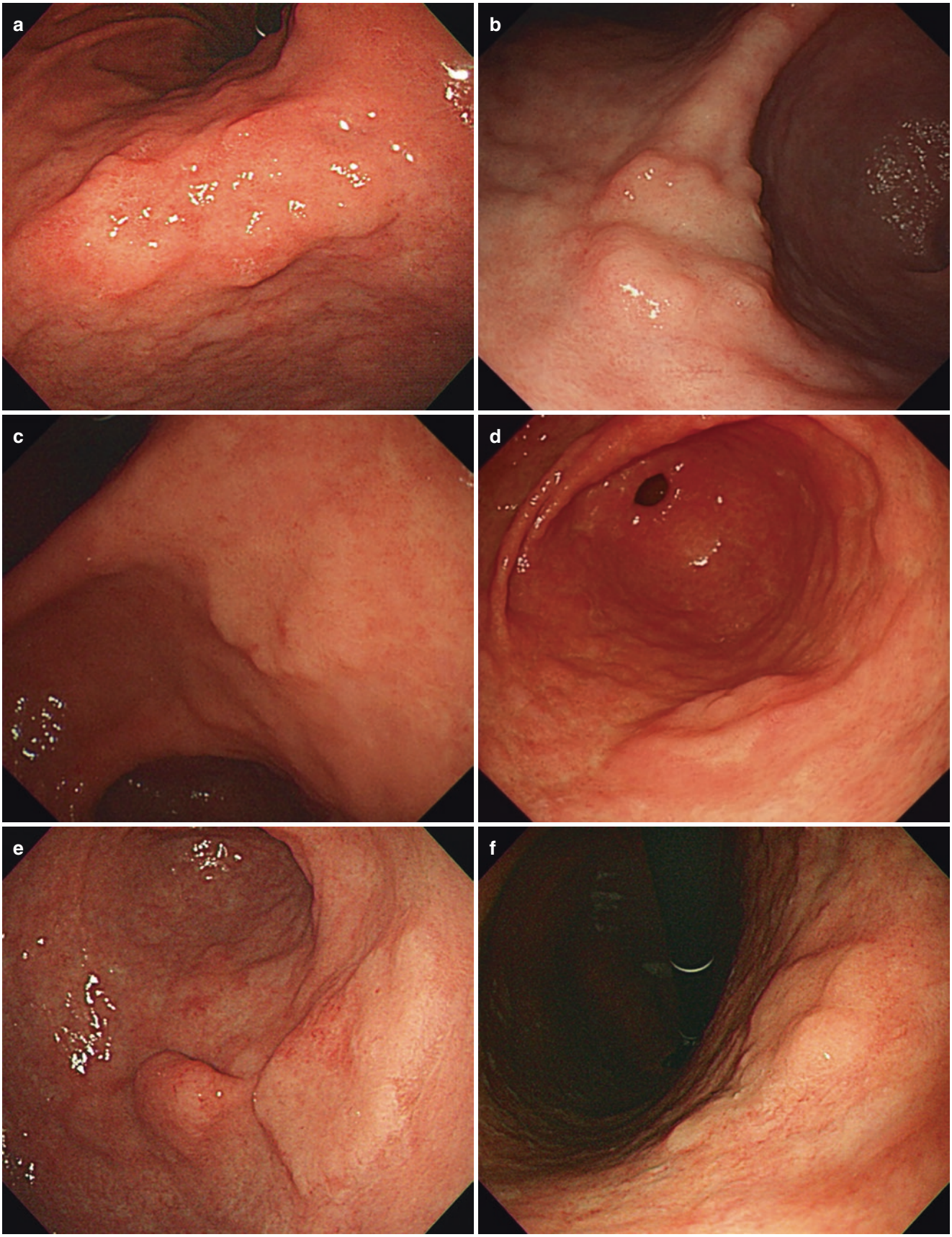
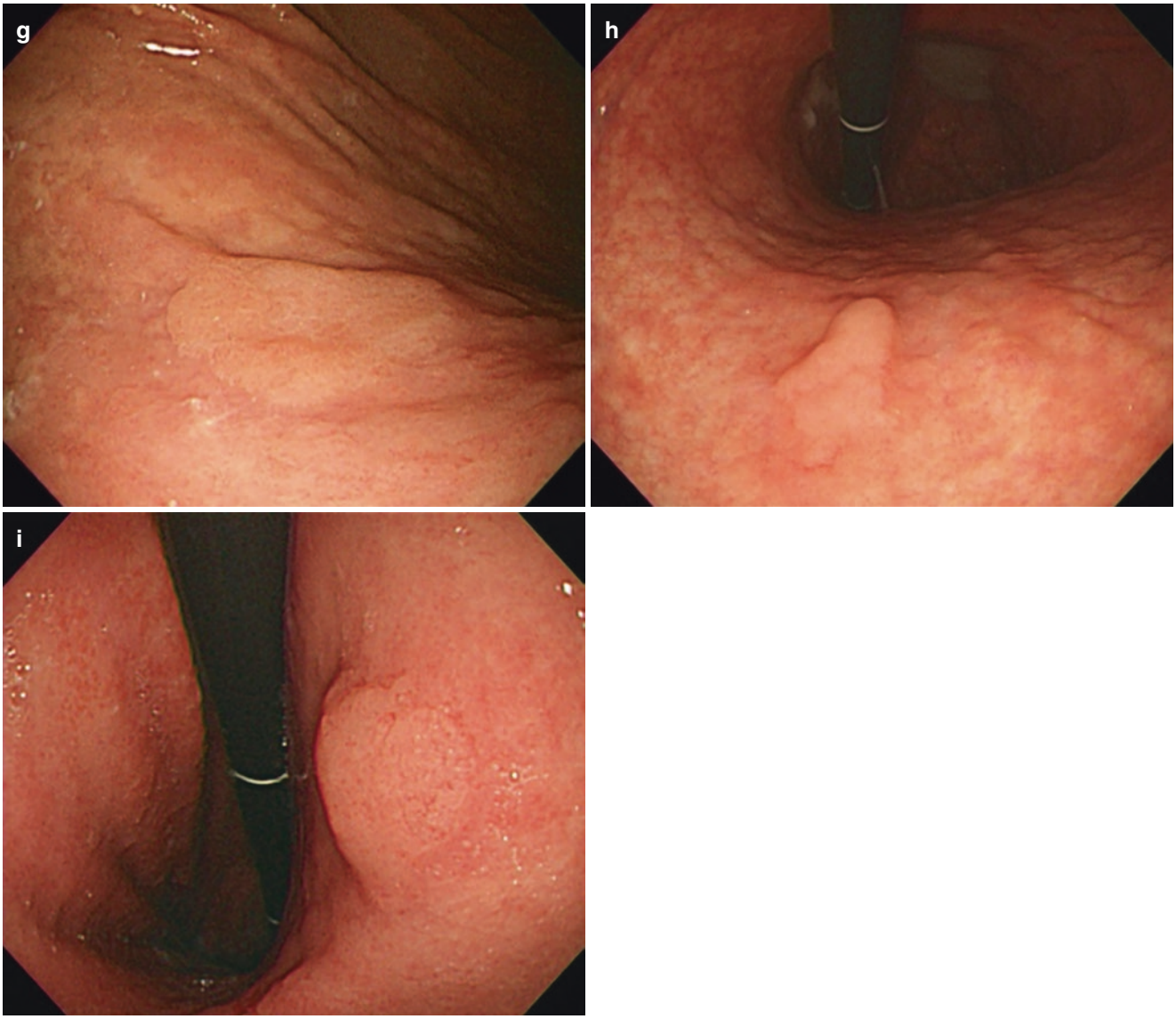


