


Gastric Polyps & Dysplasia: A review of an ever expanding list

Gregory Y. Lauwers, MD
 Senior Member
 H. Lee Moffitt Cancer Center & Research Institute
 Tampa, FL
gregory.lauwers@moffitt.org



Benign Epithelial Tumours and 'Polyps'

1990

MORSON & DAWSON'S
GASTROINTESTINAL PATHOLOGY

THIRD EDITION
MORSON & DAWSON

1979

GASTROINTESTINAL PATHOLOGY
MORSON & DAWSON

1972

MORSON & DAWSON'S
GASTROINTESTINAL PATHOLOGY

Day, Jass, Price, Shepherd, Sloan, Talbot, Warren, Williams

2003

- **Heterotopia or Hamartomatous**
- **Regenerative or Inflammatory**
- **Neoplastic (Adenoma/papilloma/papillary adeoma)**
- **Cystic Polyps**
- **Miscellaneous (Cronkhite-Canada) / Fundic Glandular cysts)**
 - Heretotropic pancreas
 - Cystic inflammatory Fibroid polyp
 - Xanthelasma
 - Others


Benign Epithelial Tumours and 'Polyps'

MORSON AND DAWSON'S

2013

GASTROINTESTINAL PATHOLOGY


FIFTH EDITION

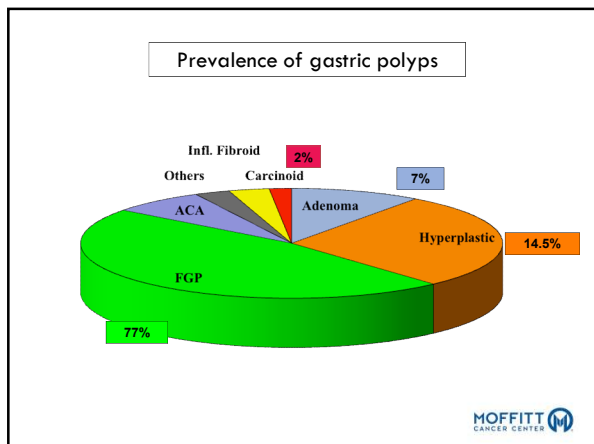


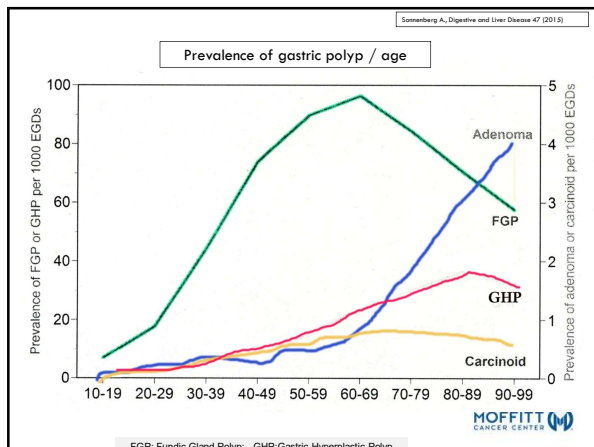
General category	Subtype	Usual location	Malignant potential
Epithelial			
Hyperplastic/Inflammatory	Hyperplastic (and variants)	Antrum and lower body	Low*
Hamartomatous	Peutz-Jeghers Juvenile Cowden		Low Low* Unknown
Neoplastic	Fundic gland polyp	Body fundus	Low*
	Polypoid dysplasia (adenoma)	Antrum and body fundus	High
	Neuro-endocrine tumor	Body fundus	Low to moderate
Mesenchymal	Inflammatory fibroid polyp Others†	Antrum	None
Miscellaneous	Cronkhite-Canada Xanthoma Gastric heterotopic pancreas		Unknown None Very low

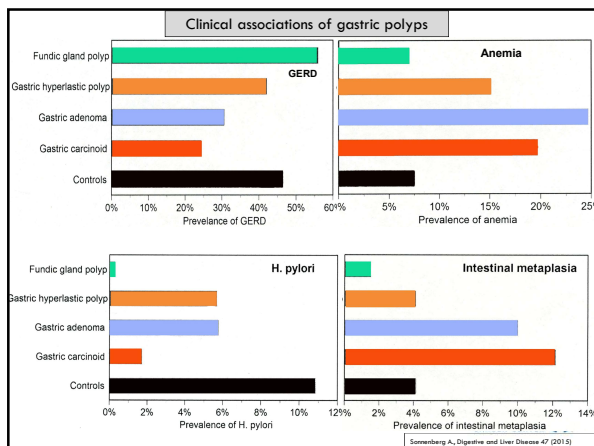
*The risk increases with the size of the polyp.
 †The risk is higher in syndromic polyps than in sporadic lesions.
 ‡These include: gastrointestinal stromal tumour (GIST), smooth muscle tumour, glomus tumour, inflammatory myofibroblastic tumour,

