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Original Research Article

Gastric Polyps: A Comprehensive Pathological Review

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Abstract: Gastric polyps are mucosal lesions protruding into the lumen of the stomach and are increasingly detected due to the widespread use of upper gastrointestinal endoscopy. Although most gastric polyps are benign and asymptomatic, certain subtypes possess malignant potential and may progress to gastric adenocarcinoma. Accurate pathological diagnosis is therefore essential for appropriate clinical management and surveillance. This review summarizes the current understanding of gastric polyps, including epidemiology, classification, histopathological characteristics, malignant potential, and diagnostic considerations according to recent pathological classifications.

Keywords: Gastric Polyp, Pathology, Gastric Adenoma, Hyperplastic Polyp, Fundic Gland Polyp, Stomach.

1. INTRODUCTION

Gastric polyps comprise a heterogeneous group of lesions arising from the gastric mucosa and projecting into the gastric lumen (Feldman M FL *et al.,* 2020.). Advances in endoscopic technology and the increasing use of upper gastrointestinal endoscopy have resulted in a growing number of incidentally detected gastric polyps over recent decades (Elhanafi S *et al*., 2015). Although the majority of these lesions are benign and clinically silent, a subset demonstrates premalignant characteristics and may serve as precursor lesions for gastric adenocarcinoma.

The prevalence of gastric polyps varies among different populations and geographic regions. Previous large-scale endoscopic studies have reported prevalence rates ranging from approximately 1% to 6%, with epithelial polyps accounting for the majority of cases (Reyes-Placencia, D *et al*., 2024). Fundic gland polyps and hyperplastic polyps are the most frequently encountered subtypes, whereas adenomatous lesions occur less commonly but carry a substantially higher risk of malignant transformation (WHO Classification of Tumours Editorial Board, 2019).

The biological behavior of gastric polyps is largely determined by their histopathological subtype. Therefore, accurate pathological classification plays a crucial role in risk stratification, therapeutic decision-making, and surveillance planning. The latest WHO Classification of Digestive System Tumours has further refined the diagnostic criteria for gastric polyps and emphasized the importance of recognizing lesions associated with dysplasia and neoplastic progression.

Given the increasing detection rate of gastric polyps and their variable malignant potential, a comprehensive understanding of their pathological characteristics is essential for both pathologists and clinicians. This review summarizes current knowledge regarding the classification, histopathological features, clinicopathological significance, and malignant potential of gastric polyps.

2. RESEARCH METHODS

A narrative review was conducted using information obtained from textbooks, WHO Classification of Digestive System Tumours (5th edition), and published articles indexed in PubMed, Scopus, and Google Scholar. Relevant studies regarding gastric polyps, histopathological characteristics, and malignant transformation were reviewed and synthesized.

Note on Image Originality

All photomicrographs (Figures 1–4) presented in this review are original images captured directly by the author from clinical diagnostic practice. No images were reproduced or extracted from external published sources.

3. RESULTS AND DISCUSSION

3.1. Classification of Gastric Polyps

Gastric polyps are broadly classified into two major groups:

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Table 1: Classification of Gastric Polyps

Category	Types of Gastric Polyps
Non-neoplastic polyps	Fundic gland polyp
	Hyperplastic polyp
	Peutz–Jeghers polyp
	Juvenile polyp
	Cowden syndrome-associated polyp
	Cronkhite–Canada syndrome-associated polyp
	Inflammatory fibroid polyp
Neoplastic polyps	Intestinal-type gastric adenoma
	Pyloric gland adenoma
	Oxyntic gland adenoma
	Foveolar-type adenoma

3.2. Non-Neoplastic Gastric Polyps

3.2.1. Fundic Gland Polyp

Fundic gland polyps (FGPs) are currently the most common gastric polyps detected during endoscopy (Shaib YH *et al*., 2013). Their increasing prevalence has been attributed to the widespread use of proton pump inhibitors (PPIs) and declining Helicobacter pylori infection rates.

Cao *et al*., reported a substantial increase in gastric polyp detection over a 10-year period, reflecting the growing utilization of endoscopic screening. Several studies have demonstrated a strong association between long-term PPI therapy and the development of FGPs (Martin FC *et al*., 2016).