Fig. 10.10 Low-grade adenoma, IIa type. (**a**–**c**) Angle, (**d**–**i**) Body



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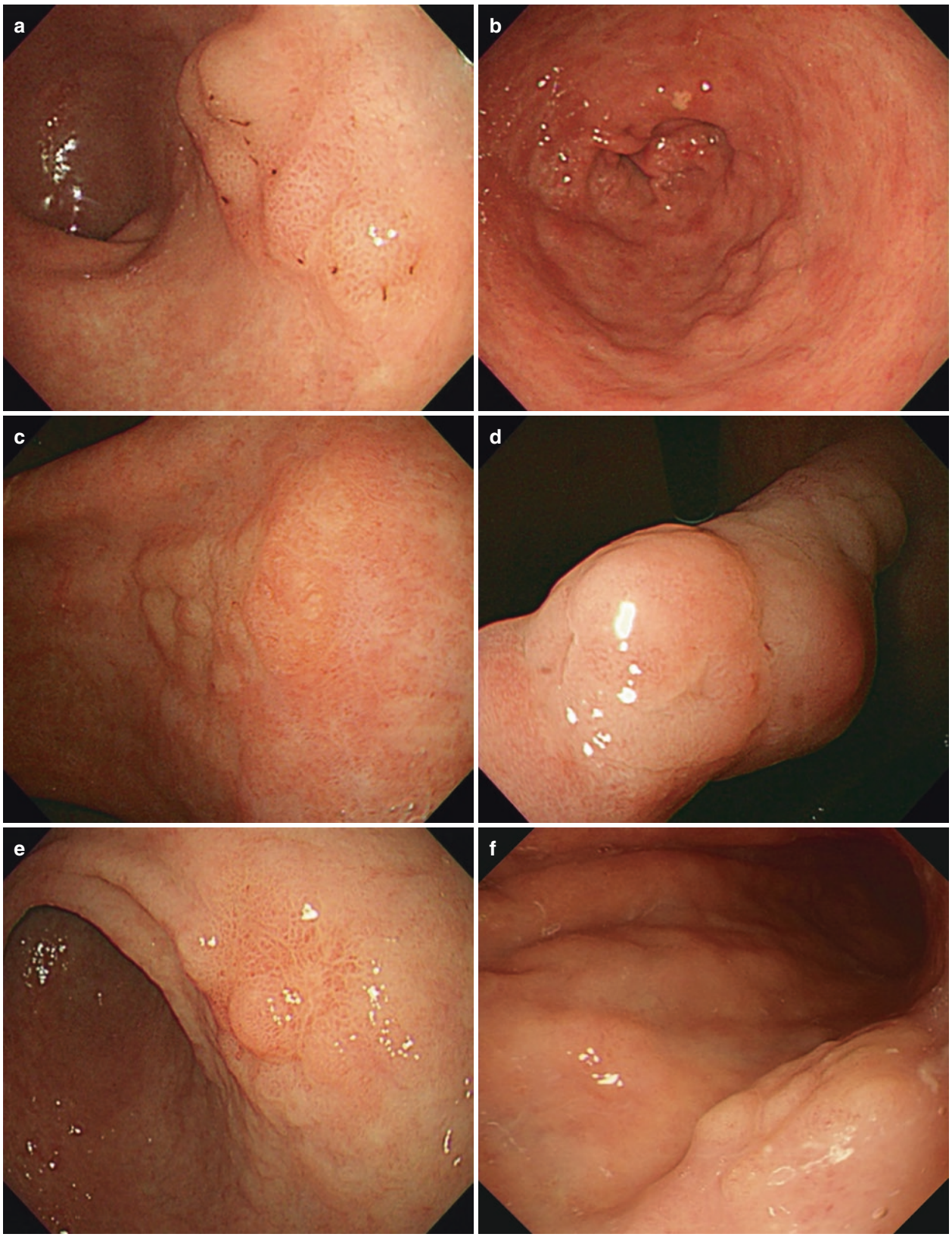
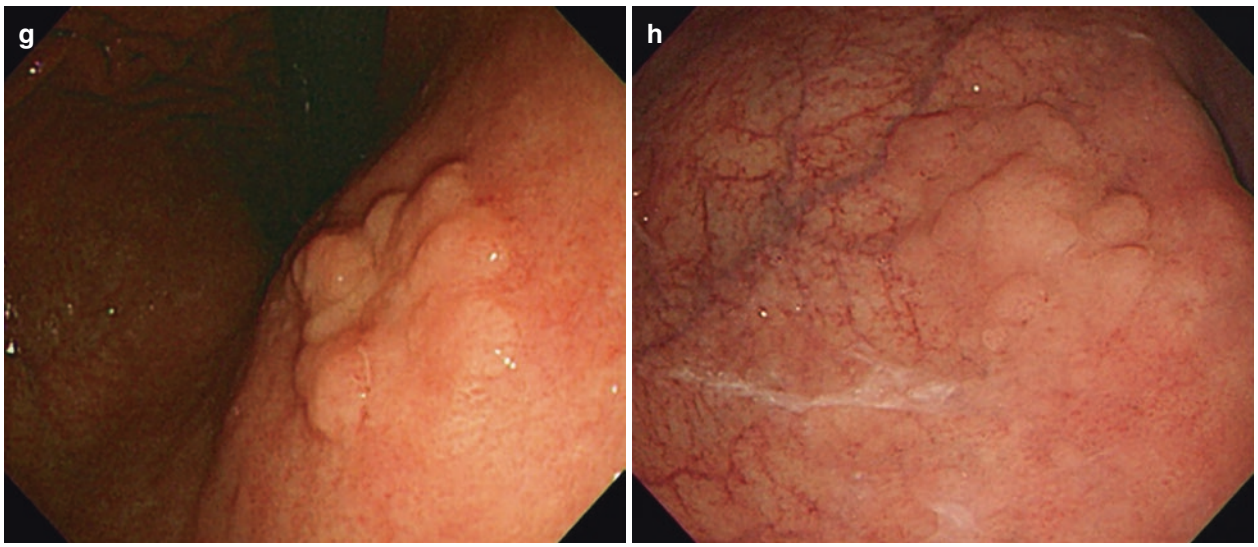


Fig. 10.11 Low-grade adenoma, IIa type. Whitish discolored, lobulated, elevated lesions. (**a**–**c**) Antrum, (**d**, **e**) Angle, (**f**–**h**) Body