- Incidental findings
- Prevalence of 3.75% (200,000 endoscopies-US)
 - Rare: hemorrhage / outflow obstruction

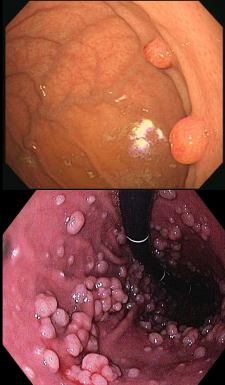








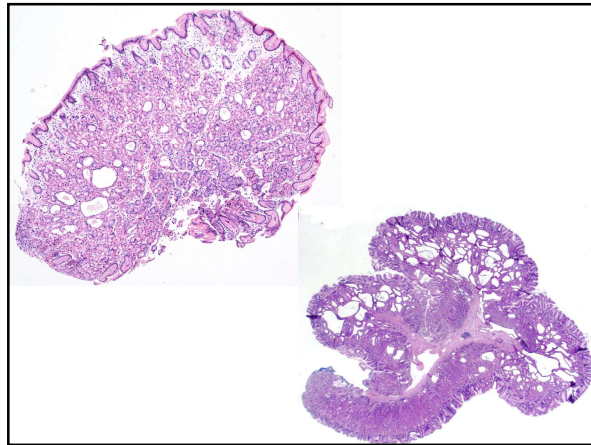
Fundic Gland Polyps

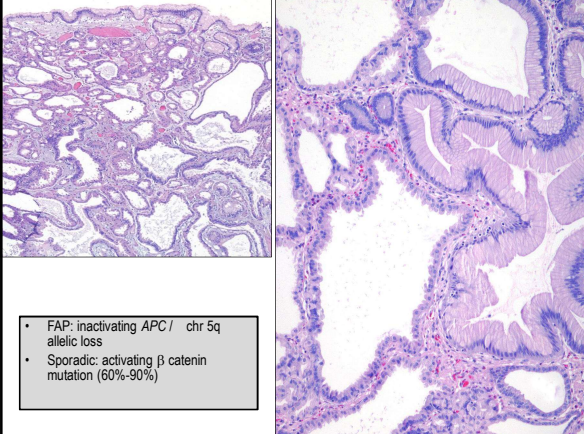


- Oxyntic mucosa
- Sessile: 1-5 mm
- Multiple (40-60%)
- Over time 40-50% are labile

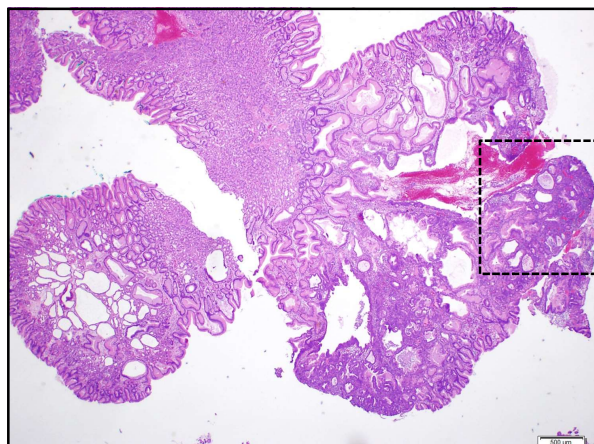
- Sporadic (0.09 to 5% of endoscoped pts; Female +)
- FAP
- Proton pump inhibitors
- GAPPS (Gastric Adenocarcinoma and Proximal Polyposis)

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- FAP: inactivating *APC* / chr 5q allelic loss
- Sporadic: activating β catenin mutation (60%-90%)



Sporadic FGP:
Dysplasia is rare (1-6%)
Syndromic patients (FAP):
25-48% (LGD>HGD [0-12%])
Only 4 cases of ACA

Gouldford AF. Gut 2010;59:1270-1276

Polyp type	Usual number and size	Usual site	Malignant potential of polyp	Malignant potential of background mucosa	Management
Sporadic fundic gland polyp	Multiple 1-5 mm	Upper and lower body	Very low	Very low	Biopsy to confirm nature of polyp No follow-up needed

Morphology and natural history of familial adenomatous polyposis-associated dysplastic fundic gland polyps

Thomas Arnason,^{1,2,*} Wen-Yih Liang,^{3,4,*} Eduardo Alfaro,¹ Paul Kelly,^{1,5} Daniel C Chung,⁶ Robert D Odze⁷ & Gregory Y Lauwers¹

Histopathology 2014.

