

# **Polyps in the Stomach**

## **All the Lumps and Bumps**

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# Non-neoplastic Polyps

- Hyperplastic polyps
- Inflammatory polyps
- Hamartomatous polyps
- Heterotopic polyps



# Neoplastic Polyps

- Adenoma
- Carcinoma
- Carcinoid (endocrine neoplasm)
- Metastatic carcinoma
- Lymphoma



# Non-epithelial Polyps

- Inflammatory fibroid polyp
- Inflammatory myofibroblastic tumor
- Gastrointestinal stromal tumor
- Smooth muscle tumor
- Lymphoid hyperplasia
- Vascular tumor



# Miscellaneous Polyps

- Xanthelasma
- Calcinosis



# Hyperplastic Polyps

- Second most common gastric polyp
- Regenerative response to injury
- Associated with gastritis, bile reflux, gastrectomy, organ transplantation
- Present throughout the stomach
- Hyperplastic polyps of the GE junction is commonly associated with GERD



# Hyperplastic Polyps

## Histopathology

- Foveolar hyperplasia (corkscrew)
- Inflamed, eroded, or ulcerated mucosal surface
- Edematous lamina propria with mixed inflammation and cystically dilated glands



# Hyperplastic Polyps

## Histopathology

- Intestinal metaplasia not uncommon
- Incidence of dysplasia varies but the risk appears to be associated with polyp size and age
- Rarely carcinoma may arise



# Differential Diagnosis

- Ménétrier disease
- Juvenile polyp
- Peutz-Jeghers polyp
- Cronkhite-Canada syndrome-associated polyp



# Ménétrier Disease

- First described by Ménétrier as “polyadenomes en nappe”.
- Rare incidence
- 30-60 years of age; 3:1 (M:F)
- Protein loss and hypoalbuminemia
- Epigastric pain, weight loss, vomiting, diarrhea
- Cause: ?



# Ménétrier Disease

- Enormous thickening of gastric folds, some with nodular or polypoid appearance
- Body is affected
- Large amount of mucus coating the enlarged folds



# Ménétrier Disease

## Histopathology

- Foveolar hyperplasia with extreme elongation and tortuosity of pits (corkscrew appearance)
- Inflammation not prominent
- Ulcer or intestinal metaplasia not characteristic

## Treatment

- Supportive
- Gastrectomy in severe cases



# Hamartomatous Polyps

- Fundic gland polyp
- Peutz-Jeghers polyp
- Juvenile polyp
- Cronkhite-Canada syndrome-associated polyp



# Fundic Gland Polyps

- Sporadic or familial
- Single or multiple
- Role of PPI?
- Glassy, transparent and sessile polyp with cystically dilated glands lined by flattened fundic epithelium
- Dysplasia may be present



# Peutz-Jeghers Polyps

- Peutz-Jeghers syndrome
  - Autosomal dominant (LKB1/STK11 gene)
  - Mucocutaneous pigmentation
  - GI hamartomatous polyps
- Most common location: small bowel
- Gastric polyps: 25-50%
- Abdominal pain, GI bleeding, obstruction



# Peutz-Jeghers Polyps

- Sessile or pedunculated
- Most are antral in location
- Excessive hyperplasia, elongation, branching, and cystic change of foveolar epithelium
- Delicate fibrovascular stroma
- Arborizing architecture with bundles of smooth muscle extending into lamina propria
- Atrophy of the deep glands
- Risk of dysplasia or carcinoma?



# Peutz-Jeghers Polyps

## Differential Diagnosis

- Juvenile polyp
- Hyperplastic polyp



# Gastric Juvenile Polyps

- Sporadic gastric JP are rare.
- May occur as part of juvenile polyposis syndrome.
- Present in 15-25% generalized JP
- 20-50% gastric JP have family history of juvenile polyposis coli.



# Gastric Juvenile Polyps

- Familial JP: autosomal dominant, SMAD4/DPC4 gene mutation most common
- Multiple gastric JP may result in severe chronic anemia and hypoproteinemia.
- Predominantly in antrum



# Gastric Juvenile Polyps

## Pathology

- Round and smooth contour
- Surface may be eroded
- Edematous lamina propria infiltrated by inflammatory cells
- Cystically dilated glands lined by foveolar epithelium



# Gastric Juvenile Polyps

## Differential Diagnosis

- Hyperplastic polyp
- Peutz-Jeghers Polyp
- Ménétrier disease



# Gastric Juvenile Polyps

## Risk of Dysplasia and Carcinoma

- Risk for patients with JPS developing GI malignancies ranges between 9 and 17%.
- 3 of 12 patients with gastric juvenile polyposis developed gastric cancer with or without adenomatous epithelium arising from JP.
  - Hizawa K et al., J Clin Pathol 1997; 50:771-4.
- JPS has malignant potential and should be closely followed up.