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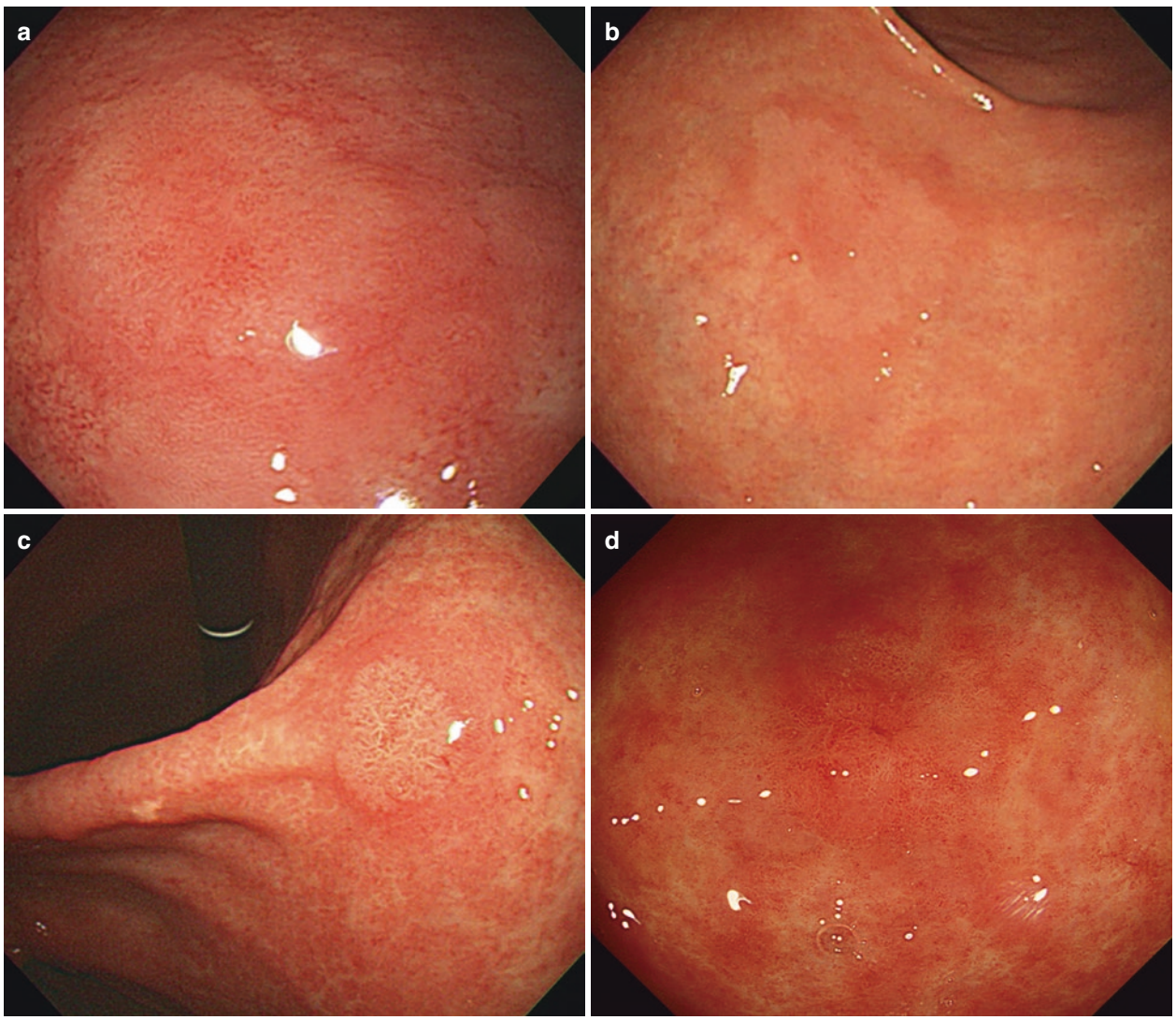
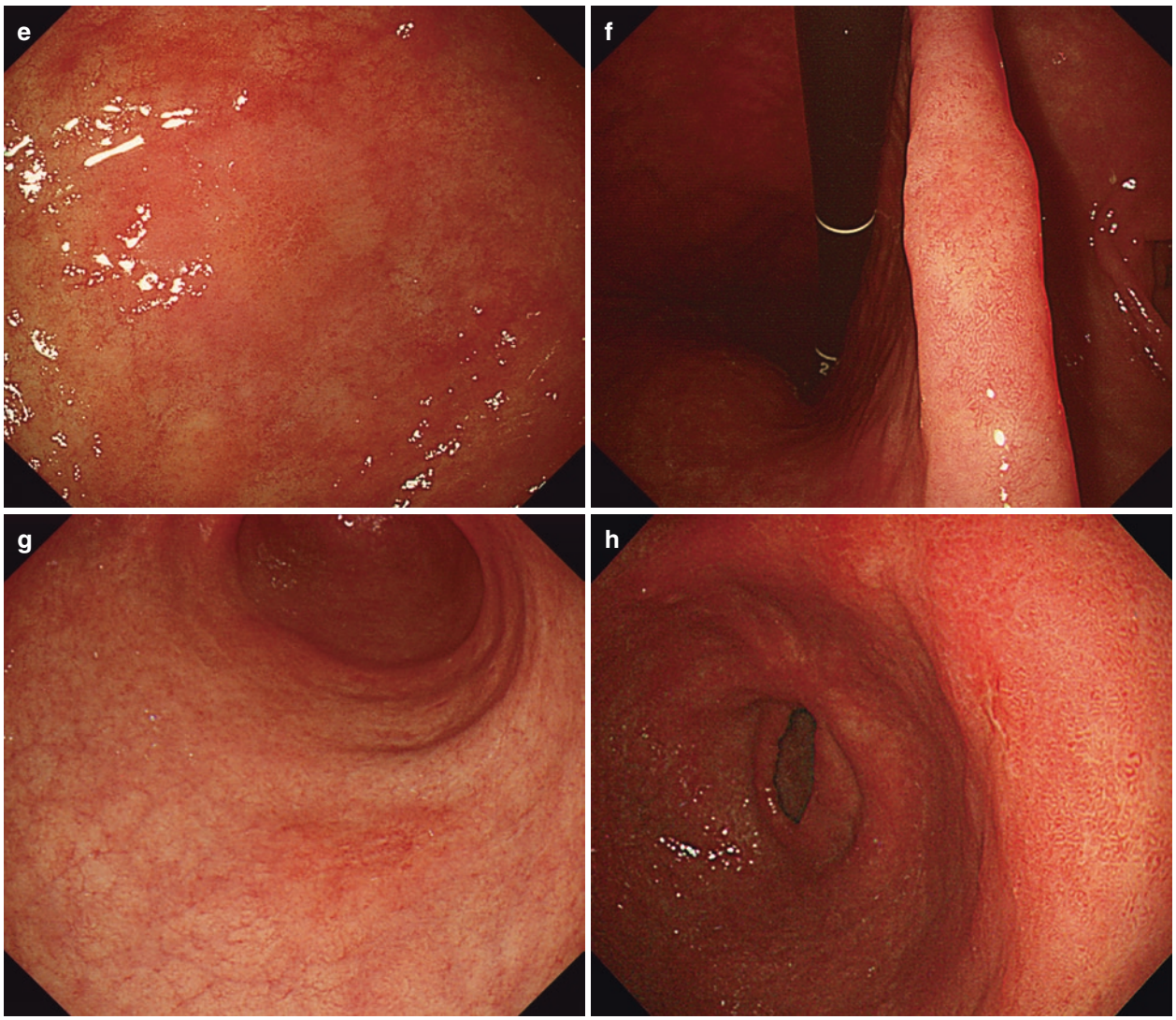


Fig. 10.12 IIb-typed low-grade dysplasia. (**a**–**f**) Whitish discolored, flat, well-circumscribed lesions, (**g**, **h**) flat, reddish discolored lesion



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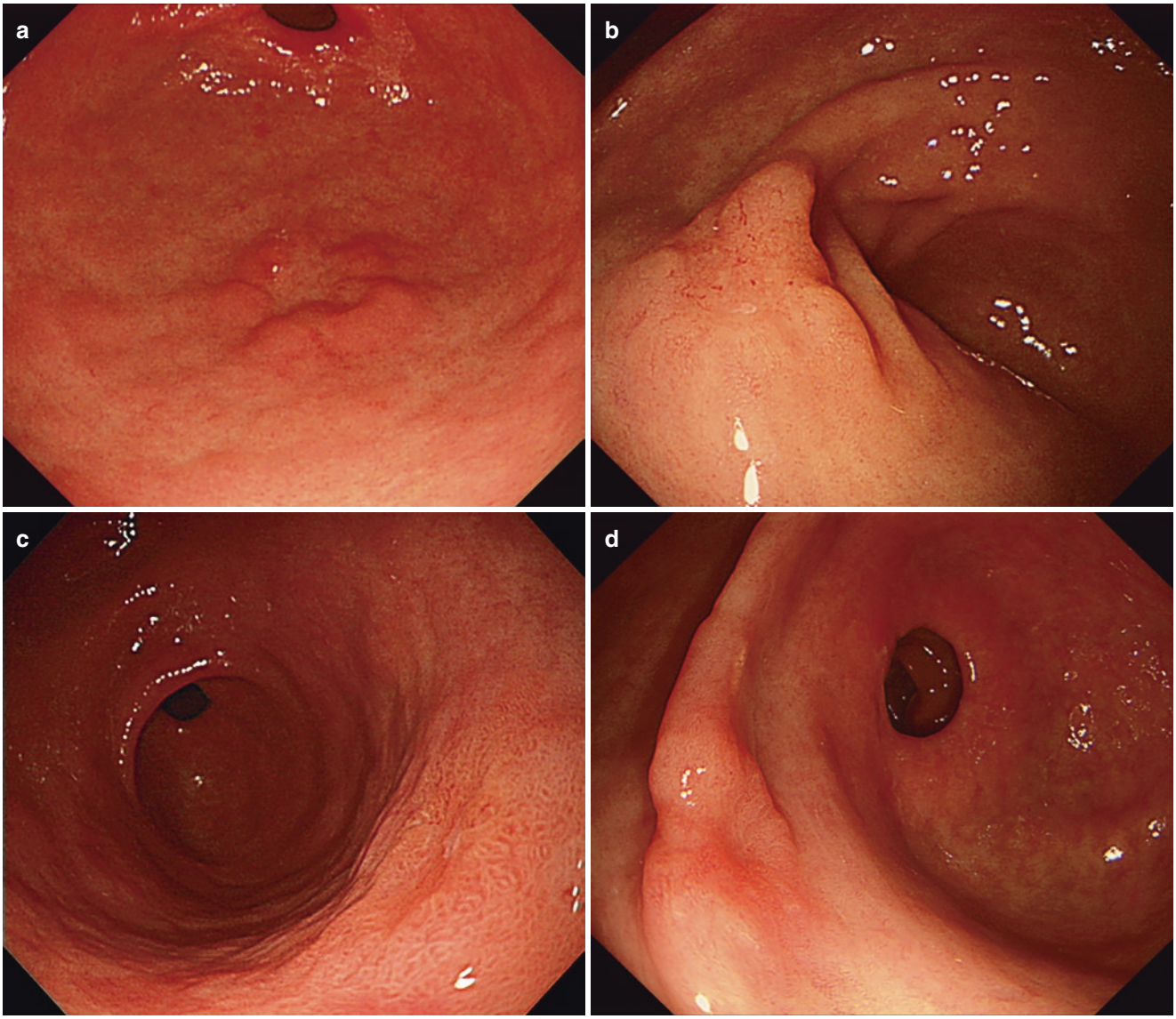