Histologically, FGPs are characterized by cystically dilated oxyntic glands lined by chief cells and parietal cells. Dysplasia is rare in sporadic lesions (<1%) but may occur in up to 25–46% of cases associated with familial adenomatous polyposis (Jeong YS *et al.,* 2014).

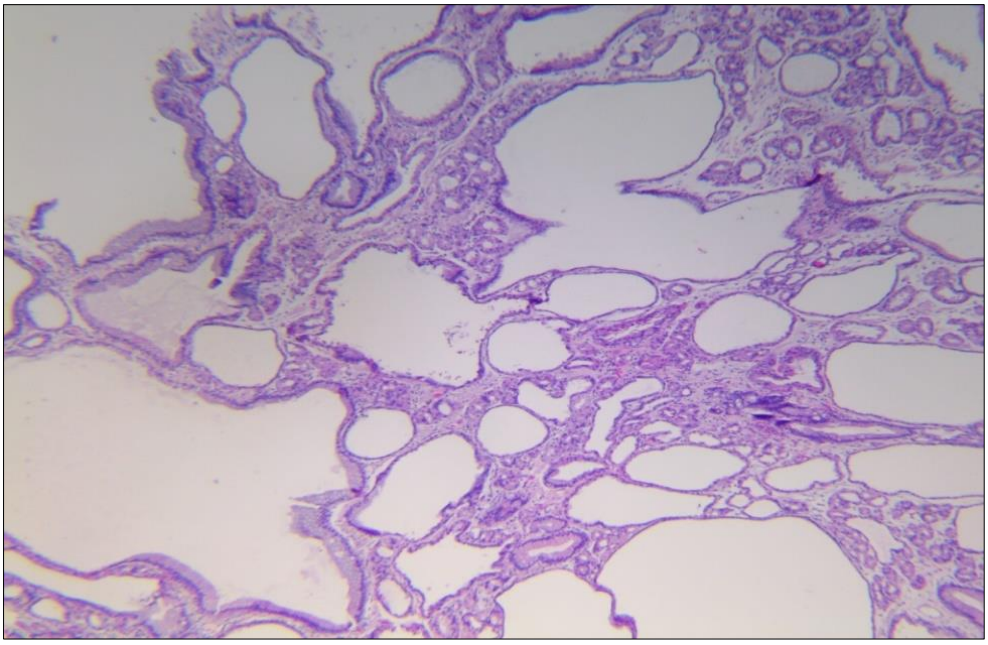

Figure 1: Fundic Gland Polyp (H&E, ×100)

3.2.2. Hyperplastic Polyp

Hyperplastic polyps are the second most common gastric polyps and are frequently associated with chronic gastritis, Helicobacter pylori infection, and autoimmune gastritis.

Several studies have demonstrated that polyp size is an important risk factor for neoplastic transformation. Ahn JY *et al*., reported that hyperplastic polyps larger than 1 cm exhibited a significantly higher rate of dysplasia or carcinoma compared with smaller lesions (Ahn JY *et al*., 2014). Therefore, hyperplastic polyps measuring 10 mm or greater are generally recommended for complete endoscopic removal to allow histopathological evaluation and to exclude the presence of neoplastic changes (Spyridon Z *et al*., 2023). Histologically, hyperplastic polyps exhibit elongated and tortuous foveolar epithelium with cystic glandular dilatation and inflammatory stromal changes.