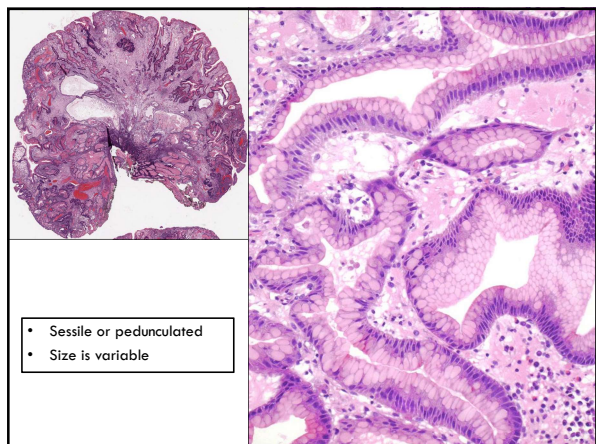
- **24 pts** (9M/15F; mean age of 35 yrs)
 - Total of 57 dysplastic FGPs.
 - Most had multifocal dysplastic FGPs.
 - 1 w/ concurrent antral adenoma.
 - 96% LGD; 4% (n=1) HGD
- **Evolution:** [mean follow-up of 6 years].
 - 54% stable "persisted" (n=13)
 - 33% "regressed" (n=8)
 - 13% "progressed" to HGD/IMC (n=3)

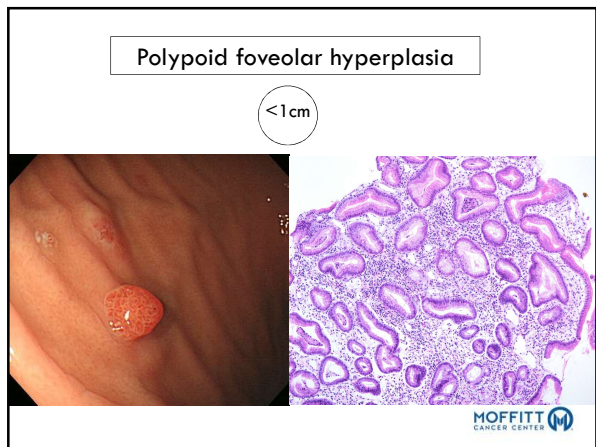
(sporadic GED progression rate: LGD: 5-14% and HGD:24-37%)

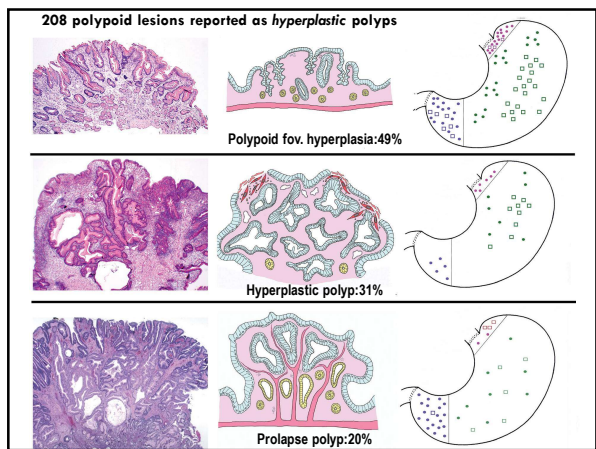
Recommendations:

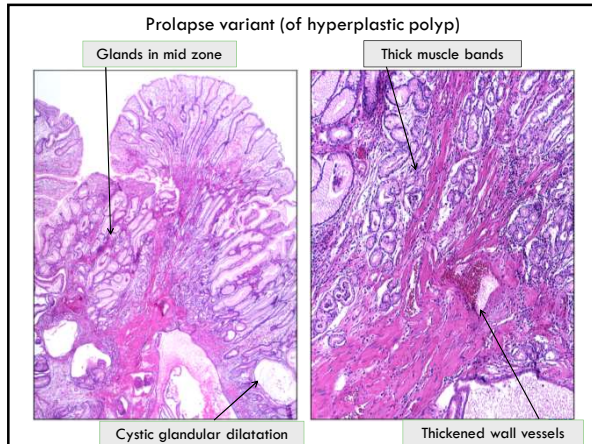
- Follow q. 2/3 years:
 - Look for large polyps (>1 cm)
 - Sample extensively

