Gastric Lesions

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Endo Skills 2024
Disclosure of Commercial Support

- Endo Skills is presented by the Alberta Society for Endoscopic Practice (ASEP)
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- Endo Skills planning is independent from the exhibitors
- ASEP covers expenses of speakers and provides gift+/- small honorarium to speakers and planning committee

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Endo Skills 2024
Managing Sources of Potential Conflict

- Endo Skills Planning Committee: oversees the program's content development to ensure accuracy and balance.
- Information and recommendations are evidence and/or guidelines-based, and opinions of the independent speakers will be identified as such.
- Program developed in accordance to ethical standards meeting Cert+ guidelines.

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Endo Skills 2024:
Presenter Disclosure

- **Presenter:** Robert Bechara
- **Relationships that may introduce potential conflict of interest:**

Commercial or Non-Profit Interest	Relationship
Olympus	Consultant
Vantage Endoscopy	Consultant
Pentax	Advisory board
Pendopharm	Consultant

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Objectives

- Appreciate the appearance of the normal gastric mucosa
  - Microsurface (MS) and microvasculature(MV)
- Be able to distinguish between normal and neoplastic gastric mucosa
- Be aware of the endoscopic appearance, management & follow-up of:
  - Early gastric cancer (EGC)
  - Fundic gland polyps (FGP)
  - Hyperplastic polyps (HP)
  - Gastric adenomas (GA)
  - Neuroendocrine Tumors (NET)

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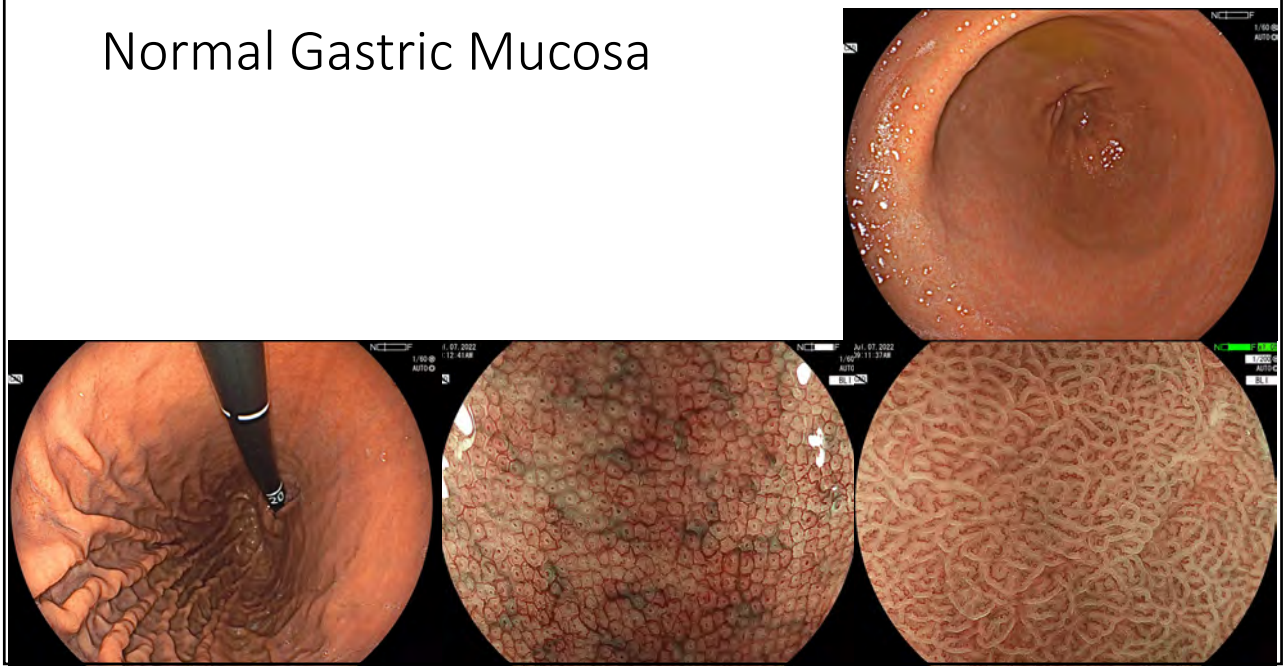
Normal Gastric Mucosa



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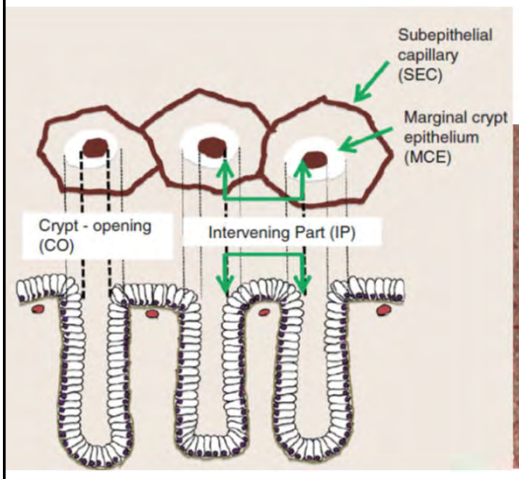
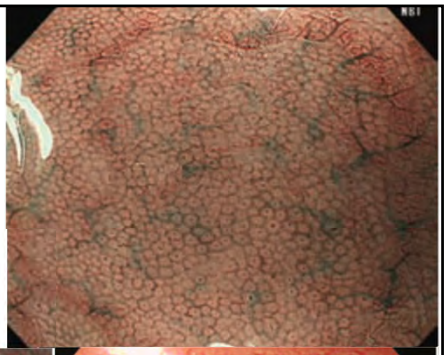
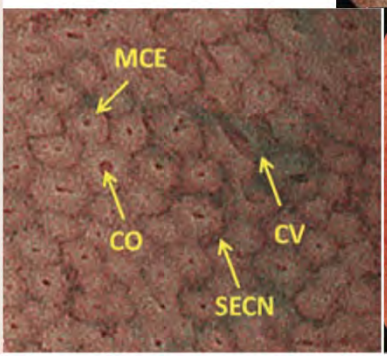
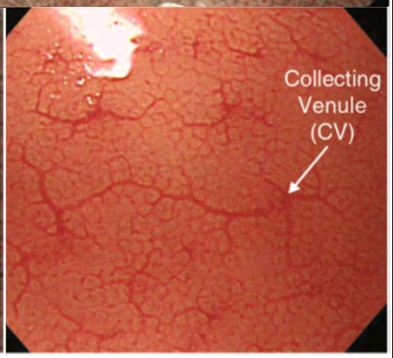
Microstructure-Body/fundus









Yao K. Gastric microvascular architecture as visualized by magnifying endoscopy: body and antral mucosa without pathologic change demonstrate two different patterns of microvascular architecture. Gastrointest Endosc 2004;59:596-7

