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.
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.
Diagnosis?
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.
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.
Mucosal invasion by a malignant GIST
The only time a GIST gets into the differential diagnosis is when you want to write a paper about little things like this, and you run out of other things to say.
This paper covering this unimportant polyp became the start of a cottage industry of publications.
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).
Epithelial membrane antigen (EMA)

+ Epithelium

+ Stromal cells
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.
The serrated crypts in these polyps led to a study of colorectal neoplasia-associated mutations. **BRAF** mutations were found in 63% whereas **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.

A sessile serrated adenoma with perineurioma-like stroma
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.

I bet you were dying to know this
Not all of them have serrated crypts. Here is a tiny polyp with the same perineurial cells in the lamina propria.
BRAF mutations: were found in
5 of 8 polyps with serrated crypts (same as SSAs)
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
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
Actin antibody stains the periphery of these inclusions

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.
and... 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 Alizart, BSc, MBBS (Hons),† Christophe Rosty, MD, PhD, FRCPA,*† and Ian S. Brown, MBBS, FRCPA*‡
Resemble the remodeled filiform inflammatory pseudopolyps in UC
UC: Filiform pseudopolyps
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
This polyp has a lot of submucosal stuff
Excess submucosal stroma
Trichrome: mostly collagen
Scattered smooth muscle fibers
#2

This next one is spectacular!
The great gastric collagenoma
Strange sclerotic vessels

Vein Elastosis

Fine elastic fibers. Thick collagen fibers

Artery

Movat pentachrome
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
The amazing polypoid non-polyp
I did not know the names of these 5 polyps, so I went to the world’s greatest textbooks written by the giants in GI pathology, where I was certain I would find them.
I still did not know the names of these 5 polyps, so I went to 2 of the premier sites for high class researchers like myself:
After an exhaustive search, I discovered that these 5 polyps have no names, but they deserve some
We diagnose these things as “benign mucosal polyps”, an abbreviated version of “Benign Unclassified Mucosal Polyps” or BUMPs
Next Polyp: 56 yo man
obese
diabetic
hypertensive
obstructive sleep apnea, chronic renal insufficiency, recurrent urolithiasis.

For this case, this is useless information.
5 years ago, a colonic adenoma was removed, so it was time for his follow-up colonoscopy. Also not important information.
During the current procedure, a pedunculated 13mm sigmoid polyp was found and resected. Sigmoid diverticulosis was also found. These findings are important!
Big pedunculated red-headed polyp
The amputation site, marked by cautery.

One half of the polyp
Very thick mucosa with wild distortion
Serrated crypts near the surface
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
Hypermucinous, AKA transitional mucosa
Core of muscularis mucosae and vessels with lymphocytes
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, iron stain
The other half of the polyp

Basal tubules trapped in the muscle core
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: Adenoma in the submucosa
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 accordian-like folds  Thick bulbous folds
The tops of one or more of these thick folds can be dragged into the lumen as a polyp
Inner muscularis propria pulled up into the stalk of this 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.
Kelly speculated that these things result from a combination of venous congestion and mucosal redundancy secondary to spastic contraction of the muscularis propria.
Another reference probably covering the same polyp
Expanded, distorted mucosa

Actin stain: muscle fibers into mucosa
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 are big ugly polyps
Weight lifting 3 years

BRRB and lumps 2 years

No lifting 8 months
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
No presentation is complete without an immunostain, even if it is pointless!
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
Diagnosis: 3 world’s record polypoid prolapsed mucosae, (with vastly expanded fibrotic muscularis mucosae)
Many colonic polyps are not adenomas, serrated thing, juvenile or Peutz-Jeghers polyps

Some have too much stroma

Some have weird mucosa

Some have both
Some have names
Some don’t. We call those
“benign mucosal polyps” (BMPs)
If you use the BMP diagnoses, remember they have no references, even in

Google ™ or

Wikipedia

Your endoscopists may not like BMP.

If they don’t like it, make up another name that they do like.

You want them to be happy!
If they are happy then they will send you many more polyps with no names and your standard of living will not be compromised