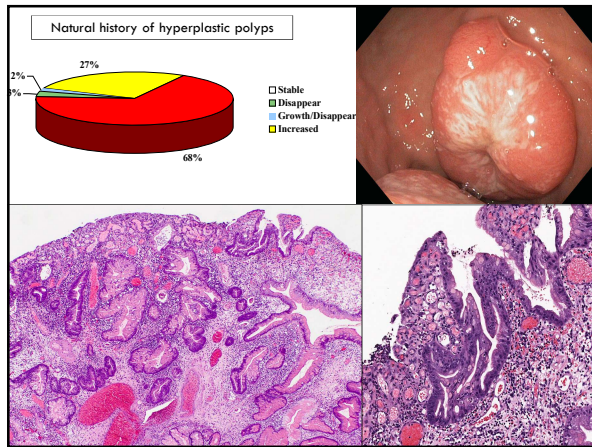
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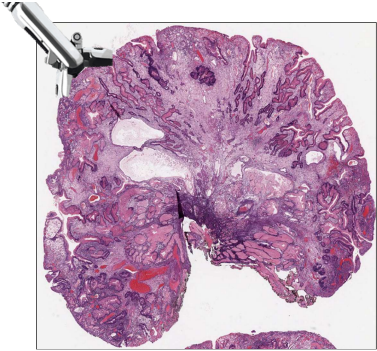


Dysplasia: 1.8-16.4%; Carcinoma: 0.3-7.1% (avg 2.1%) (> 2.0 cm)

Polyp type	Usual number and size	Usual site	Malignant potential of polyp	Malignant potential of background mucosa	Management
Hyperplastic	Single 1-2 cm	Antrum	Low but significant	Low	Remove polyp if dysplastic Eradicate H. pylori Repeat OGD 1 year
	Multiple <1 cm	Lower body	Low but significant	Low	Eradicate H. pylori Repeat OGD 1 year

Goddard AF, Gut 2010;58:1270-1276

Differential diagnosis of hyperplastic polyps is challenging on a superficial pinch biopsies



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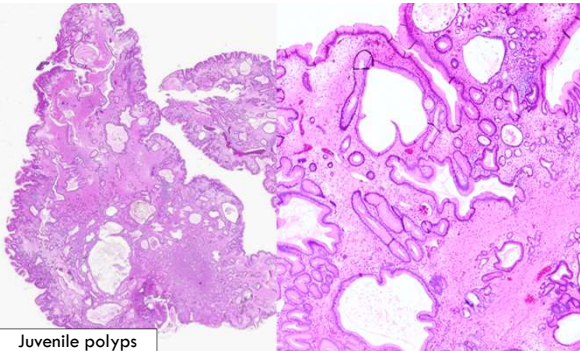
Hyperplastic Polyps – Diff. Dx

	Juvenile polyposis	Peutz-Jeghers Syndrome	Cowden's Disease	Cronkhite-Canada Syndrome
Inheritance	autosomal dominant	autosomal dominant	autosomal dominant	non-inherited (sporadic)
Gene	SMAD4 or BMPR1A	STK11 /LKB1	PTEN	None
Gastric location	infrequent (15–25%)	25–50%	common	common
Location of polyp	antrum > body or fundus	random	random	random
Size of polyp	variable	usually small (<1 cm)	usually small (<1 cm)	variable
Lifetime risk of gastric Ca.	15–20%	30%	rare	about 10%

- Other differential dx:
 - Menetrier's disease
 - Bile reflux/ post surgery gastritis
 - Gastritis Polyposa Cystica


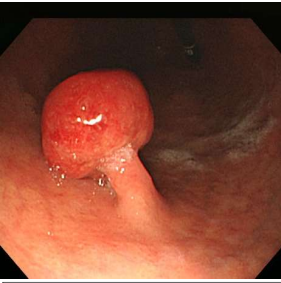
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- Disorganized pits / glands of varying sizes & shapes.
- Edematous L propria (w/ granulation tissue)
- No smooth muscle fibers



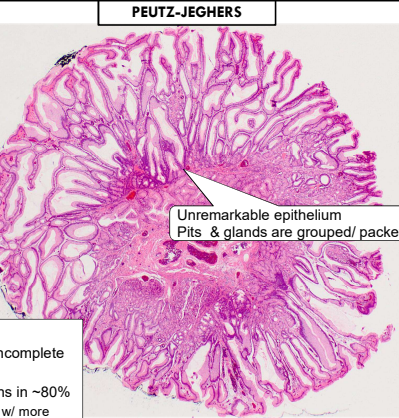

Juvenile polyps

Juvenile polyps (polyposis)



- Family history in 50% pts. Extra-colonic polyps almost always syndromic
- Median age of pts presenting with gastric polyps ~40 years
- Rounded and sessile when small but pedunculated with a lobular appearance as they enlarge.

