From a clinical perspective, there are only 2 GI polyps

**Neoplastic**
- almost all adenomas
**Non-neoplastic**
- everything else

Non-neoplastic polyps are important because they do not alter management. There is no surveillance.

Time for the title of the talk

Polyps with too much mucosal and/or submucosal stroma, and weird mucosa, none of which are life-threatening, but all of which are fun to look at and talk about.

Where to find me for complaints: appelman@umich.edu
The world’s greatest reference for this otherwise minimally referenced topic

Benign Gastrointestinal Mesenchymal BUMPS
A Brief Review of Some Spindle Cell Polyps With Published Names
Ahren C. Rittershaus, MD; Henry D. Appelman, MD

Arch Pathol Lab Med. 2011;135:1311-1319

First Case
Adult, any sex,
Colonoscopy for any reason
Snared
Resection was said to be complete.

1 cm polyp

Lots of pink stuff separating crypts and filling superficial submucosa
Layer of lamina propria over the pink stuff

Plump spindle cells fairly evenly spaced in short fascicles and whorls

Trichrome: the thing is full of collagen

Vimentin: the cells stain like fibro- or myofibroblasts
The cells are actin negative, but they bust up the muscularis mucosae.

These were first called:

Benign Fibroblastic Polyps of the Colon
A Histologic, Immunohistochemical, and Ultrastructural Study

Fatima Eslami-Varzaneh, MD, * Kay Washington, MD, PhD, † Marie E. Robert, MD, ‡
Michael Kashgarian, MD, § John R. Goldblum, MD, ‡ and Dhanpat Jain, MD*.


14 polyps required 6 authors, kind of like the old Whipple’s disease papers.

The importance of this paper was that it gave a name to a polyp that lacked one.

Diagnosis?
In the paper, the authors spent a lot of words telling us why this is not a GIST. Tumors like this are never GISTs. GISTs are **intramural** tumors. The only time we see a GISTs in the mucosa is when it is malignant and invades the mucosa, but such tumors are not small polyps.

A year later, the name was changed to **Intestinal Perineuriomas**.

The cells in these tumors are really not fibroblasts, but they are **perineurial cells** with characteristic EM findings and positivity with the antibody to **epithelial membrane antigen (EMA)**.
Meningioma-like balls. All stains negative except vimentin and EMA.

Actually EMA and vimentin positivity are expected in meningiomas.

Serrated crypts are common.

This study emphasized

1. the common association with serrated crypts, resembling those in hyperplastic polyps, and
2. the condensed zone of lamina propria superficially.

Fibroblastic polyp of the colon: clinicopathological analysis of 10 cases with emphasis on its common association with serrated crypts.

G M Groisman, S Polak-Charcon1 & H D Appelman2

1Departments of Pathology, Rambam Haifa Medical Centre, Haifa and 2Sheba Medical Centre, Tel-HaShomer, Israel; and

University of Michigan, Ann Arbor, MI, USA.
#3
The serrated crypts in these polyps led to a study of colorectal neoplasia-associated mutations. 
BRAF mutations were found in 63%  
KRAS mutation was found in 4%  
(similar to that in SSAs and HPs)  
Conclusion: serrated fibroblastic polyps are a unique type of mixed epithelial-stromal polyp: hybrid hyperplastic polyp/mucosal perineuroma


#4
Perineurial-like stroma occurred in 6.5% of 198 SSAs  
This finding coupled with the common finding of serrated crypts in colonic perineuriomas suggest an epithelial-stromal interaction, possibly related to some factor elaborated by the serrated epithelium.

BRAF mutations: were found in 5 of 8 polyps with serrated crypts (same as SSAs) and 0 of 12 polyps without serrated crypts. Conclusion: BRAF mutations originate in the serrated epithelium. No differences in clinical and endoscopic findings. Conclusion: They may be 2 variants of a single lesion.


The perineurioma is a polyp with excess stuff in the lamina propria and/or superficial submucosa. There are some others.