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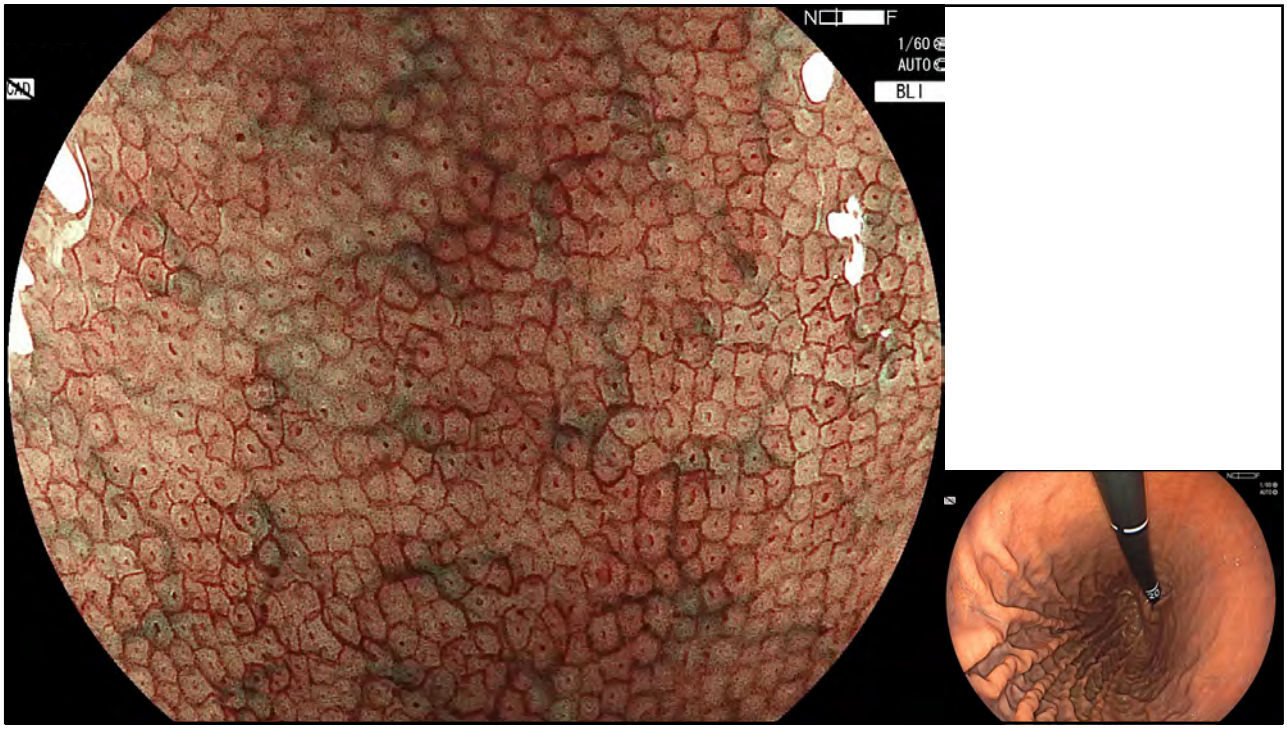

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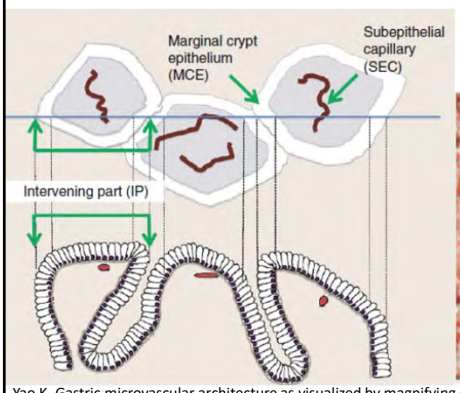
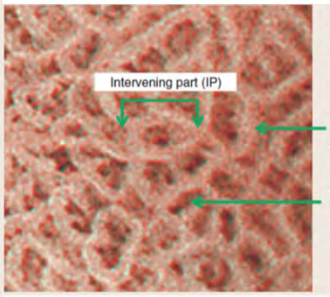
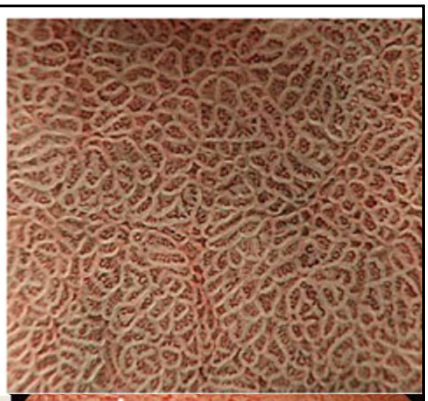
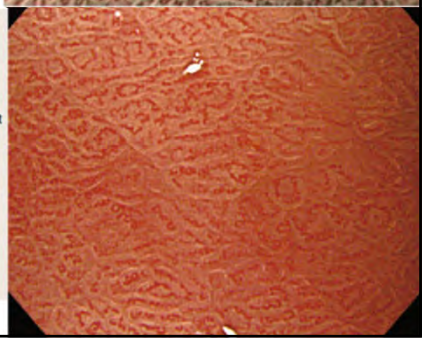
Microstructure- Antrum









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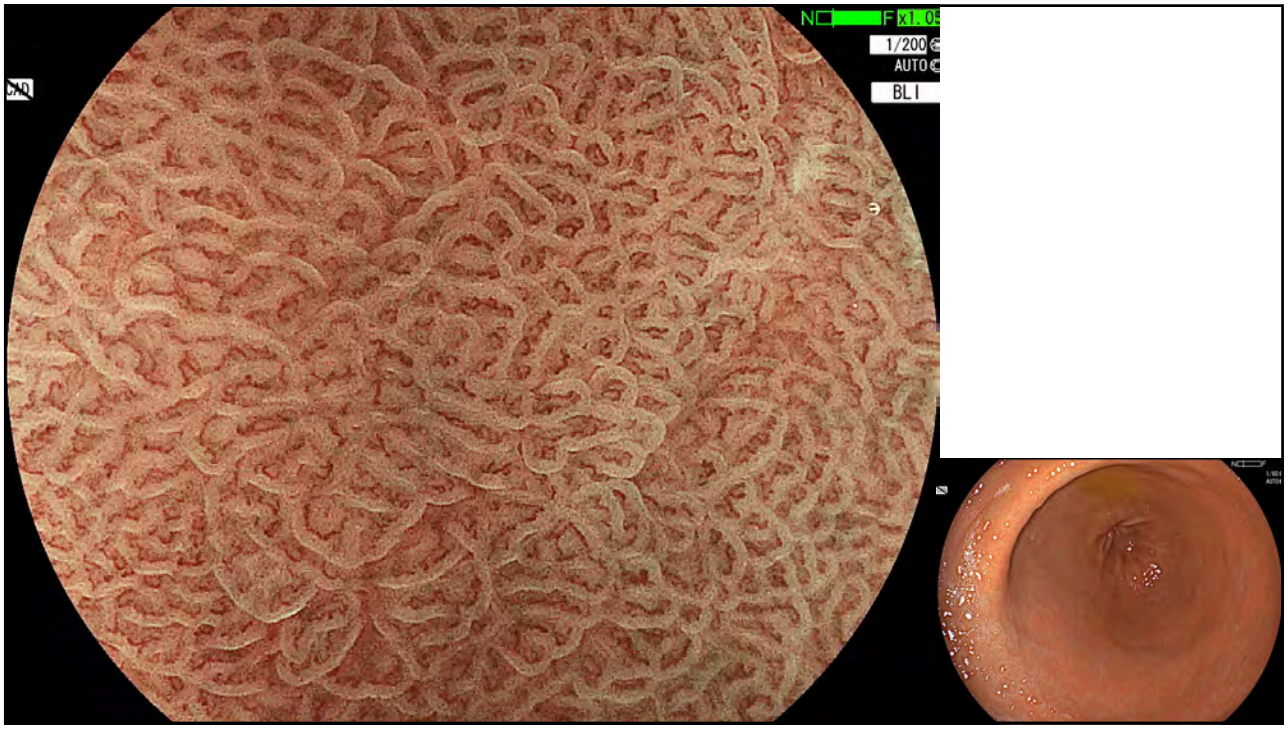