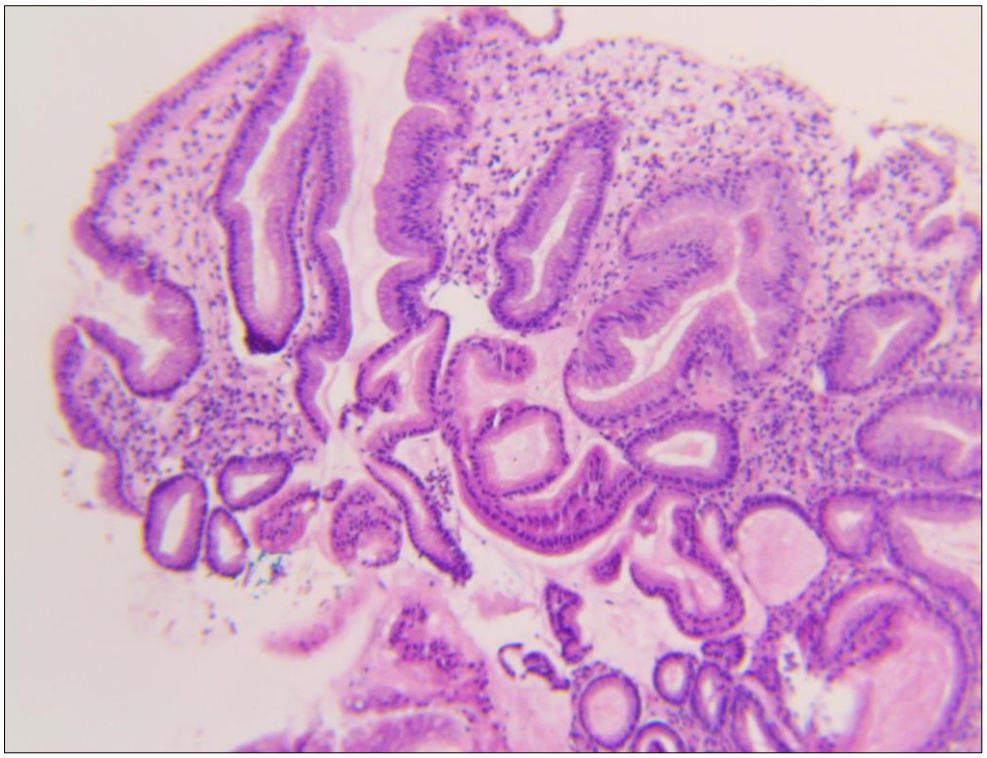

Figure 2: Hyperplastic polyp (H&E, ×100)

3.2.3. Peutz-Jeghers Polyp

Peutz–Jeghers syndrome is an autosomal dominant inherited disorder characterized by mucocutaneous pigmentation and multiple hamartomatous polyps throughout the gastrointestinal tract. These polyps may occur anywhere in the gastrointestinal tract but are most commonly found in the small intestine (approximately 64%), followed by the stomach (25–50%). In the stomach, polyps typically develop in the antrum and pyloric regions. The syndrome affects males and females equally and is most frequently diagnosed in children and adolescents, with a mean age of onset of approximately 16 years.

Polyps are often asymptomatic; however, larger lesions may lead to complications such as intussusception. Approximately 70% of Peutz–Jeghers syndrome cases are associated with germline mutations in the STK11/LKB1 tumor suppressor gene (serine/threonine kinase 11, also known as liver kinase B1), which is involved in the transforming growth factor-beta (TGF-β) signaling pathway (Tacheci I *et al*., 2021).

3.2.4. Juvenile Polyp

Juvenile polyposis syndrome is an autosomal dominant inherited disorder. Gastric involvement is histologically similar to that observed in the small intestine and colon, and gastric polyps are present in approximately 15–25% of patients with juvenile polyposis syndrome.

Sporadic juvenile polyps of the stomach are extremely rare. They most commonly occur as part of systemic juvenile polyposis syndrome. Clinicopathological variants include infantile juvenile polyposis, solitary juvenile polyps of the colon, and solitary juvenile polyps of the stomach.

The syndrome is characterized by genetic dysregulation of the transforming growth factor-beta (TGF-β) signaling pathway. The most frequently identified mutations involve the SMAD4/DPC4 gene on chromosome 18q21.1 and the BMPR1A gene on chromosome 10q22.23. In addition, germline mutations in the PTEN and ENG genes have also been reported (Lieberman S *et al*., 2019).

3.2.5. Cowden Syndrome-Associated Gastric Polyps

Cowden syndrome, a component of PTEN hamartoma tumor syndrome, is a rare autosomal dominant disorder caused by germline mutations in the PTEN tumor suppressor gene. Gastric polyps occur in nearly half of affected individuals and may serve as an important clue to the diagnosis. Patients are at increased risk of several malignancies, particularly breast, endometrial, thyroid, and brain cancers.