# Gastric Polyps in Cowden Disease

- Autosomal dominant
- PTEN mutation
- Multiple hamartoma syndrome
  - Trichilemmoma
  - Oral mucosal papilloma
  - GI polyps (75%)
- Increased risk of cancer
  - Breast
  - Thyroid



# Gastric Polyps in Cowden Disease

## Pathology

- Can be more than 100
- 2-15 mm in size
- Enlarged and elongated foveolar epithelium and deep cystically dilated glands, mimicking gastric hyperplastic polyp
- Smooth muscle within mucosa

Hizawa K. et al. *J Clin Gastroenterol* 1994;18:13-8



# Cronkhite-Canada Syndrome- Associated Polyps

- Rare disorder of unknown etiology and not familial
- Middle-aged or elderly
- No gender predilection
- Endodermal abnormalities
  - Numerous GI polyps (stomach is almost always involved)
- Ectodermal abnormalities
  - Alopecia, macular hyperpigmentation of face, nail dystrophy



# Cronkhite-Canada Syndrome- Associated Polyps

- Abdominal pain, diarrhea
- Malabsorption, Weight loss
- Hypoproteinemia
- May be fatal
- May develop GI adenocarcinoma



# Cronkhite-Canada Syndrome- Associated Polyps Pathology

- Diffuse numerous small to medium polyps (0.5-1.5 cm) superimposed on enlarged rugae throughout antrum and fundus.
- Sessile, marked surface and foveolar hyperplasia, with focally dilated irregular foveolar glands within the lamina propria expanded by edema and inflammatory infiltrate.



# Cronkhite-Canada Syndrome- Associated Polyps Differential Diagnosis

- Ménétrier disease
- Juvenile polyp
- Hyperplastic polyp



# Heterotopic Polyps

- Pancreatic heterotopia
- Brunner's gland nodules



# Adenoma

- WHO: circumscribed, polypoid lesions composed of either tubular and/or villous structures lined by dysplastic epithelium
- Prevalence varies: East vs West
- Predominantly solitary, exophytic, sessile, or pedunculated
- Average size: 1 cm
- Usually asymptomatic
- Can be found in FAP and Gardner's syndrome



# Adenoma

## Pathology

- Often arising in background of atrophic gastritis with intestinal metaplasia
- Predominantly in antrum, followed by angularis and fundus
- Dysplastic epithelium
  - Intestinal type
  - Gastric type
  - Mixed type
- Intestinal type more likely to show high-grade dysplasia and carcinoma

Abraham SC et al. *Am J Surg Pathol* 2002;26:1276-85.

Abraham SC et al. *Mod Pathol* 2003;16:786-95.



# Adenoma

## Dysplasia

- Low-grade dysplasia
- High-grade dysplasia



# Polypoid Endocrine Neoplasm

- 1.7% of gastric polyps
- 90% found in gastric body
- May arise
  - In atrophic autoimmune gastritis
  - In Zollinger-Ellison syndrome
  - As sporadic tumors



# Gastric Endocrine Neoplasm

- Well-differentiated endocrine neoplasm (carcinoid)
  - non-functioning
  - confined to mucosa-submucosa
  - non-angioinvasive
  - $\leq 1$ cm,
  - association with hypergastrenemia
- Benign behavior
  - non-functioning
  - confined to mucosa-submucosa
  - non-angioinvasive
  - $\leq 1$ cm,
  - association with hypergastrenemia
- Uncertain behavior
  - $>1$  cm
  - angioinvasive ECL-cell hyperplasia
  - sporadic
- Well-differentiated endocrine carcinoma
  - extending beyond submucosa
  - angioinvasion
  - metastasis
- Poorly differentiated endocrine carcinoma (small cell carcinoma, high-grade malignant)



# Gastric Endocrine Neoplasm

## Differential Diagnosis

- Poorly differentiated carcinoma
- Lymphoma
- GIST



# Inflammatory Fibroid Polyp and Inflammatory Myofibroblastic Tumor

## IFP

- Most common in antrum
- Small (median 1.5 cm), well circumscribed, submucosal
- Spindly cells surrounding small to medium vessels
- CD34 (+)
- Mixed inflammatory cells

## IMT

- Aka inflammatory pseudotumor
- Median size 8 cm
- Spindly cells with features of myofibroblasts
- SMA (+), ALK (+)
- Plasma cells and lymphocytes



# Suggested References

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- Lewin KJ, Appelman HD. Tumors of the Esophagus and Stomach, in *Atlas of Tumor Pathology, 3<sup>rd</sup> Series, AFIP fascicle*