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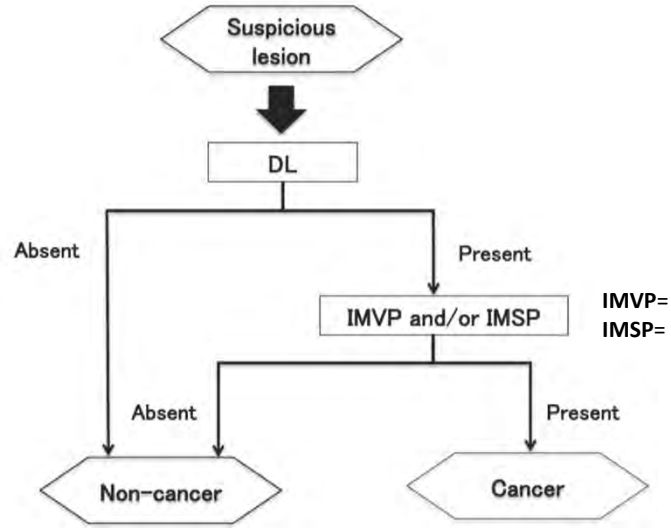
Characterizing Lesions-Simplified Algorithm



IMVP= irregular microvascular pattern
IMSP= irregular microsurface pattern

Muto, M. et al. Magnifying endoscopy simple diagnostic algorithm for early gastric cancer (MESDA-G). Digestive Endoscopy 28, 379-393, 38 (2016).

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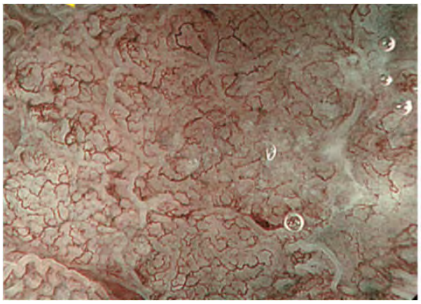
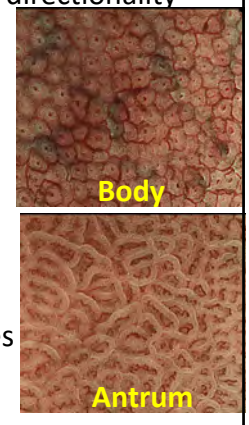
What is an irregular microvascular pattern?

1. **Group**
   a) Irregular vessel arrangement, shading, morphology, distribution, directionality



2. **Individual**
   a) Unequal sizes/shape/caliber/shades/loops and irregular branches



Yao K, Matsui T, Iwashita A. [Clinical application of magnification endoscopy with NBI for diagnosis of early gastric cancer]. Nihon Shokakibyo Gakkai Zasshi 2007;104:782-9.

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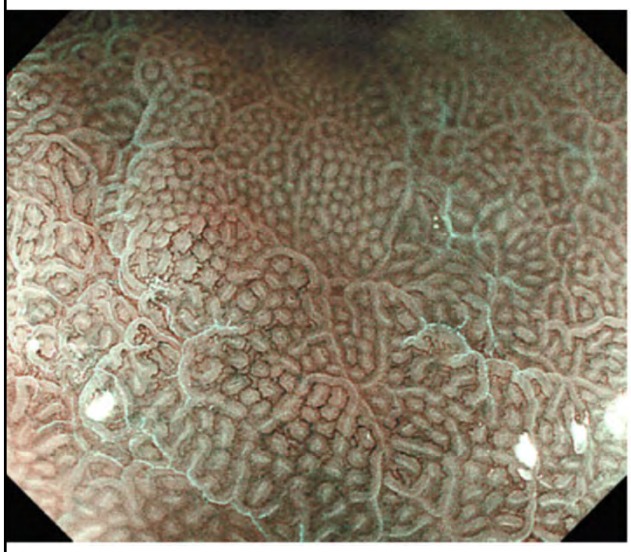
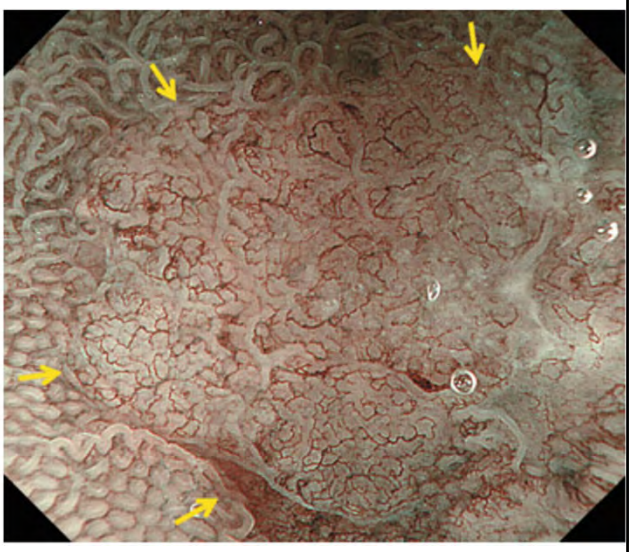
Microvascular pattern





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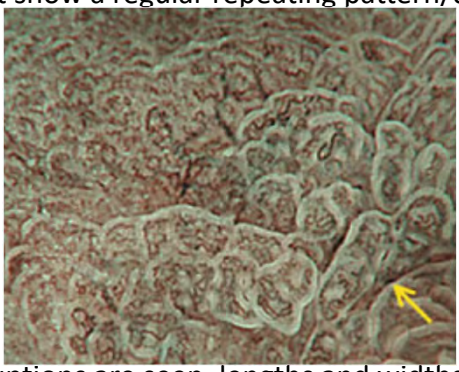
What is an irregular microsurface pattern?