Fig. 10.13 IIc typed low-grade dysplasia. (**a**) A round depressed lesion at the greater curvature side of antrum, (**b**–**d**) A slightly depressed lesions at the body

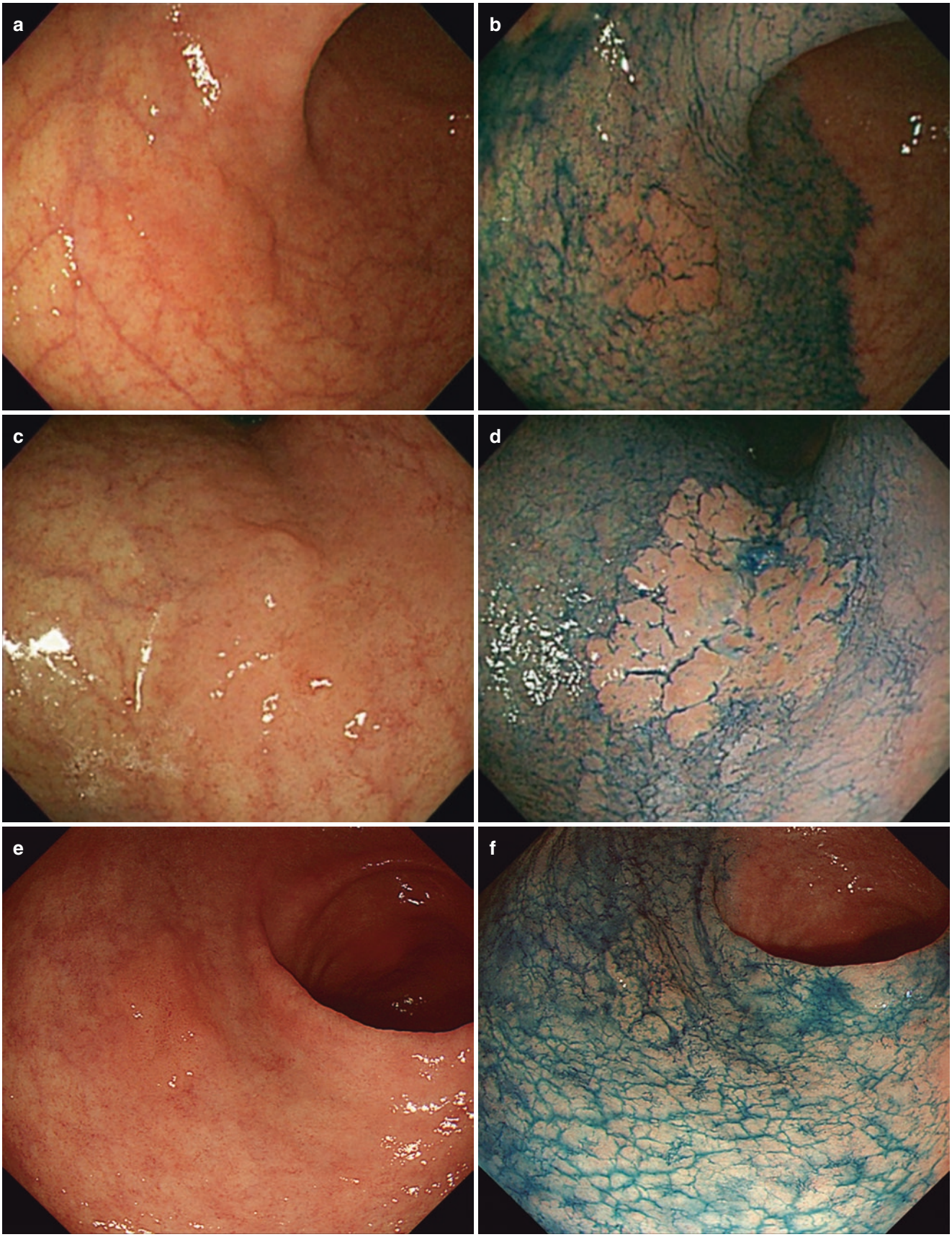
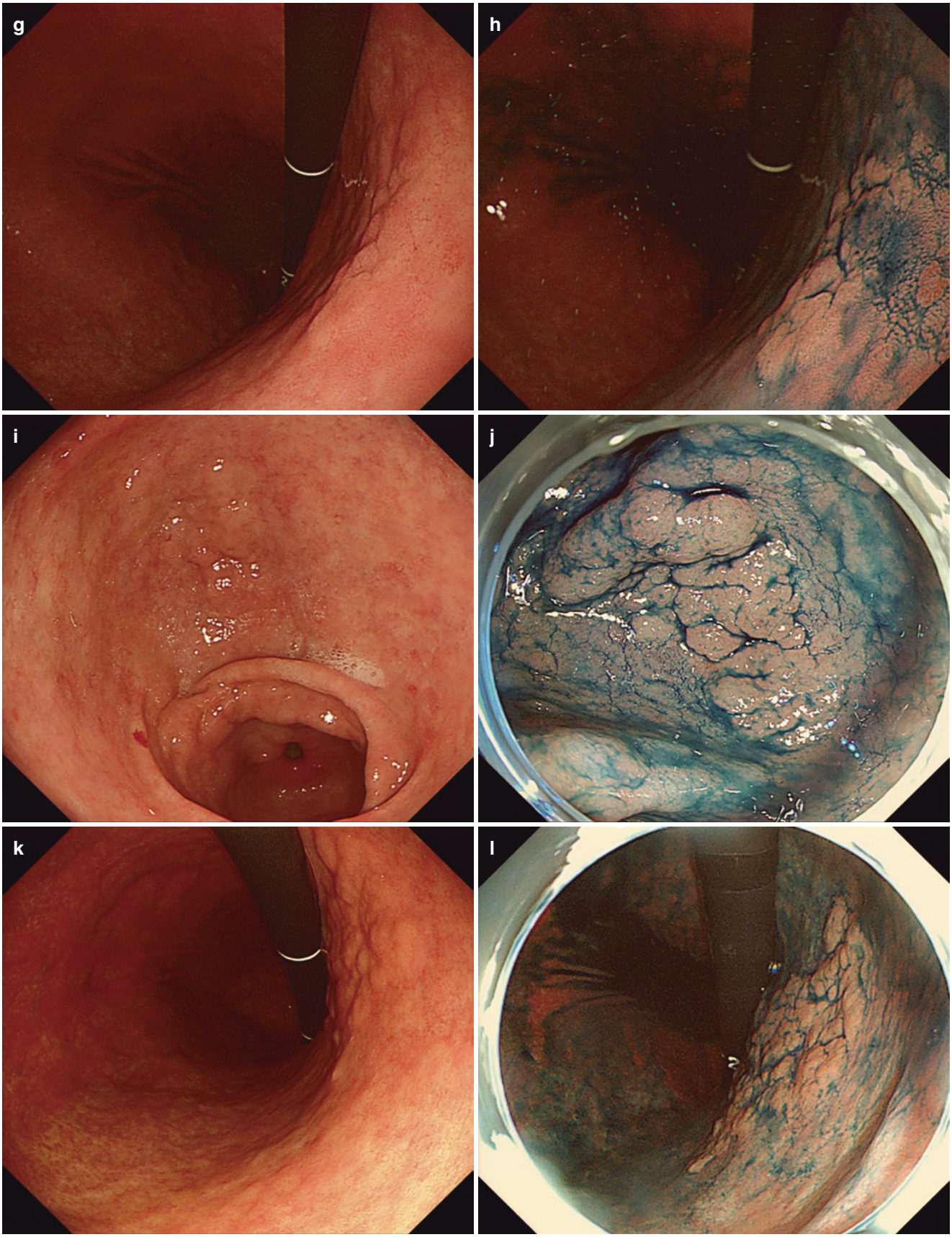