Grossly, gastric polyps are usually sessile and range from 1 to 20 mm in size. Histologically, they may resemble hyperplastic or juvenile polyps, showing irregular foveolar epithelium, cystically dilated mucus-filled glands, and a mildly inflamed fibrotic stroma. The presence of multiple polyp types, especially those with distinctive mesenchymal components, should raise suspicion for Cowden syndrome.

3.2.6. Cronkhite–Canada Syndrome-Associated Polyp

Cronkhite–Canada syndrome (CCS) is a rare, non-hereditary protein-losing enteropathy characterized by diffuse gastrointestinal polyposis involving the stomach, small intestine, and colorectum. It typically affects middle-aged to older adults and is associated with gastrointestinal symptoms such as diarrhea, weight loss, abdominal pain, and gastrointestinal bleeding, along with ectodermal abnormalities including alopecia, nail dystrophy, and skin hyperpigmentation. Approximately 20% of patients may develop gastrointestinal adenocarcinoma.

Grossly, gastric lesions present as multiple sessile polyps, which may become diffusely distributed throughout the gastric mucosa in advanced disease. Histologically, the polyps show foveolar hyperplasia, cystic gland dilatation, and glandular atrophy within an edematous, mildly inflamed lamina propria, often containing numerous eosinophils. Similar changes may also be observed in the surrounding non-polypoid mucosa.

3.2.7. Inflammatory Fibroid Polyp

Inflammatory fibroid polyps are uncommon mesenchymal lesions that most frequently occur in the gastric antrum.

Histologically, they consist of spindle cells arranged concentrically around small blood vessels, accompanied by inflammatory infiltrates rich in eosinophils. Immunohistochemically, they are typically positive for CD34 and negative for KIT (CD117) and DOG1.

3.3. Neoplastic Gastric Polyps

3.3.1. Intestinal-Type Gastric Adenoma

Intestinal-type gastric adenoma (IGA) is the most common subtype of gastric adenoma and is recognized as a precursor lesion of gastric adenocarcinoma. Although gastric adenomas account for a relatively small proportion of gastric polyps, their prevalence varies across geographic regions, reflecting differences in the incidence of gastric cancer worldwide. IGA is predominantly diagnosed in older adults, with a male predominance, and most frequently arises in the antrum in association with intestinal metaplasia and mucosal atrophy. Clinically, these lesions are often asymptomatic, although larger adenomas may cause gastrointestinal bleeding and anemia. Histologically, approximately 40% of cases exhibit high-grade dysplasia, and a substantial proportion may progress to invasive adenocarcinoma (Abraham SC *et al*., 2003). In addition, patients with IGA commonly show a higher prevalence of *Helicobacter pylori* infection and more advanced gastric atrophy than individuals without adenomatous lesions.

3.3.2. Pyloric Gland Adenoma

Pyloric gland adenoma (PGA) is a rare gastric epithelial polyp composed of neoplastic glands showing pyloric gland differentiation (Pezhouh MK *et al*., 2015). It represents less than 3% of gastric epithelial polyps and is most frequently located in the gastric body, although it may arise throughout the stomach.

PGA can occur either sporadically or in association with hereditary polyposis syndromes. Sporadic PGAs are typically diagnosed in older adults and often develop in a background of chronic atrophic gastritis, autoimmune gastritis, or *Helicobacter pylori*-related mucosal changes. They show a female predominance and are generally associated with a low risk of malignant progression (Wood LD *et al*., 2014).

Syndromic PGAs tend to occur at a younger age and have been reported in patients with familial adenomatous polyposis (FAP) and gastric adenocarcinoma and proximal polyposis of the stomach (GAPPS). Despite their association with hereditary syndromes, their overall risk of progression to gastric carcinoma remains relatively low.

3.3.3. Oxyntic Gland Adenoma

Oxyntic gland adenoma (OGA) is a rare benign epithelial neoplasm composed of columnar cells showing differentiation toward chief cells, parietal cells, or both. These lesions are considered clinically significant because of their potential for progression to gastric adenocarcinoma (WHO Classification of Tumours Editorial Board, 2019).