1. Group
   - MCE and IP do not show a regular repeating pattern/distribution/ arrangement



2. Individual
   - Breaks and interruptions are seen, lengths and widths not uniform

Yao K, Matsui T, Iwashita A. [Clinical application of magnification endoscopy with NBI for diagnosis of early gastric cancer]. Nihon Shokakibyo Gakkai Zasshi 2007;104:782-9.

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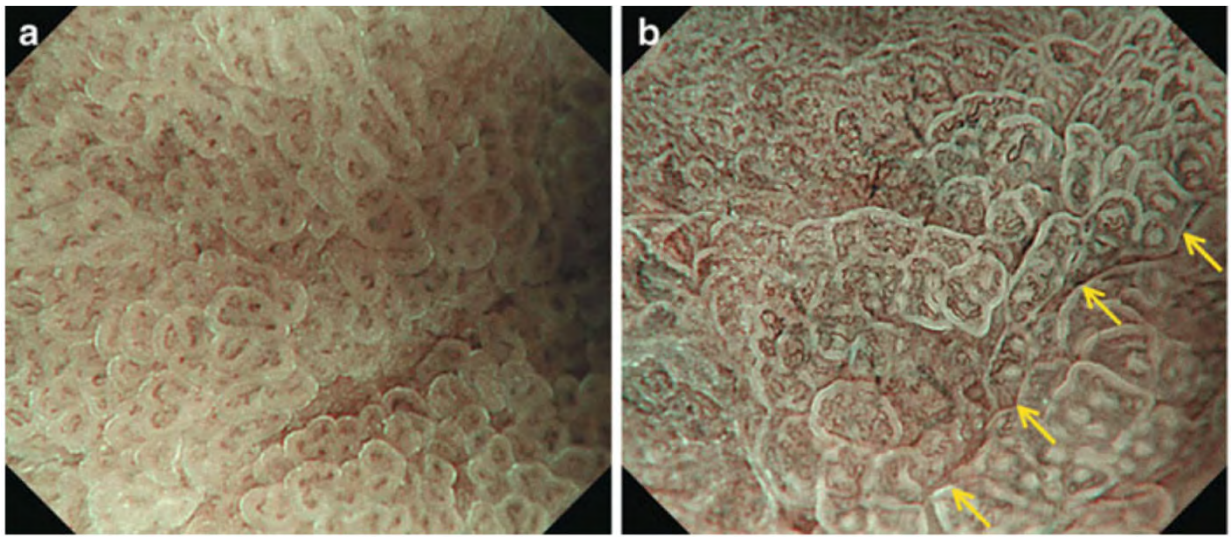
Microsurface pattern



Yao K, Matsui T, Iwashita A. [Clinical application of magnification endoscopy with NBI for diagnosis of early gastric cancer]. Nihon Shokakibyo Gakkai Zasshi 2007;104:782-9.

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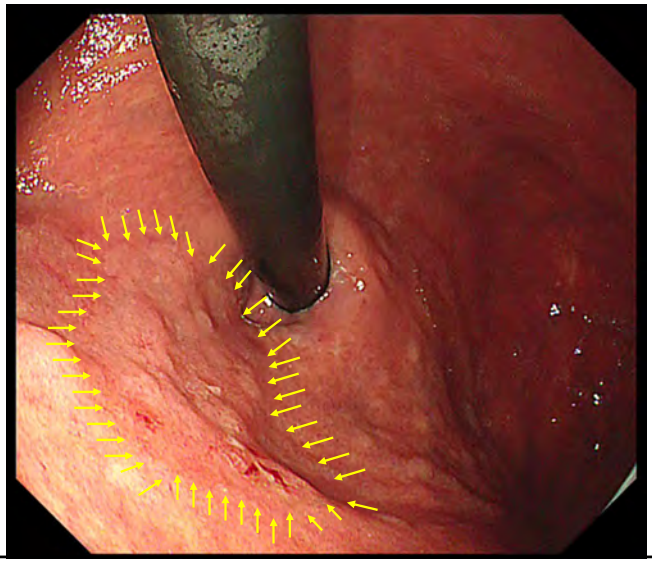
Early Gastric Cancer



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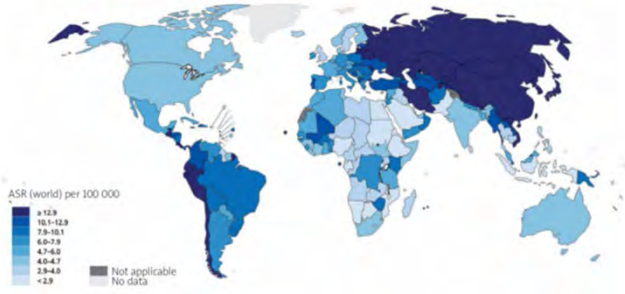
Gastric Cancer

Clinical
Endoscopic Appearance
Management
Follow-up

- In North America incidence is ~5 per 100 000/year
- Mongolia/South Korea/China/Japan gastric Cancer incidence up to ~40 per 100 000 per year
- Risk Factors
  - Atrophic gastritis, intestinal metaplasia, Family Hx, high risk ethnicity, H.pylori



http://seer.cancer.gov

Rawla, P. & Barsouk, A. Epidemiology of gastric cancer: global trends, risk factors and prevention. *Prz Gastroenterol* **14**, 26-38, (2019).

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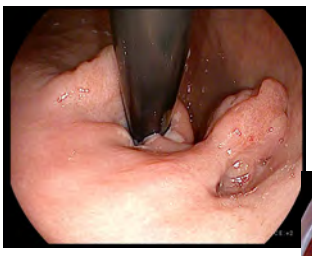
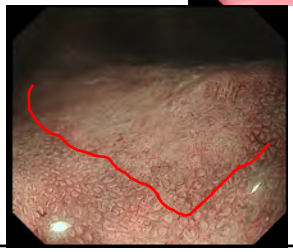
Early Gastric Cancer

Clinical
Endoscopic Appearance
Management
Follow-up

- **Location**
  - Anywhere
- **Macroscopic**
  - Any: Paris IIa/b/c (most common)
- **Microscopic**
  - Demarcation line with IMVP and/or IMSP