Fig. 10.14 Low-grade adenoma/dysplasia. Indistinct margined dysplasias due to marked atrophy and intestinal metaplasia around the lesions are often observed. Indigo carmine chromoendoscopy delineated the lesion more clearly. (**a**, **c**, **e**, **g**, **i**, **k**) White light endoscopy, (**b**, **d**, **f**, **h**, **j**, **l**) indigo carmine chromoendoscopy



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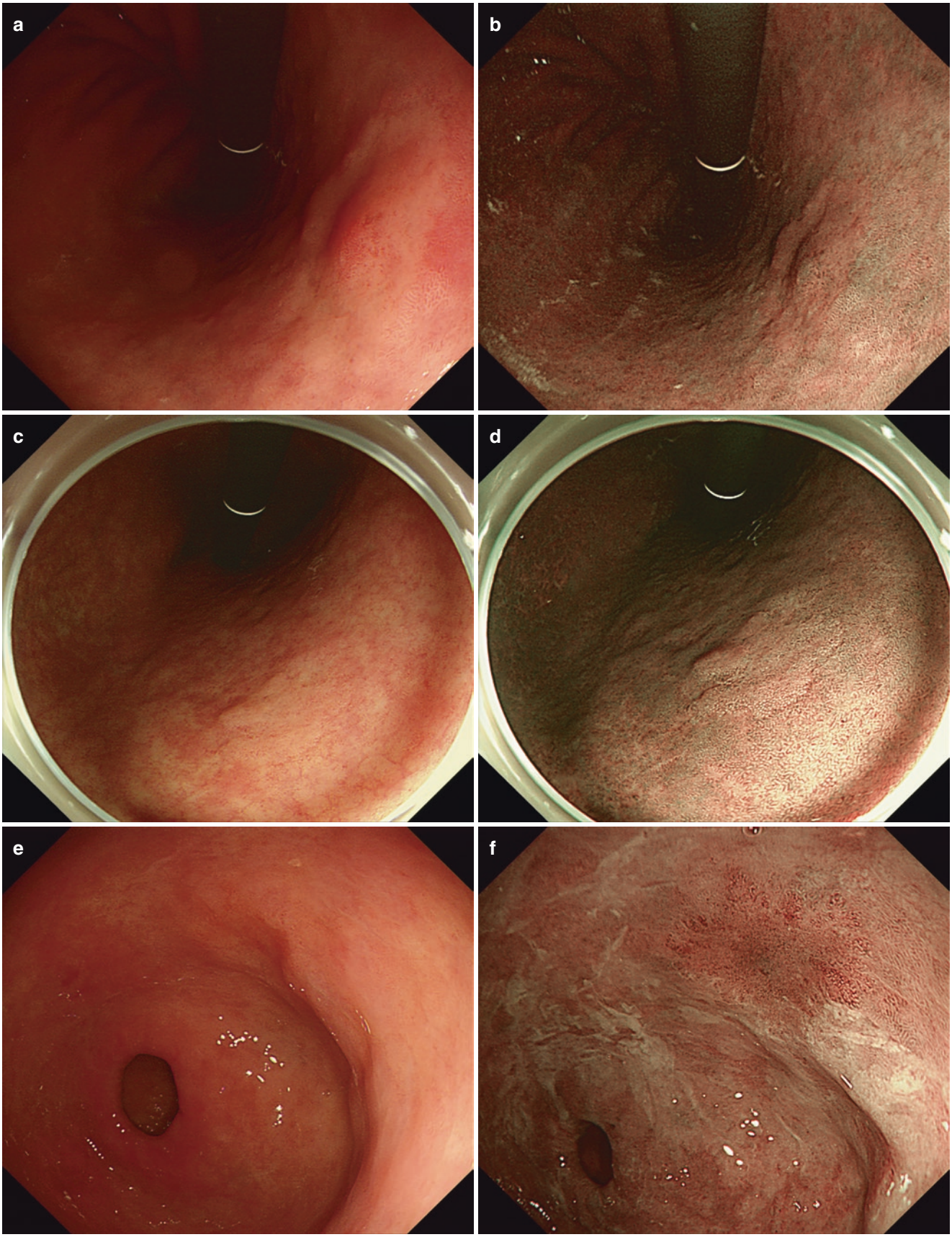
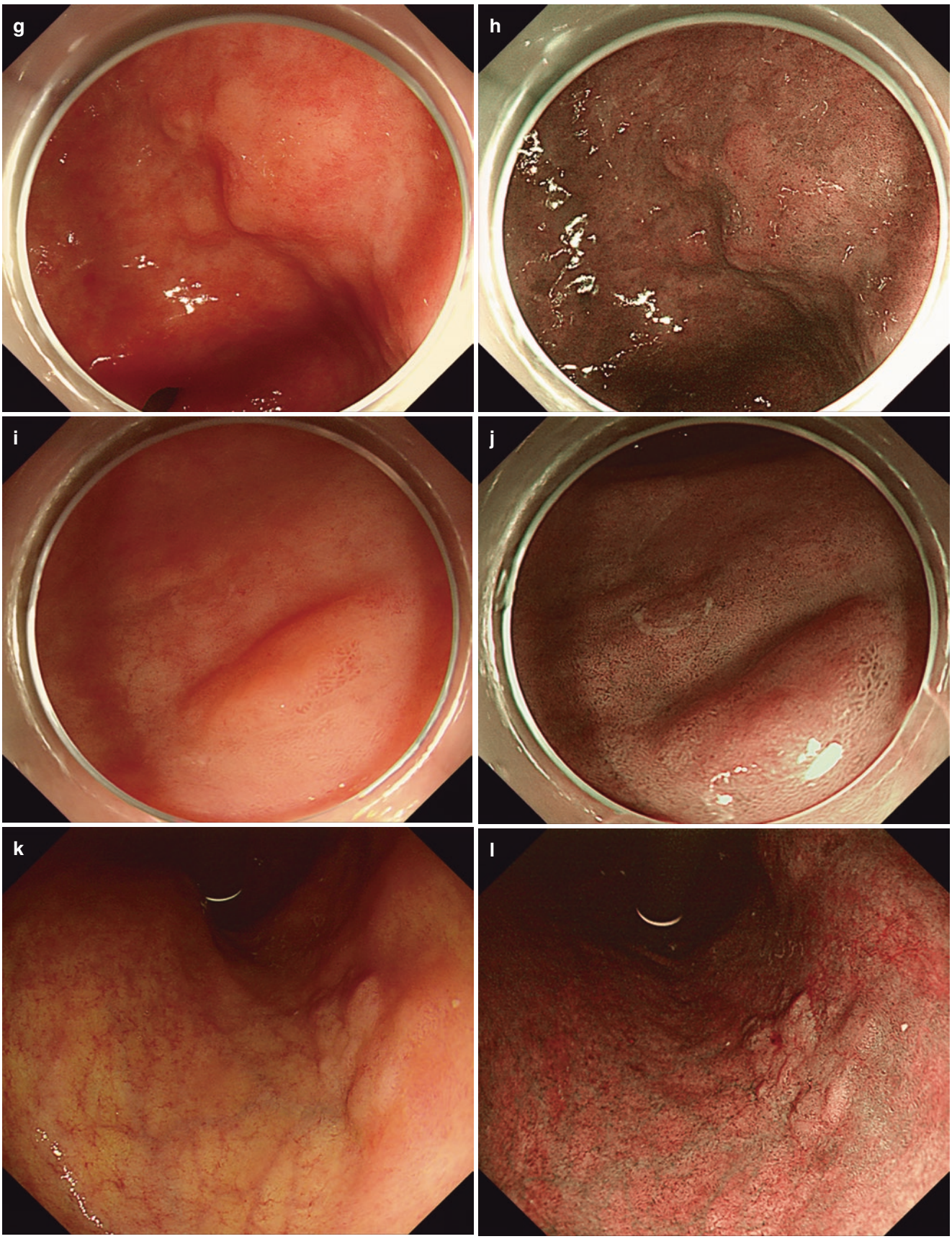