Approximately 80% of OGAs arise in the upper third of the stomach, particularly in the fundus and gastric body. They are most commonly diagnosed in individuals over 60 years of age and show a male predominance. Despite their generally indolent appearance, OGAs frequently exhibit submucosal invasion, which has been reported in up to 60% of cases and may indicate early malignant transformation.

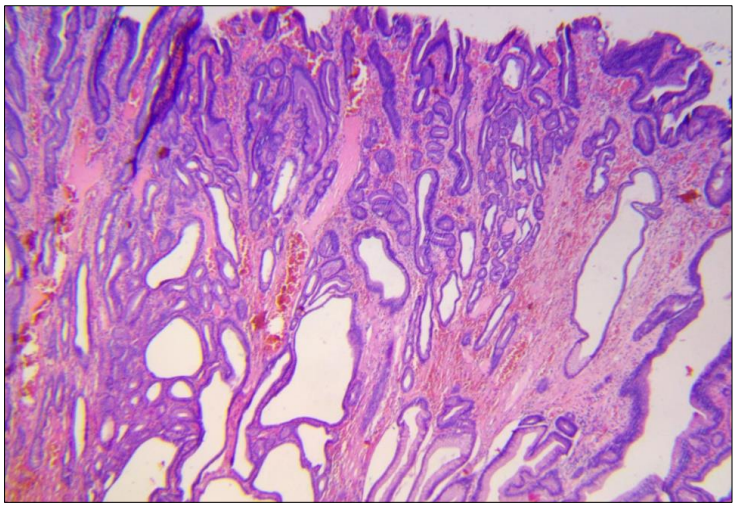

Figure 3: Oxyntic gland adenoma (H&E, ×100)

3.3.4. Foveolar-Type Adenoma

Fundic gland adenoma (FGA) is a rare gastric epithelial neoplasm composed of neoplastic fundic gland-type epithelium. These lesions are predominantly located in the gastric body and fundus and typically arise in otherwise normal gastric mucosa without significant inflammation, atrophy, or intestinal metaplasia.

Sporadic cases are uncommon and have occasionally been reported in association with pseudopyloric gland metaplasia or gastritis cystica profunda (GCP). To date, sporadic FGAs have not been clearly linked to progression toward gastric carcinoma (Guan J *et al*., 2022).

FGA may also occur in the setting of hereditary polyposis syndromes, particularly familial adenomatous polyposis (FAP) and gastric adenocarcinoma and proximal polyposis of the stomach (GAPPS), where they are frequently accompanied by multiple fundic gland polyps. Although neoplastic progression has been reported, the overall risk of malignant transformation remains low. These lesions are rarely encountered in patients without *Helicobacter pylori* infection (Shibagaki K *et al*., 2019).

3.4. Malignant Potential of Gastric Polyps

The risk of malignant transformation varies according to histological subtype.

Fundic gland polyps generally have a very low malignant potential. Hyperplastic polyps may develop dysplasia and carcinoma, particularly when larger than 1 cm. Gastric adenomas exhibit the highest risk and are recognized precursor lesions for gastric adenocarcinoma.

Therefore, histopathological examination remains essential for determining prognosis and guiding clinical management.

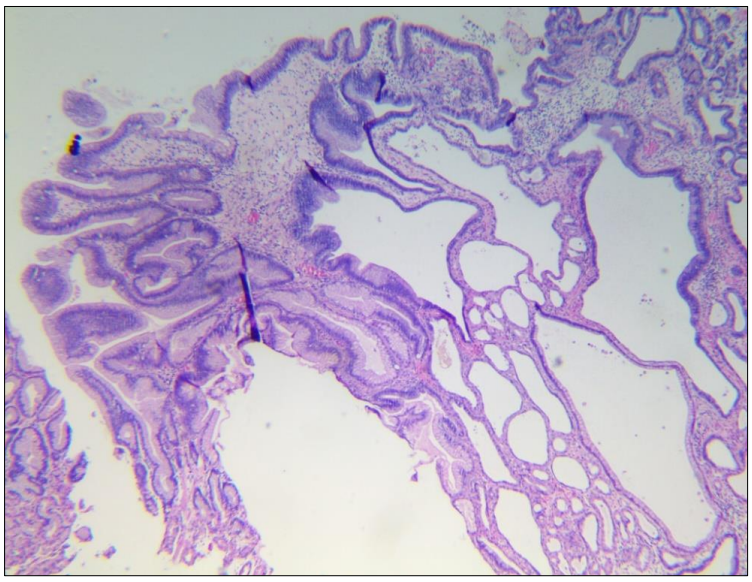

Figure 4: Fundic gland polyp with low-grade dysplasia (H&E, ×100)