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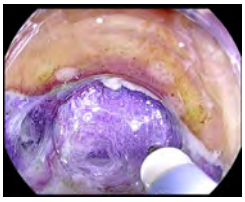
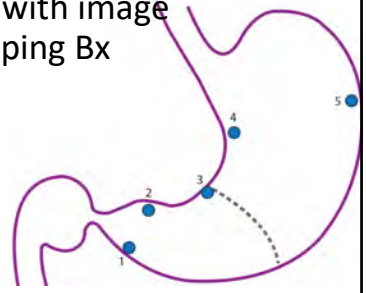
Early Gastric Cancer

Clinical
Endoscopic Appearance
Management
Follow-up



- EGC and gastric dysplasia should be resected en bloc
  - ≤ 1cm EMR
  - >1cm ESD→ Referral to Therapeutic Endoscopist

- Ensure thorough assessment of background mucosa with image enhanced endoscopy (IEE) +Sydney protocol for mapping Bx
  - Incidence of synchronous dysplasia 30%



Nakamoto, S. *et al.* Indications for the use of EMR for early gastric cancer in Japan: a comparative study with ESD. *Endoscopy* **41**, 746-750, (2009)
Carmack, S. *et al*. Management of gastric polyps: a pathology-based guide for gastroenterologists. *Nature reviews. Gastroenterology & hepatology* **6**, 331-341, (2009).

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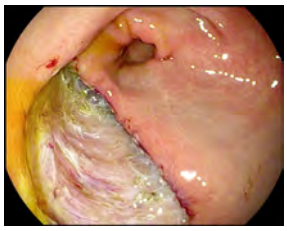
Early Gastric Cancer

Clinical
Endoscopic Appearance
Management
Follow-up



- **After curative resection (R0)**
  - Patient should undergo follow-up EGD in 3-6 months
  - Surveillance q1year with image enhanced endoscopy

- **If non-curative resection**
  - Repeat EMR/ESD (if lateral margin +)
  - Surgical resection (if vertical margin +ve due to deep submucosal invasion, unfavorable histology)

Ono, H. *et al.* Guidelines for endoscopic submucosal dissection and endoscopic mucosal resection for early gastric cancer. *Digestive endoscopy* **28**, 3-15, (2016).

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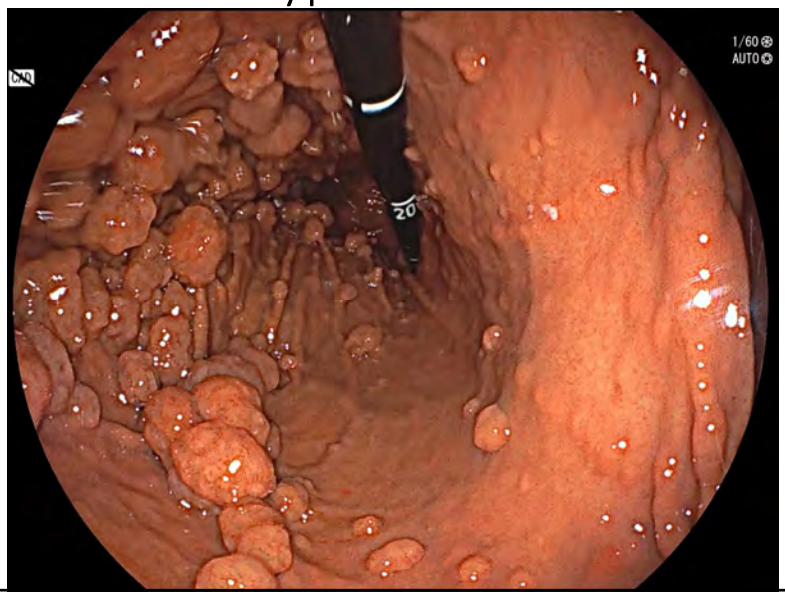
Fundic Gland Polyps



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Fundic Gland Polyps

Clinical
Endoscopic Appearance
Management
Follow-up

- Most common polyps encountered
  - ~5% of patients undergoing endoscopy
  - ~75% of all polyps encountered
- Clinical
  - Sporadic
  - PPI-induced
  - FAP (Familial Adenomatous Polyposis)
  - GAPPS (Gastric adenocarcinoma and proximal polyposis of the stomach)
- Risk of dysplasia
  - Overall <1% in sporadic/PPI
  - if>1cm ~2%
  - FAP-up to 40% can have dysplasia

Carmack, S. W., Genta, R. M., Schuler, C. M. & Saboorian, M. H. The current spectrum of gastric polyps: a 1-year national study of over 120,000 patients. *Am J Gastroenterol* **104**, 1524-1532, (2009)
Burt RW. Gastric fundic gland polyps. Gastroenterology 2003;125:1462-9.

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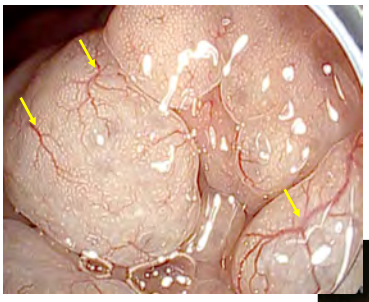
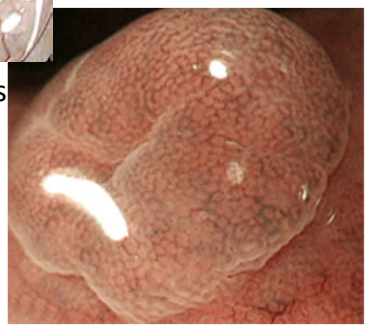
Clinical
Endoscopic Appearance
Management
Follow-up

Fundic Gland Polyps



- **Location**
  - Body
- **Macroscopic**
  - Paris Isp/p/s
  - Smooth, shiny, no exudates, prominent collecting venules



- **Microscopic**
  - Have similar MV and MS as normal gastric body

Omori T, Kamiya Y, Tahara T, et al. Correlation between magnifying narrow band imaging and histopathology in gastric protruding/or polypoid lesions: a pilot feasibility trial. BMC Gastroenterol 2012;12:17.

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Clinical
Endoscopic Appearance
Management
Follow-up

Fundic Gland Polyps

- Document: size, number, location
- If:
  - <1cm→ representative bx
  - >1cm→ generally recommend resection
  - >20, LGD or duodenal adenomas
    - Sample based on above AND arrange colonoscopy
- Resection tips*
  - Use a thicker, braided snare (offers more coagulation)
  - Ensure you get snare to base of FGP (can be aided by injection)
    - Careful around the stalk, may cold cut through→ minor bleeding

*Based on my experience, not evidence based

Management of epithelial precancerous conditions and lesions in the stomach (MAPS II). Endoscopy 51, 365-388, (2019)

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Fundic Gland Polyps

Clinical
Endoscopic Appearance
Management
Follow-up

- Generally, do not require follow-up
- **Patients with that require surveillance***
  - FAP
    - Interval q1-5 years depending on Spigelman classification
  - LGD
    - Repeat in 6-12months, rule out polyposis
  - GAPPS
    - Close surveillance vs gastrectomy
    - Should be followed in tertiary center

***Consider sending these patients to tertiary center/therapeutic endoscopist**

Goddard, A. F., Badreldin, R., Pritchard, D. M., Walker, M. M. & Warren, B. The management of gastric polyps. *Gut* **59**, 1270-1276, (2010).