Fig. 10.15 Low-grade adenoma/dysplasia. In NBI system, margin of adenoma/dysplasia is more clearly observed. (**a**, **c**, **e**, **g**, **i**, **k**, **m**) White light endoscopy, (**b**, **d**, **f**, **h**, **j**, **l**, **n**) NBI



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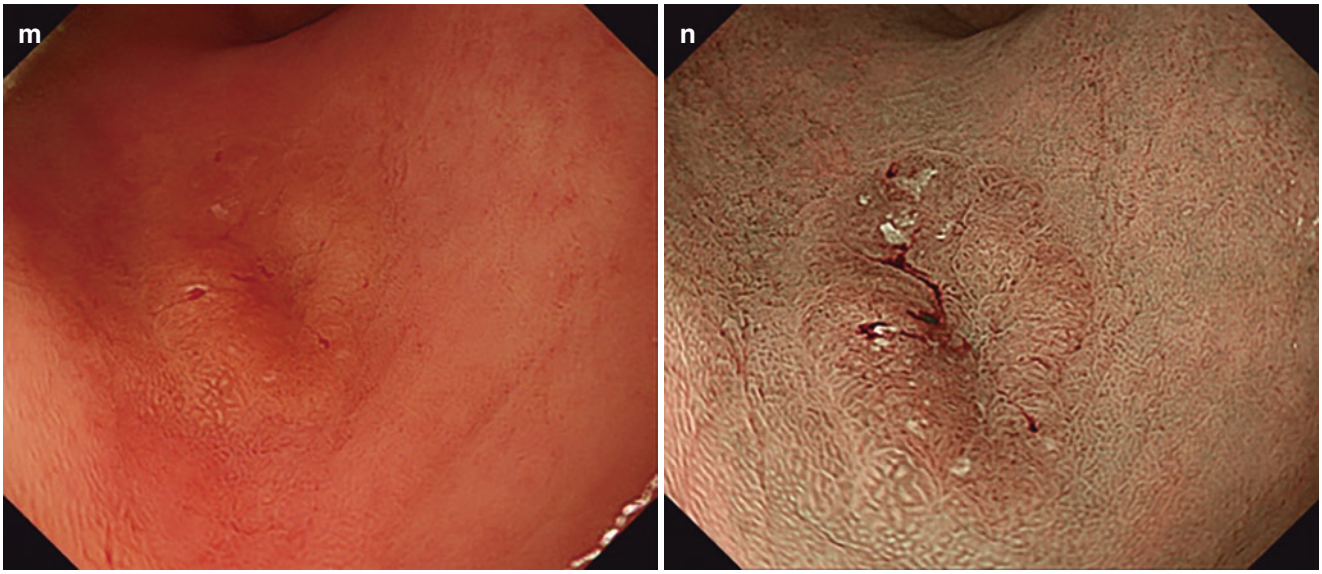

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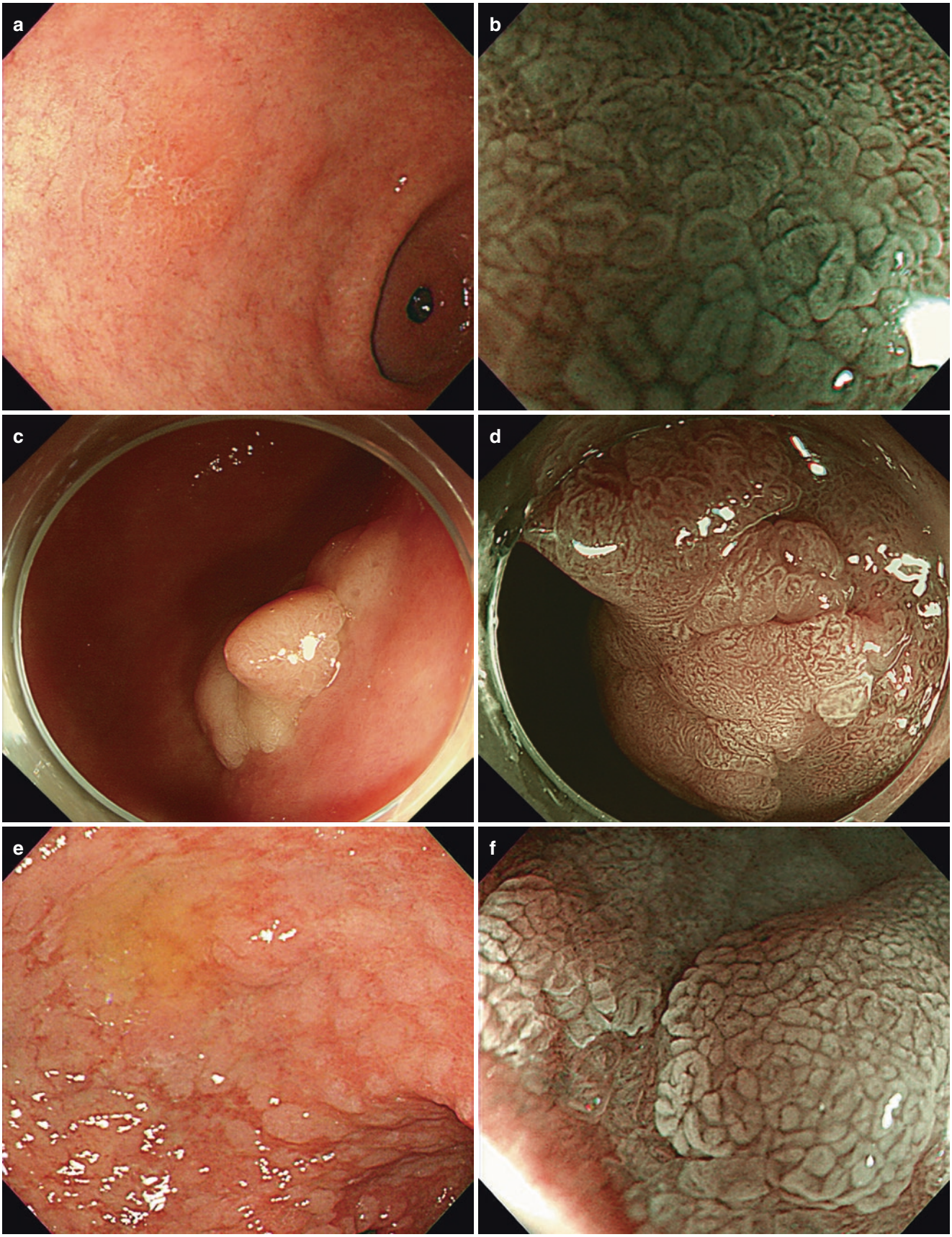