4. DIFFERENTIAL DIAGNOSIS

The differential diagnosis of gastric polyps includes a variety of non-neoplastic and neoplastic lesions that may share overlapping endoscopic and histopathological features.

Reactive gastric mucosal hyperplasia: Reactive gastric mucosal hyperplasia may resemble hyperplastic polyps both endoscopically and microscopically. These lesions are commonly associated with chronic inflammation, mucosal injury, or chemical gastropathy and generally lack the dysplastic changes observed in neoplastic polyps. Histopathological examination is essential for accurate distinction (Abraham SC *et al*., 2001).

Gastritis Cystica Profunda (GCP):

Gastritis cystica profunda is characterized by cystically dilated gastric glands extending into the submucosa. It may present as a polypoid lesion and can mimic gastric adenomas or early gastric carcinoma on endoscopic evaluation. Definitive diagnosis relies on histological assessment (Choi MG *et al*., 2012).

Early Gastric Adenocarcinoma:

Early gastric adenocarcinoma should be considered in the differential diagnosis of gastric polyps, particularly in lesions demonstrating dysplasia, ulceration, or irregular surface architecture. Gastric adenomas and dysplastic polyps are recognized precursor lesions with malignant potential (WHO Classification of Tumours Editorial Board, 2019).

Gastrointestinal Stromal Tumor (GIST):

GISTs may appear as polypoid or subepithelial gastric masses. Histologically, they are composed of spindle or epithelioid cells and typically express KIT (CD117) and DOG1 on immunohistochemistry, facilitating distinction from epithelial gastric polyps (Miettinen M *et al*., 2006).

Neuroendocrine Tumor (NET):

Gastric neuroendocrine tumors may present as small polypoid lesions, especially in patients with chronic atrophic gastritis or hypergastrinemia. Immunohistochemical positivity for chromogranin A and synaptophysin supports the diagnosis (Klöppel G *et al*., 2022).

5. CONCLUSION

Gastric polyps represent a heterogeneous group of lesions with diverse pathological features and biological behavior. Most lesions are benign; however, certain subtypes, particularly gastric adenomas, possess significant malignant potential. Histopathological evaluation remains the gold standard for classification and risk assessment. Early recognition and accurate diagnosis are crucial for appropriate patient management and prevention of gastric cancer.