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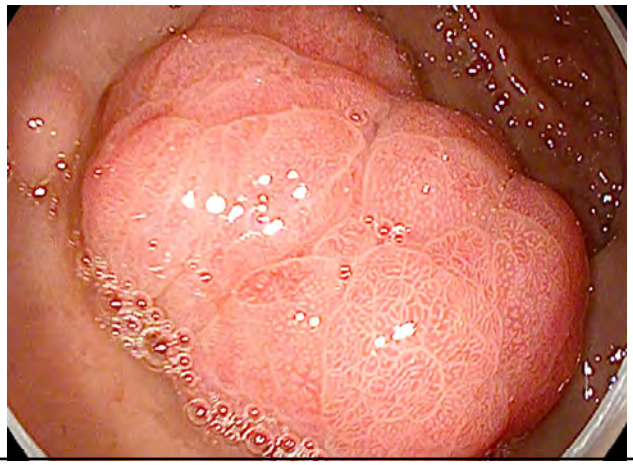
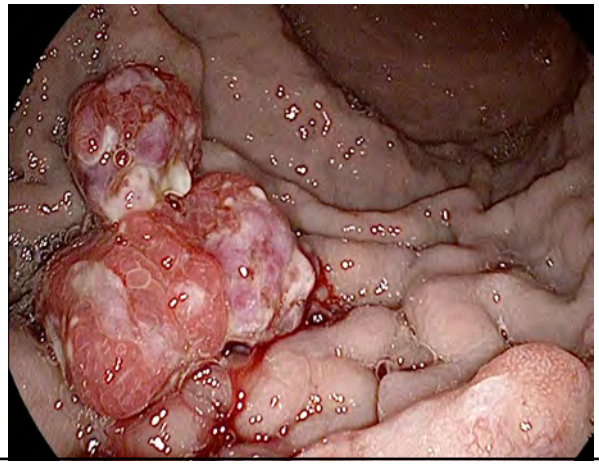
Hyperplastic polyps





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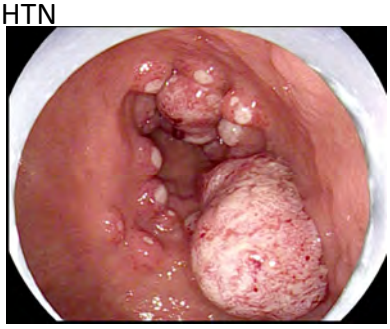
Hyperplastic polyps

Clinical
Endoscopic Appearance
Management
Follow-up

- Second most common type gastric polyp
- Usually as result of recurring insult
  - Chronic gastritis (chemical, reactive, H.pylori), portal HTN
- Risk of dysplasia
  - ~2-20%
- Risk of carcinoma ~0.5-2%



Abraham SC, Singh VK, Yardley JH, et al. Hyperplastic polyps of the stomach: associations with histologic patterns of gastritis and gastric atrophy. Am J Surg Pathol 2001;25:500-7.
Orlowska J, Jarosz D, Pachlewski J, et al. Malignant transformation of benign epithelial gastric polyps. Am J Gastroenterol 1995;90:2152-9.

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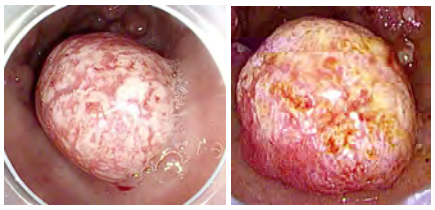
Hyperplastic polyps

Clinical
Endoscopic Appearance
Management
Follow-up

- **Location**
  - Anywhere in the stomach, but are more common in the antrum
- **Macroscopic**
  - Paris Is/sp/p
  - Can be friable with overlying mucin, surface erosions



- **Microscopic**
  - Very dense vascular structure, with elongated/villous microsurface

Ahn, J. Y. *et al.* Neoplasms arising in large gastric hyperplastic polyps: endoscopic and pathologic features. *Gastrointestinal endoscopy* **80**, 1005-1013.e1002, (2014).

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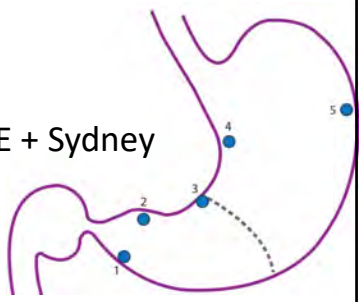
Clinical
Endoscopic Appearance
Management
Follow-up

Hyperplastic polyps

- <1cm representative sample via bx
- **If >1cm *generally* resect**
  - <3cm and known H.P +ve, recommend eradication and repeat EGD 3-6 months *prior to resection* as likely to regress
  - ≥3cm, resect regardless of H.P status as unlikely to regress
- Thorough assessment of background mucosa with IEE + Sydney protocol for mapping and ruling out H.pylori



Ahn, J. Y. *et al.* Neoplasms arising in large gastric hyperplastic polyps: endoscopic and pathologic features. *Gastrointestinal endoscopy* **80**, 1005-1013.e1002, (2014).
Ohkusa, T. *et al.* Endoscopic, Histological and Serologic Findings of Gastric Hyperplastic Polyps after Eradication of Helicobacter pylori. *Digestion* **68**, 57-62, (2003).

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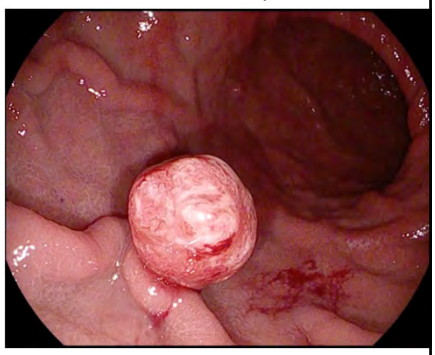
Clinical
Endoscopic Appearance
Management
Follow-up

Hyperplastic polyps



- Resection tips*
  - Submucosal Injection +/- epi
  - Paris Ip/Isp
    - lesions, use a thicker, braided snare
  - Paris Is ≥3cm
    - Consider referral to therapeutic Endoscopist
    - use a thinner snare to increase current density as tend to have +++ fibrosis and current may not conduct current well
    - piecemeal removal, ESD or limited ESD with snare (“hybrid ESD”)
  - Be prepared for hemostasis

*Based on my experience, not evidence based

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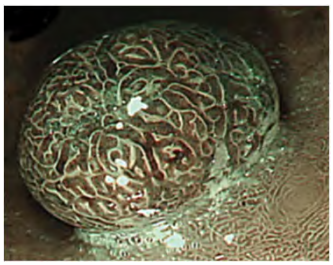
Hyperplastic polyps

Clinical
Endoscopic Appearance
Management
Follow-up

- If removed piecemeal and/or if inciting factor not removed tend recur
  - Repeat EGD in 1 year
- Surveillance is recommended if there is evidence of dysplasia, atrophy or intestinal metaplasia



Islam, R. S., Patel, N. C., Lam-Himlin, D. & Nguyen, C. C. Gastric polyps: a review of clinical, endoscopic, and histopathologic features and management decisions. *Gastroenterol Hepatol (N Y)* **9**, 640-651 (2013).