Core of red something

The tumor is very red
Big smooth muscle cells in short fascicles, vaguely storiform

Hypertrophic muscle cells with lots of red cytoplasm, extending into base of mucosa

Blends with muscularis mucosae at the edge

Mesenchymal Tumors of Muscularis Mucosae of Colon and Rectum are Benign Leiomyomas that Should be Separated from Gastrointestinal Stromal Tumors—A Clinicopathologic and Immunohistochemical Study of Eighty-Eight Cases
Markku Miettinen, M.D., Maarit Sarlomo-Rikala, M.D., Leslie H. Sobin, M.D.
Department of Soft Tissue Pathology (MM), Armed Forces Institute of Pathology, Washington, DC;
Department of Pathology (MM), Hietalan Institute of the University of Helsinki, Helsinki, Finland; and
Division of Gastrointestinal Pathology (LS), Armed Forces Institute of Pathology, Washington, DC
Mod Pathol. 14:950-956, 2001

Just imagine: a tumor that not only looks like it contains smooth muscle cells but it actually does contain smooth muscle
So we can call it a leiomyoma, and be correct.
That is so cool!!
Leiomyoma of the muscularis mucosae (leiomyomatous polyp)

Huge smooth muscle fibers often have intracytoplasmic eosinophilic globules


18 of 30 of these tiny leiomyomas had red globules.
By EM, they were made up of dense aggregates of intermediate filaments with focal dense bodies.
They seemed to be neoplastic smooth muscle specific in the colorectum.
I did not know this was reportable. I thought it was part of being a leiomyomatous polyp!
Actually, they are not colorectal specific. Here are some in an esophageal leiomyoma.

GI leiomyomas are most common in the **muscularis propria** of the esophagus and **muscularis mucosae** of the distal colon, mainly rectum. They are really, really rare tumors everywhere else.

In contrast to uterine leiomyomas in which the cells tend to be small, in GI leiomyomas the cells are hypertrophied.

Another type of polyp with spindle cells in the lamina propria separating the crypts.
Spindled cells

Ganglion cells & Schwann cells

Mucosal ganglioneuromas
Seen in 3 settings
- NF1
- MEN2b
- Sporadic, the most common

Polyp with spindle cells filling the superficial lamina propria
This polyp has Schwann cells and no ganglion cells. I called these “mucosal neuromas” for years. I thought they had the same associations as did the mucosal ganglioneuromas, but there is little proof that is the case.

They decided to call these bumps *hamartomas* because they were not associated with neurofibromatosis 1 (NF1) and as an interim designation to “avoid confusion with the neural lesions that have significant associations with inherited syndromes.”

These don’t exactly fit the classic hamartoma definition.
Then there is this little guy:

- Too much blue stuff in the middle
- Thick walled blood vessels at the base

Blue stuff and vessels

Looks like elastosis
Elastic stain: it is elastosis!

Prominent vessels and elastosis

Elastosis and elastofibromatous change in the gastrointestinal tract: a clinicopathologic study of 13 cases and a review of the literature.

“The changes occasionally appear centered around blood vessels and often are mistaken for amyloid”


Doesn’t look like amyloid to me!

Amyloid, pink and smudged

Elastosis, blue and fibrillar
The weirdest of all these polyps
A long skinny thing.

Looks like the stalk of a polyp without a head

Fairly normal mucosa with a submucosal core
Colonic Mucosubmucosal Elongated Polyp: A Clinicopathologic Study of 13 Cases and Review of the Literature

Michelle Marie-Christine Alizari, BSc, MBBS (Hons),* †Christophe Rosny, MD, PhD, FRCPA,‡
and Ian S. Brown, MBBS, FRCPA* †


Resemble the remodeled filiform inflammatory pseudopolyps in UC
11 patients:
- 10 had 1 polyp and one had 3 polyps in the same segment
- All adults.
- Many picked up during screening colonoscopy
- Most common site was sigmoid
- No clue as to cause, but maybe the result of mechanical traction.

Check out these 5 polyps which looked alike endoscopically

They had to blame something!

This polyp has a lot of submucosal stuff

Excess submucosal stroma
Trichrome: mostly collagen

Scattered smooth muscle fibers

The great gastric collagenoma

Vein Elastosis
Artery
Strange sclerotic vessels
Movat pentachrome

Fine elastic fibers. Thick collagen fibers
How about this one?

#3

Thick fascicles of red stuff mixed with blue stuff

Dense collagen resembling osteoid

Small arteries with thick walls

Smooth muscle

Lymphocytes

Nodular something or other at the submucosal-mucosal junction

#4

Red nodules pushing into the mucosa
Plump spindle cells and thick collagen bundles

Actin: this is a smooth muscle or maybe myofibroblastic something or other

There is a huge void here where there should be something
We diagnose these things as

“benign mucosal polyps”,

an abbreviated version of

“Benign Unclassified Mucosal Polyps” or BUMPs

After an exhaustive search, I discovered that

these 5 polyps have no names, but they deserve some

Next Polyp: 56 yo man

obese
diabetic
hypertensive
obstructive sleep apnea, chronic renal insufficiency, recurrent urolithiasis.