PEUTZ-JEGHERS

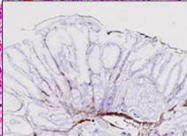



Median age of Dx: 16 yrs

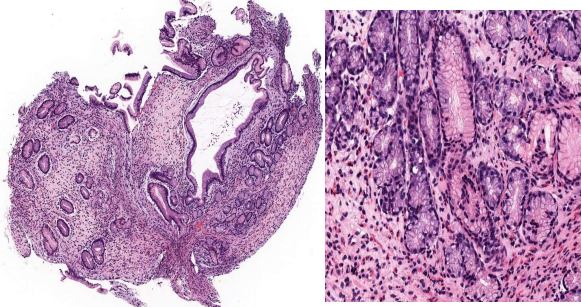
Unremarkable epithelium
Pits & glands are grouped/ packets

- Incidence : 1:200,000
- Autosomal dominant, incomplete penetrance
- LKB1 (STK11) mutations in ~80%
 - Truncating mutations w/ more severe disease

Subtle intervening septations of smooth muscle strands
Unremarkable lamina propria




Cronkhite-Canada Syndrome



- Broad based polyp w/ marked stromal edema & unevenly spaced glands.
- Mixed inflammatory infiltrate w/ prominent eosinophilia

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Cronkhite-Canada Syndrome



- Protein-losing enteropathy.
- Ectodermal changes
- Hamartomatous polyposis.
- (IgG4 related condition?)
- Variable natural history
 - 50-60% mortality
 - Electrolytes imbalance, GI bleeding, opportunistic infections
- Malignant potential~10%

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Gastric Adenoma



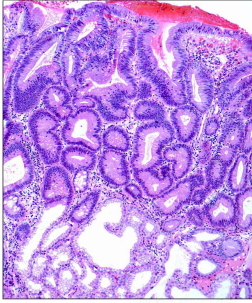
- Nodule of dysplastic epithelium, i.e., "Unequivocal neoplastic (non invasive) process"

• Single in 82% of cases; 80-90% < 2cm

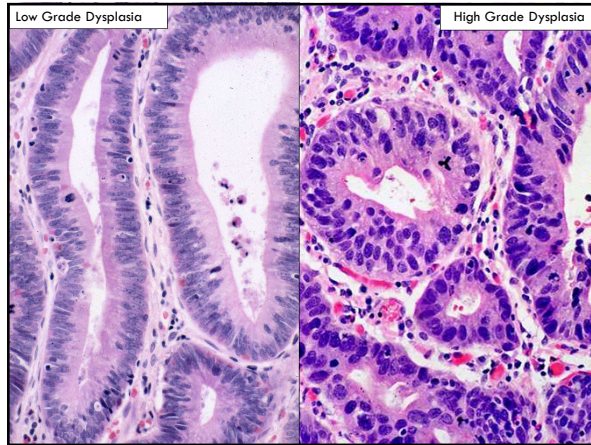
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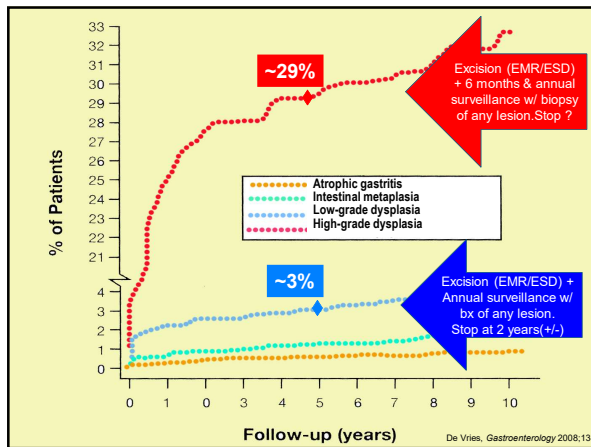
Architectural & Cytologic Features of Gastric Epithelial Dysplasia

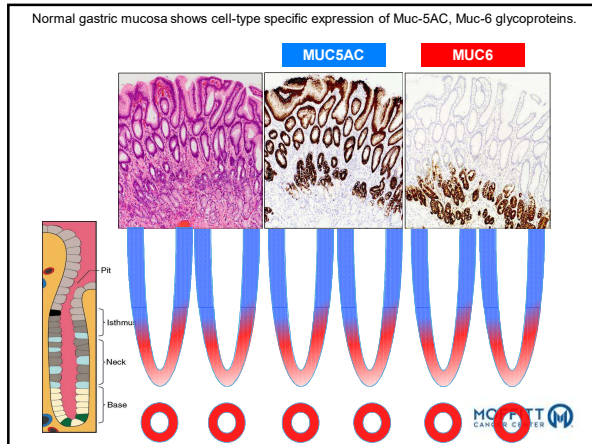
Glandular disarray, budding, branching and dilatation