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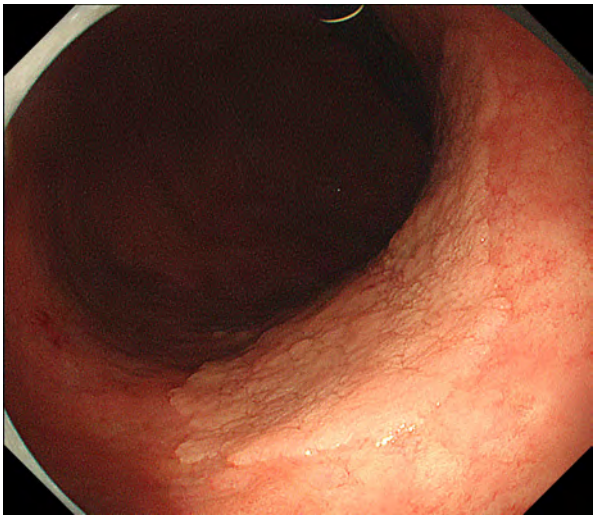
Adenomatous polyps



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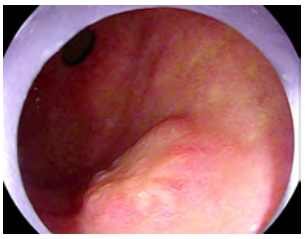
Adenomatous polyps



- Most common neoplastic polyp
- Typically associated with H.pylori, atrophic gastritis, intestinal metaplasia
- High incidence of synchronous dysplastic lesions up to ~30%
- Risk of carcinoma
  - For >2cm up to 40%

Rugge M, Farinati F, Baffa R, et al. Gastric epithelial dysplasia in the natural history of gastric cancer: A multicenter prospective follow-up study. Gastroenterology 1994;107:1288-1296.

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Adenomatous polyps

- **Location**
  - Anywhere, more common in antrum
- **Macroscopic**
  - Elevated "velvety", similar in appearance to duodenal adenomas
  - Usually Paris Is, IIa, +/-**IIc** component
  - If >2cm, have IIc component→ Think Early Gastric Cancer

- **Microscopic**
  - No unified accepted classification
  - +demarcation line, MS/MV are different from surrounding mucosa, but are regular

Rugge M, Farinati F, Baffa R, et al. Gastric epithelial dysplasia in the natural history of gastric cancer: A multicenter prospective follow-up study. Gastroenterology 1994;107:1288-1296.
Yao, K. *et al.* White opaque substance within superficial elevated gastric neoplasia as visualized by magnification endoscopy with narrow-band imaging: a new optical sign for differentiating between adenoma and carcinoma. *Gastrointestinal endoscopy* **68**, 574-580, (2008).

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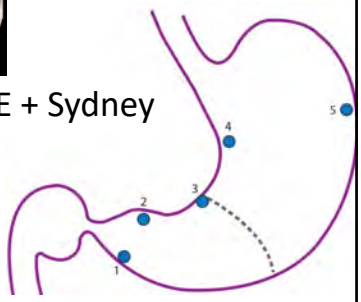
Adenomatous polyps

Clinical
Endoscopic Appearance
Management
Follow-up

- EMR or ESD, ideally gastric adenomas should be resected en bloc
  - ≤ 1cm EMR
  - >1cm ESD

- Thorough assessment of background mucosa with IEE + Sydney protocol for mapping Bx
  - Incidence of synchronous dysplasia 30%



Banks, M. *et al.* British Society of Gastroenterology guidelines on the diagnosis and management of patients at risk of gastric adenocarcinoma. *Gut* **68**, 1545-1575, (2019).

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Adenomatous polyps

Clinical
Endoscopic Appearance
Management
Follow-up

- If en bloc R0 resection with clear margins and only LGD
  - EGD in 1 year with image enhanced endoscopy, then q1-3years
- R0 resection with HGD
  - EGD in 6-12 months
- If piecemeal/incomplete resection
  - Repeat EGD 3 months

Goddard, A. F., Badreldin, R., Pritchard, D. M., Walker, M. M. & Warren, B. The management of gastric polyps. *Gut* **59**, 1270-1276, doi:10.1136/gut.2009.182089 (2010).
Banks, M. *et al.* British Society of Gastroenterology guidelines on the diagnosis and management of patients at risk of gastric adenocarcinoma. *Gut* **68**, 1545-1575, (2019).

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Neuroendocrine tumors

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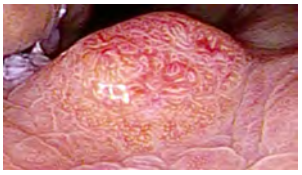
Neuroendocrine tumors

Clinical
Endoscopic Appearance
Management
Follow-up



- Make up less than 1% of detected gastric polyps
- 3 Types
  - **Type I** ~80%
    - Usually multiple and small <1cm, associated with hypergastrinemia 2^{o} to atrophic gastritis
    - Usually, incidental finding on EGD done for anemia
  - **Type II** ~5%
    - Usually multiple and small <1cm , result from gastrin secreting tumor
    - Often detected as part of workup for Multiple Endocrine Neoplasia or Zollinger Ellison Syndrome
  - **Type III** ~15%
    - Often present as sporadic, usually solitary lesions
    - Usually detected after becoming larger >1.5cm, tend to have higher grade and poorer prognosis

Ramage, J. K. *et al.* Guidelines for the management of gastroenteropancreatic neuroendocrine (including carcinoid) tumours (NETs). *Gut* **61**, 6-32, (2012).

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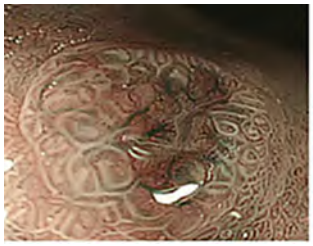
Clinical
Endoscopic Appearance
Management
Follow-up

Neuroendocrine tumors

- Location
  - Type I, II: clusters in body/fundus
  - Type III: Solitary anywhere
- Macroscopic
  - Paris Is, IIa, +/-IIc component
- Microscopic
  - Usually have normal/stretched mucosal/vasculature at periphery with central areas having IMVP/IMSP





Sato, Y. Endoscopic diagnosis and management of type I neuroendocrine tumors. *World journal of gastrointestinal endoscopy* **7**, 346-353, (2015).
Carmack, S. W., Genta, R. M., Graham, D. Y. & Lauwers, G. Y. Management of gastric polyps: a pathology-based guide for gastroenterologists. *Nature reviews.* **6**, 331-341, (2009).