Fig. 10.16 White opaque substances in NBI. (**a**, **c**, **e**) A whitish discolored low-grade dysplasia at the antrum, (**b**, **d**, **f**) White opaque substances along the pit at the magnified endoscopy with NBI

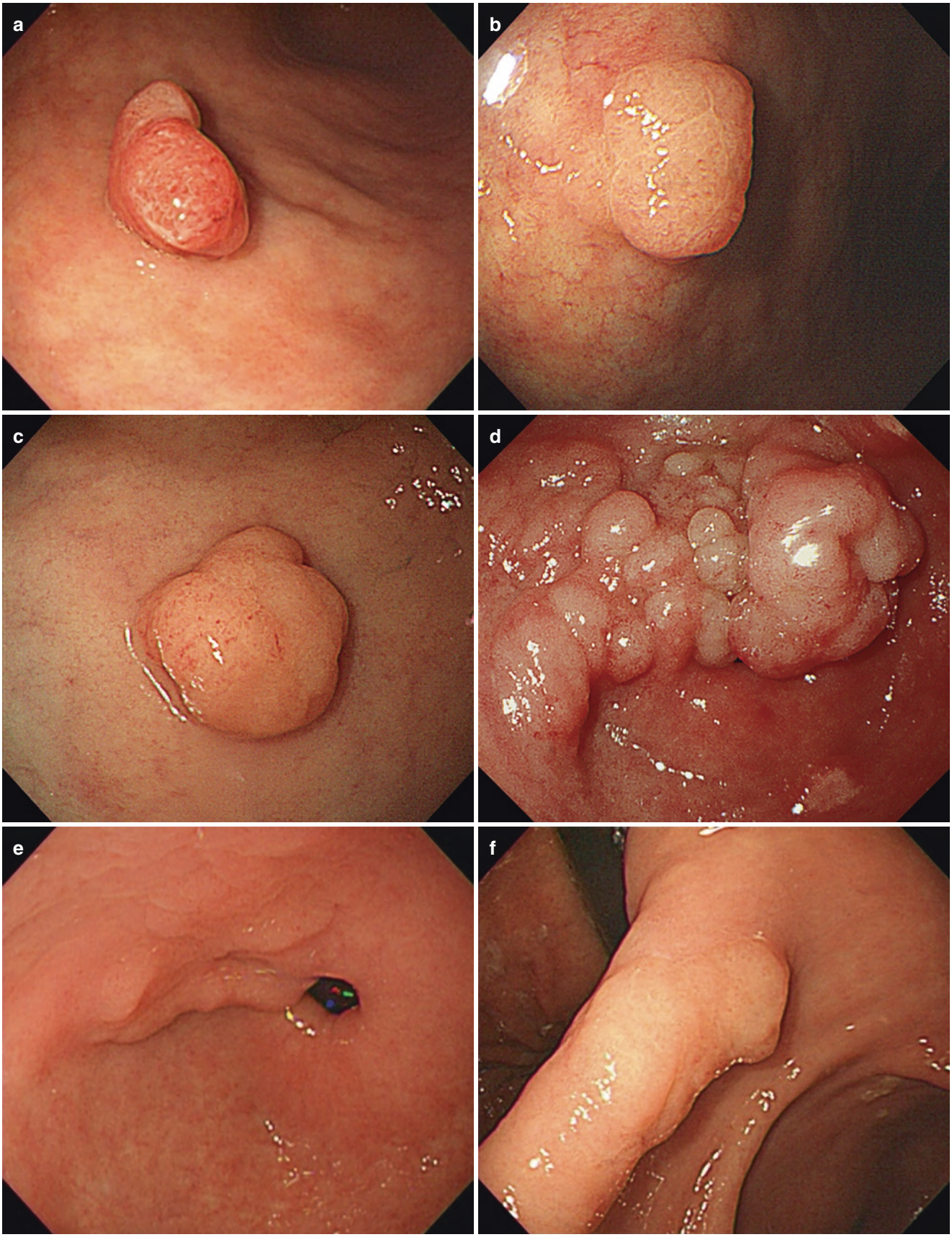
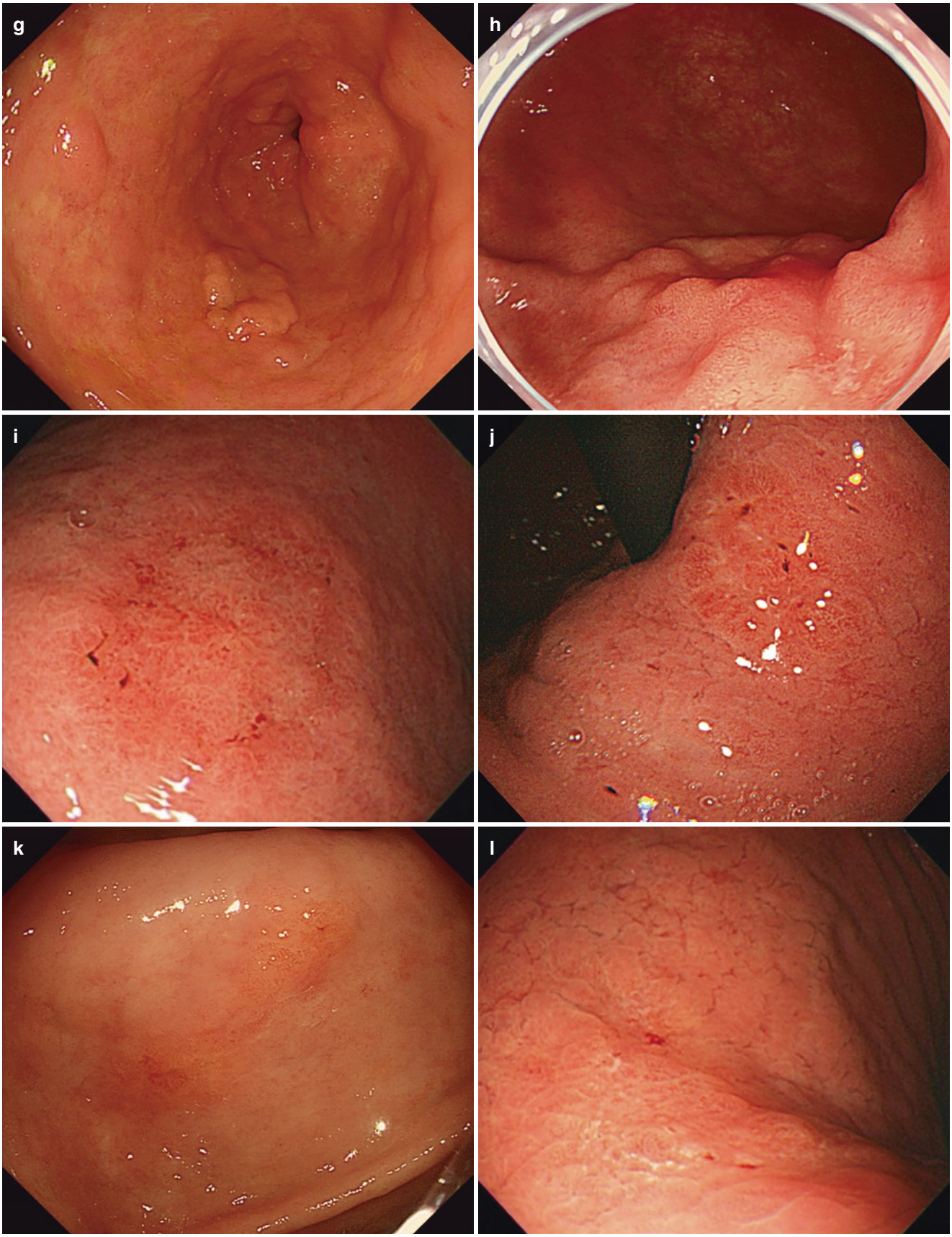