Nuclear pleomorphism
High N/C ratio
Loss of nuclear polarity w/ pseudostratification
Lack of differentiation w/ mucus depletion

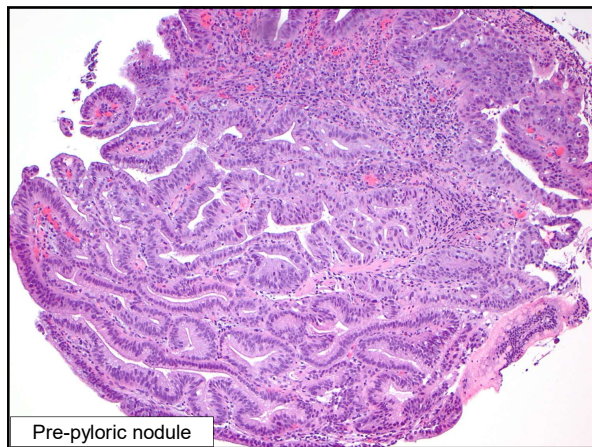


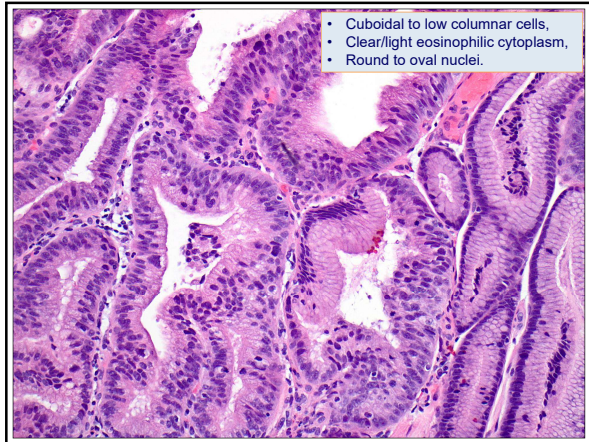




Phenotypic Diversity of Gastric Dysplasia

	Adenomatous	Foveolar	Pyloric
	CD10	MUC2	MUC5AC
Intestinal	(+) (Apical membrane)	(+) (Goblet cells)	(-)
Foveolar	(-)	(-)	(+) (+/- glands)
Pyloric	(-)	(-)	(+) (+ glands)





Prevalence of foveolar GED: 22% (Adenomatous: 45%, hybrid 33%) (n=69)

Type 2

Muc5AC

Type 1

CD10

- Foveolar GED is often depressed/flat and associated w/ HGD (p= 0.046).
- HGD associated w/ MUC5AC expression regardless of the type (p=0.026).

Grade	Immunophenotype			p value
	Foveolar (n=24)	Intestinal (n=22)	Hybrid (n=14)	
HGD (n=25)	15* (63%)	4 (18%)	6 (43%)	
Low grade (n=35)	9 (37%)	18 (82%)	8 (57%)	0.016

*coexistent intramucosal carcinoma in 3 cases

Foveolar differentiation is associated w/ HGD & coexistence of IMC

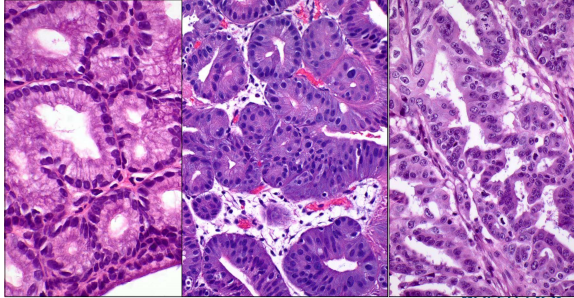
PYLORIC GLAND ADENOMA

- Older pts (mean age: 70 yrs)
- Females > males (3:1)

- Oxyntic mucosa
- Autoimmune gastritis +
- FAP; no sex predominance (6%)

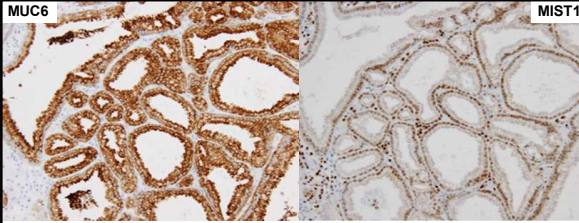
“dysplasia” in pyloric gland adenoma

~1/3 w/ HGD



Dysplasia ranges to very subtle to appreciable (HGD)

MUC6 **MIST1**



Journal of Pathology
J Pathol 2013; 229: 579–587
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(wileyonlinelibrary.com) DOI: 10.1002/path.4153