REFERENCES

- Feldman, M., Friedman, L. S., & Brandt, L. J. (2020). *Sleisenger and Fordtran's gastrointestinal and liver disease* (11th ed.). Elsevier.
- Elhanafi, S., Saadi, M., Lou, W., et al. (2015). Gastric polyps: Association with Helicobacter pylori status and the pathology of the surrounding mucosa, a cross-sectional study. *World Journal of Gastrointestinal Endoscopy, 7*(10), 995–1002. https://doi.org/10.4253/wjge.v7.i10.995
- Reyes-Placencia, D., Cantú-Germano, E., Latorre, G., Espino, A., Fernández-Esparrach, G., & Moreira, L. (2024). Gastric epithelial polyps: Current diagnosis, management, and endoscopic frontiers. *Cancers, 16*(22), 3771. https://doi.org/10.3390/cancers16223771
- WHO Classification of Tumours Editorial Board. (2019). *Digestive system tumours* (5th ed.). IARC Press.
- Shaib, Y. H., Rugge, M., Graham, D. Y., & Genta, R. M. (2013). Management of gastric polyps: An endoscopy-based approach. *Clinical Gastroenterology and Hepatology, 11*(11), 1374–1384.
- Martin, F. C., Chenevix-Trench, G., & Yeomans, N. D. (2016). Systematic review with meta-analysis: Fundic gland polyps and proton pump inhibitors. *Alimentary Pharmacology & Therapeutics, 44*(9), 915–925. https://doi.org/10.1111/apt.13800
- Jeong, Y. S., Kim, S. E., Kwon, M. J., et al. (2014). Signet-ring cell carcinoma arising from a fundic gland polyp in the stomach. *World Journal of Gastroenterology, 20*(47), 18044–18047. https://doi.org/10.3748/wjg.v20.i47.18044
- Ahn, J. Y., Son, D. H., Choi, K. D., et al. (2014). Neoplasms arising in large gastric hyperplastic polyps: Endoscopic and pathologic features. *Gastrointestinal Endoscopy, 80*(6), 1005–1013.e2. https://doi.org/10.1016/j.gie.2014.04.020
- Zouridis, S., Michael, M., Arker, S. H., Sangha, M., & Batool, A. (2023). Gastric hyperplastic polyps: A narrative review. *Digestive Medicine Research, 6*, 25. https://doi.org/10.21037/dmr-22-80
- Tacheci, I., Kopáčová, M., & Bureš, J. (2021). Peutz-Jeghers syndrome. *Current Opinion in Gastroenterology, 37*(3), 245–254. https://doi.org/10.1097/MOG.0000000000000718
- Lieberman, S., Beeri, R., Walsh, T., et al. (2019). Variable features of juvenile polyposis syndrome with gastric involvement among patients with a large genomic deletion of BMPR1A. *Clinical and Translational Gastroenterology, 10*(7), e00054. https://doi.org/10.14309/CTG.0000000000000054
- Abraham, S. C., Park, S. J., Lee, J. H., Mugartegui, L., & Wu, T. T. (2003). Genetic alterations in gastric adenomas of intestinal and foveolar phenotypes. *Modern Pathology, 16*(8), 786–795. https://doi.org/10.1097/01.MP.0000080349.37658.5E

- Pezhouh, M. K., & Park, J. Y. (2015). Gastric pyloric gland adenoma. *Archives of Pathology & Laboratory Medicine, 139*(6), 823–826. https://doi.org/10.5858/ARPA.2013-0613-RS
- Wood, L. D., Salaria, S. N., Cruise, M. W., Giardiello, F. M., & Montgomery, E. A. (2014). Upper GI tract lesions in familial adenomatous polyposis (FAP): Enrichment of pyloric gland adenomas and other gastric and duodenal neoplasms. *The American Journal of Surgical Pathology, 38*(3), 389–393. https://doi.org/10.1097/PAS.0000000000000146
- Guan, J., Li, Z., Shen, G., & Huang, W. (2022). Sporadic foveolar-type adenoma in gastric body/antrum junction with gastritis cystica profunda. *BMC Gastroenterology, 22*(1), 221. https://doi.org/10.1186/s12876-022-02285-y
- Shibagaki, K., Fukuyama, C., Mikami, H., et al. (2019). Gastric foveolar-type adenomas endoscopically showing a raspberry-like appearance in the *Helicobacter pylori*-uninfected stomach. *Endoscopy International Open, 7*(6), E784–E791. https://doi.org/10.1055/a-0854-3818
- Abraham, S. C., Singh, V. K., Yardley, J. H., & Wu, T. T. (2001). Hyperplastic polyps of the stomach: Associations with histologic patterns of gastritis and gastric atrophy. *The American Journal of Surgical Pathology, 25*(4), 500–507. https://doi.org/10.1097/00000478-200104000-00010
- Choi, M. G., Jeong, J. Y., Kim, K. M., et al. (2012). Gastritis cystica profunda: Clinicopathologic features and relationship to gastric carcinoma. *World Journal of Gastroenterology, 18*(19), 2436–2442.
- Miettinen, M., & Lasota, J. (2006). Gastrointestinal stromal tumors: Pathology and prognosis at different sites. *Seminars in Diagnostic Pathology, 23*(2), 70–83.
- Klöppel, G., Rindi, G., Perren, A., et al. (2022). The ENETS and WHO classification of neuroendocrine neoplasms. *Virchows Archiv, 480*(2), 351–366.

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