Fig. 10.17 High-grade adenoma/dysplasia. (**a**–**d**) Is type, (**e**–**h**) IIa type, (**i**–**n**) IIb type, (**o**–**r**) elevated lesion with central erosion, (**s**–**v**) lesions with depression and hyperemic change



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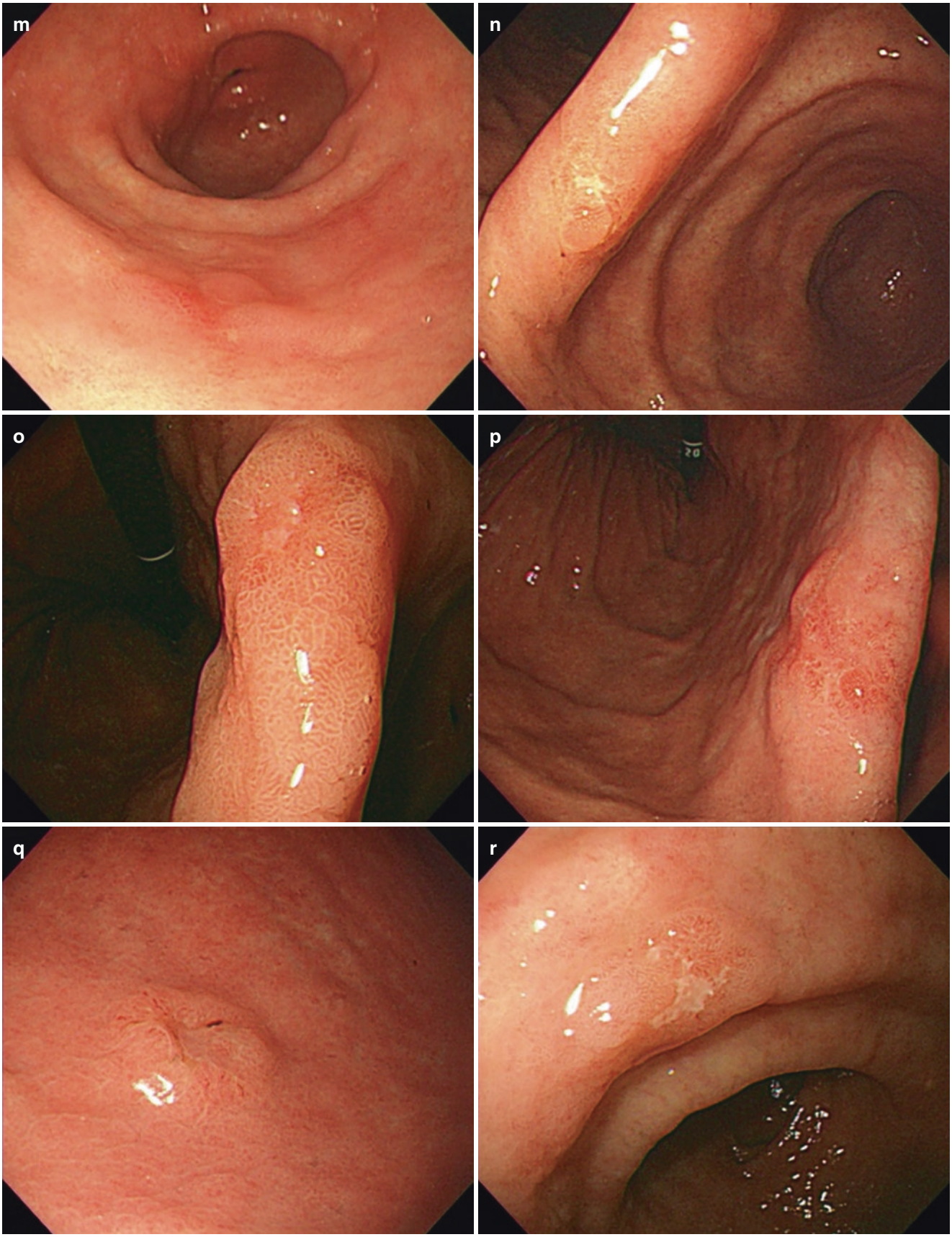

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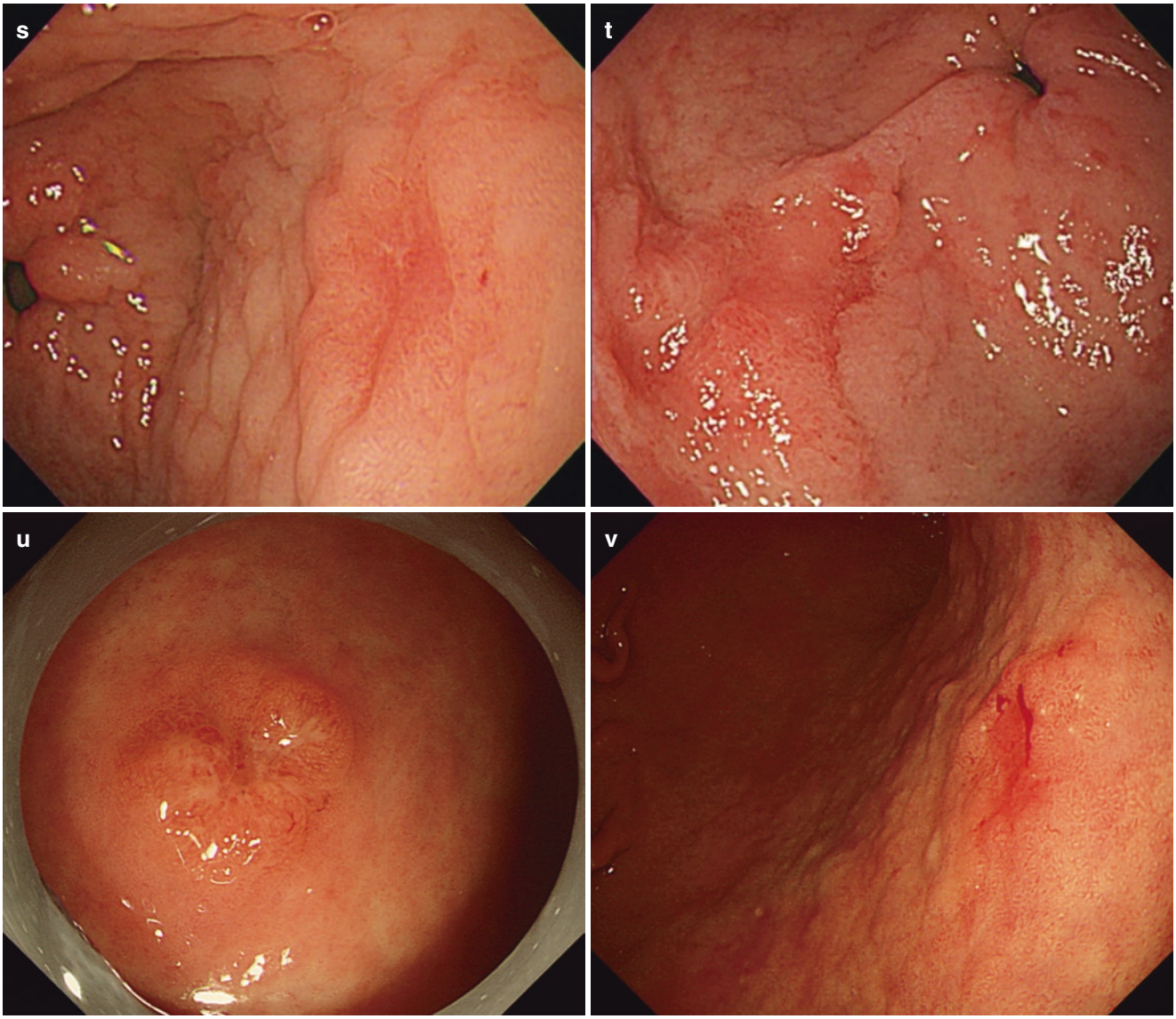

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