ORIGINAL PAPER

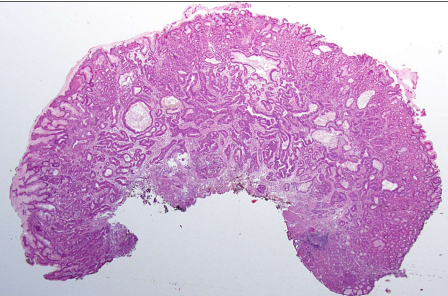
Frequent *GNAS* and *KRAS* mutations in pyloric gland adenoma of the stomach and duodenum

Atsuko Matsubara,¹ Shigeki Sekine,^{1*} Ryoji Kushima,¹ Reiko Ogawa,² Hirokazu Taniguchi,¹ Hitoshi Tsuda¹ and Yae Kanai¹

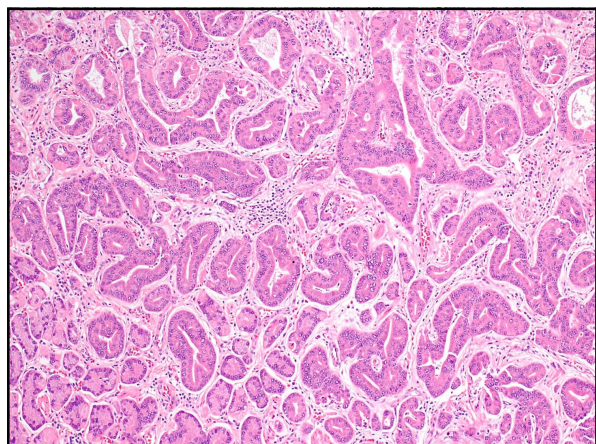
GNAS mutation in 48% of cases (not in intestinal and foveolar type dysplasia)
KRAS mutation in 41% of cases

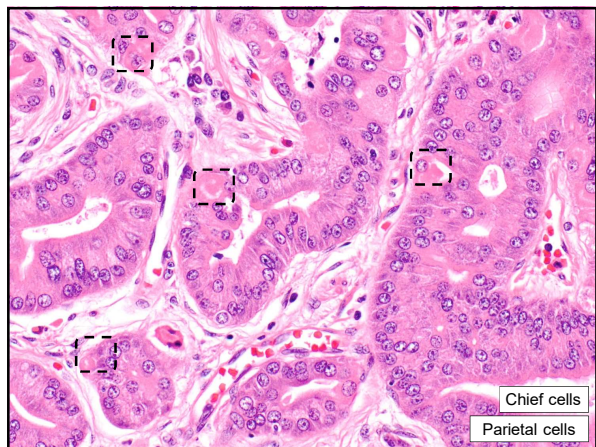
Gastric Adenocarcinoma of Fundic Gland Type (Chief Cell Predominant Type): Proposal for a New Entity of Gastric Adenocarcinoma Uyama H AJSP. 2010;90:64-70.

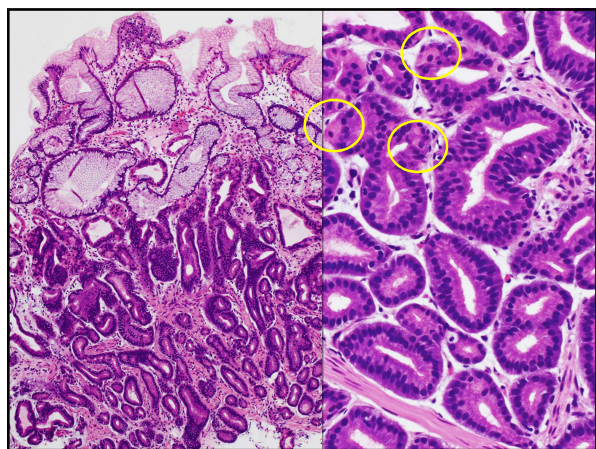
Gastric Adenocarcinoma With Chief Cell Differentiation
A Proposal for Reclassification as Oxyntic Gland Polyp/Adenoma Singhi A. AJSP. 2012;1030-1035.