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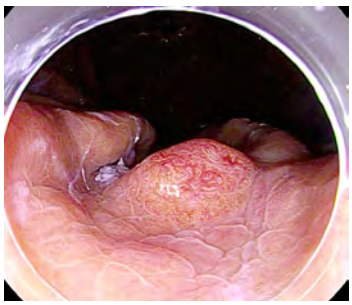
Clinical
Endoscopic Appearance
Management
Follow-up

Neuroendocrine tumors

- **Type I**(atrophy associated)
  - ≤5mm can Bx or snare
  - ≤1cm can be resected with polypectomy/EMR/ESD
  - >1cm, consider referral to therapeutic endoscopist
- **Type II/III**
  - Should refer to tertiary care center
    - DOTA-peptide PET/CT scan
    - EUS to search for duodenal wall/pancreas gastrinomas and which CT can't see
  - Type III often require surgery due to presenting at later stage with metastasis
    - Consider EMR/ESD in select cases



Ramage, J. K. *et al.* Guidelines for the management of gastroenteropancreatic neuroendocrine (including carcinoid) tumours (NETs). *Gut* **61**, 6-32, (2012).

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Neuroendocrine tumors

Clinical
Endoscopic Appearance
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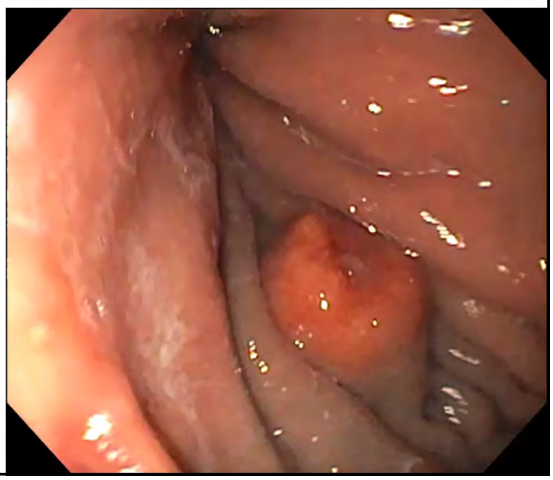
Follow-up

- Resection tips*
  - Submucosal Injection + epi
  - <1cm
    - Traditional hot polypectomy
  - >1cm
    - tend to have submucosal invasion, fibrosis + fat
      - Will take longer to cut through (if EMR)
      - Vascular so be prepared to deal with bleeding
      - Consider referral for EMR/ESD



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Neuroendocrine tumors

Clinical
Endoscopic Appearance
Management
Follow-up

- Type I
  - If favorable pathology surveillance with annual EGD with IEE
    - Borderline/unfavorable pathology should discuss at multidisciplinary tumor boards
- Type II
  - Dependent on management of underlying syndrome

- Type III
  - Traditionally managed surgically
  - Should discuss at multidisciplinary tumor boards if endoscopically resected

Ramage, J. K. *et al.* Guidelines for the management of gastroenteropancreatic neuroendocrine (including carcinoid) tumours (NETs). *Gut* **61**, 6-32, (2012).

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*General Tips for Gastric Tissue Resection

- **Diagnostic**
  - Clean the stomach well and identify lesions
  - Examine the background mucosa
  - Macroscopic and microscopic exam of lesion → Pay close attention to margins
- **Planning therapy**
  - Forward and retroflexed: assess stability and maneuverability
  - Am I the right person for this or should I refer to another endoscopist?
  - Is now the right time?
    - If bleed/perforation, do I have plan A, B, C?
    - Review the plan, tools and specific language with your assistant
    - Make sure you have all equipment and sedation required

*Based on my experience, not evidence based

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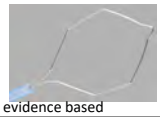
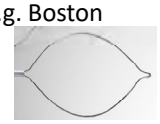
*General Tips for Gastric Tissue Resection

- **Therapeutic**
  - Injection:
    - Most gastric lesions with saline +/- dilute epi. Viscous agent if larger/fibrosis/scarred
  - Electrosurgery:
    - Most common setting ERBE EndoCut Q (Effect 3, Duration 1, Interval 6)
  - Snares:
    - Thicker braided snare for more coagulation easier control (e.g. Olympus Snaremaster 15mm)
    - Stiffer, thinner twisted snares for lesions with fibrosis/difficult to capture (e.g. Boston captivator II, Cook Acusnare hexagonal)





*Based on my experience, not evidence based

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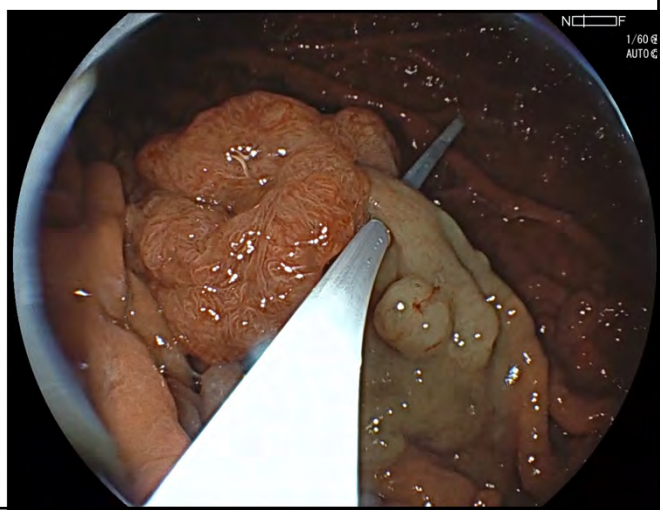
*General Tips for Gastric Tissue Resection

- Hemostasis:
  - You must be comfortable with bleeding
  - Coagulation forceps (Soft Coag Effect 5, 80W)
    - consider cautious application of Endoloop for >2cm 1SP, 1P polyps.
  - Close defects if possible.



*Based on my experience, not evidence based

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Summary

- Normal gastric microsurface (MS) and microvasculature(MV) and key features to distinguish between normal and neoplastic lesions
- Endoscopic appearance, management and follow-up of:
  - Early gastric cancer (EGC)
  - Fundic gland polyps (FGP)
  - Hyperplastic polyps (HP)
  - Gastric adenomas (GA)
  - Neuroendocrine Tumors (NET)
- Tips for gastric tissue resection

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Thank you!

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 www.youtube.com/c/rbendoscopy

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