For this case, this is useless information.
During the current procedure, a pedunculated 13mm sigmoid polyp was found and resected. Sigmoid diverticulosis was also found.

These findings are important!
Serrated crypts near the surface

Dark superficial tubules mimicking adenoma

Dark tubules mimicking adenoma, but the epithelium becomes regenerative toward the surface, that is, it matures
Hypermucinous, AKA transitional mucosa

Core of muscularis mucosae and vessels with lymphocytes
Trichrome: Core of muscularis mucosae, collagen, and vessels and air bubbles

Actin: extra muscularis mucosae and vessels. Muscle fibers high in the lamina propria

Actin stain: muscle cells from the muscularis mucosae extend high into lamina propria

Old hemorrhage
Old hemorrhage, iron stain

The other half of the polyp

Basal tubules trapped in the muscle core

Mucosa including both basal tubules and lamina propria trapped in the muscle core
This resembles pseudoinvasion in adenomas

**Pseudoinvasion in Adenomas**

Herneation or downgrowth of adenomatous mucosa, both tubules and lamina propria, into the submucosa through breaks in the muscularis mucosae, due to trauma, torsion & ischemia.

**Risk factors:**
- left-sided
- pedunculated
- large

**Summary #1**

**Big red polyp in sigmoid**

Thick mucosa with profound architectural distortion
Multiple kinds of epithelium, all non-neoplastic
Summary #2
Core of smooth muscle and collagen
Muscle fibers extending into the base of the mucosa
We regard these as prolapse changes

Summary #3
Changes common in large, left-sided, pedunculated polyps:
- Old hemorrhage at the base
- Trapping of mucosa at the base (pseudoinvasion in adenomas)

Additional information: diverticula in the same area as the polyp

Polypoid prolapsing mucosal folds in diverticular disease (Kelly polyp)

Mucosal folds, actually submucosal and muscle folds in diverticulosis

Thin accordion-like folds  Thick bulbous folds

The tops of one or more of these thick folds can be dragged into the lumen as a polyp

Like the polyp I just presented, the Kelly polyps had old hemorrhage and smooth muscle in the lamina propria coming from the muscularis mucosae
Kelly speculated that these things result from a combination of venous congestion and mucosal redundancy secondary to spastic contraction of the muscularis propria.

18 of 32 polyps were in the sigmoid. No mention of diverticulosis

They had the same smooth muscle prolapse changes and old hemorrhage as did the Kelly polyps.

A lot of these polyps were probably diverticulosis-associated.

Not much literature on these after the initial Japanese report.
Whenever you see such a funny polyp in the sigmoid, check for diverticulosis.

Prolapse is common in the distal gut, especially in the rectum. Wherever it occurs, it has the mixture of stromal overgrowth and epithelial complexity.

An example: 25 yo man

2 years of painless bright red rectal bleeding with every bowel movement.

No defecation problems.

He sometime feels tissue prolapsing through his anus.

For 3 years he lifted heavy weights, but not in the last 8 months.
3 colonoscopies over this 2 year period, and during all of them, there were....

**Three** 1 cm to 2.5 cm, polyps in the rectum, just above the anorectal junction

These polyps were partly removed each time, and finally they were surgically excised.

Distorted mucosa and thick red basal stroma
Trichrome, the low-tech stain: makes a lot of the red stroma blue

Irregularly oriented muscle fibers from the muscularis mucosae mixed with collagen

Anti-actin: smooth muscle everywhere

Actin stain brings out all the smooth muscle in the lamina propria
Fibromuscular lamina propria. Wild distortion.

Villiform surface

Big smooth muscle bundles high in the lamina propria

Pointed crypts

‘Diamond-shaped’ crypts and mucosal elastin: helpful diagnostic features in biopsies of rectal prolapse

B.F.WARREN, E.K.DANKWA & J.D.DAVIES
Department of Pathology, Bristol Royal Infirmary, Bristol, UK

Histopathology, 1990, 17, 129-134
These 3 polyps contain prolapsed mucosa, including vastly expanded fibrotic *muscularis mucosae*.

**Summary**

Many colonic polyps are not adenomas, serrated thing, juvenile or Peutz-Jeghers polyps.

- Some have too much stroma
- Some have names
- Some don’t. We call them “benign mucosal polyps” (BUMPs)