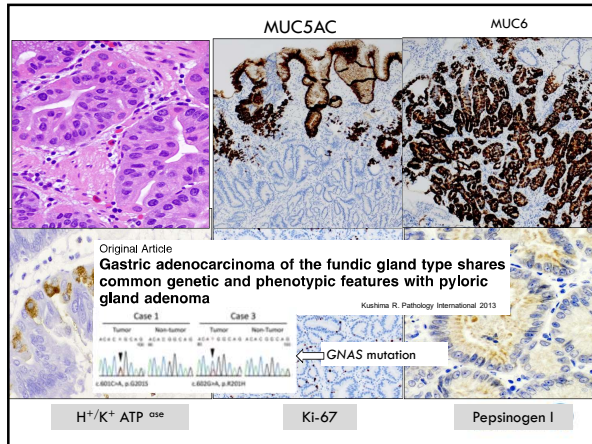


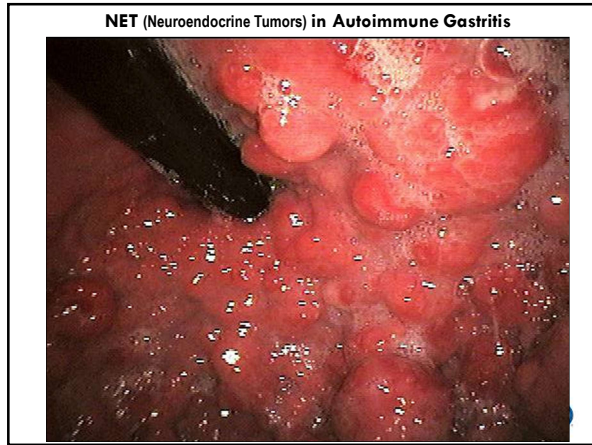
TTM

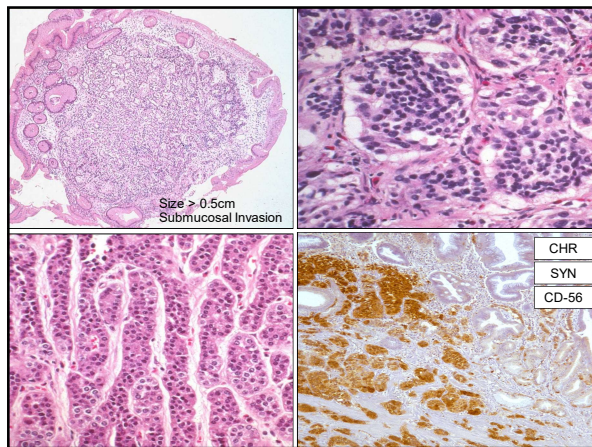


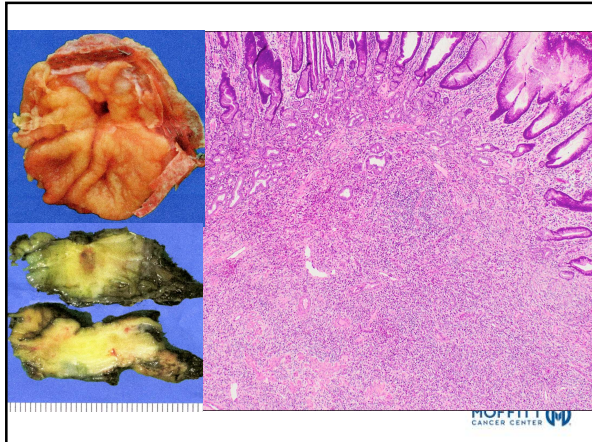


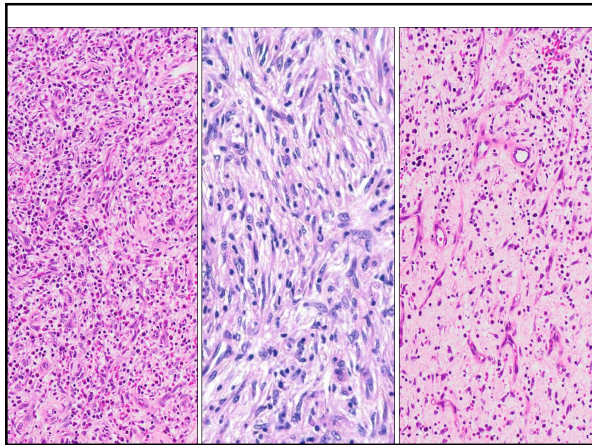












- Cell of origin: *fibroblastic?*
Myofibroblastic?, histiocytic
or dendritic cells?
- cells are (+) for CD34,
fascin and calponin, [SMA
can be seen].
- *c-kit, S100, desmin:*
negative.

CD117

PDGFR α gain of function mutations

The chromatogram displays the DNA sequence: T A G T T C G A A T C A T G C C T T G A T G T C T C C G G
G G C T T G G C A G A G A C A T C A T G C T T G T T C
139 145 151 157 163

Gastric polyps: characteristics and management strategies

Table 2 Gastric polyp characteristics and malignant potential

Polyp type	Usual number and size	Usual site	Malignant potential of polyp	Malignant potential of background mucosa	Management
Sporadic fundic gland polyp					
Familial adenomatous polyposis-associated fundic gland polyp					
Hyperplastic					
Adenoma					

Goddard AF. Gut 2010;59:1270-1276



Thank You!