Polypoid lesions of the gastrointestinal tract

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Polypoid lesions of the gastrointestinal tract

A polyp is any lesion that is raised above an epithelial surface.
Polypoid lesions of the gastrointestinal tract

polyp = any lesion that is raised above an epithelial surface

polypoid = something that looks like something that is raised above an epithelial surface

pseudo-polyp = something that looks like something that is raised above an epithelial surface
# Gastric polyps

## Table 12.1 Classification of gastric polyps

<table>
<thead>
<tr>
<th>General category</th>
<th>Subtype</th>
<th>Usual location</th>
<th>Malignant potential</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Epithelial</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hyperplastic/inflammatory</td>
<td>Hyperplastic (and variants)</td>
<td>Antrum and lower body</td>
<td>Low&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Hamartomatous</td>
<td>Peutz-Jeghers</td>
<td></td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td>Juvenile</td>
<td></td>
<td>Low&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>Cowden</td>
<td></td>
<td>Unknown</td>
</tr>
<tr>
<td>Neoplastic</td>
<td>Fundic gland polyp</td>
<td>Body fundus</td>
<td>Low&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>Polypoid dysplasia (adenoma)</td>
<td>Antrum and body fundus</td>
<td>High</td>
</tr>
<tr>
<td></td>
<td>Neuro-endocrine tumor</td>
<td>Body fundus</td>
<td>Low to moderate</td>
</tr>
<tr>
<td><strong>Mesenchymal</strong></td>
<td>Inflammatory fibroid polyp</td>
<td>Antrum</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>Others&lt;sup&gt;c&lt;/sup&gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Miscellaneous</strong></td>
<td>Cronkhite–Canada</td>
<td></td>
<td>Unknown</td>
</tr>
<tr>
<td></td>
<td>Xanthoma</td>
<td></td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>Gastric heterotopic pancreas</td>
<td></td>
<td>Very low</td>
</tr>
</tbody>
</table>

<sup>a</sup>The risk increases with the size of the polyp.

<sup>b</sup>The risk is higher in syndromic polyps than in sporadic lesions.

<sup>c</sup>These include: gastrointestinal stromal tumour (GIST), smooth muscle tumour, glomus tumour, inflammatory myofibroblastic tumour, lipoma (covered in Chapter 14).

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*Morson & Dawson’s Gastrointestinal Pathology, 2013*
Colorectal polyps

Table 3.1 Classification of colorectal polyps

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Epithelial</strong></td>
<td></td>
</tr>
<tr>
<td>Conventional adenoma</td>
<td>Tubular</td>
</tr>
<tr>
<td></td>
<td>Tubulovillous</td>
</tr>
<tr>
<td></td>
<td>Villous</td>
</tr>
<tr>
<td></td>
<td>Flat adenoma</td>
</tr>
<tr>
<td>Serrated polyp</td>
<td>Hyperplastic (microvesicular, goblet cell, mucin poor)</td>
</tr>
<tr>
<td></td>
<td>Sessile serrated adenoma</td>
</tr>
<tr>
<td></td>
<td>Mixed polyp</td>
</tr>
<tr>
<td></td>
<td>Traditional serrated adenoma</td>
</tr>
<tr>
<td></td>
<td>Polypoid adenocarcinoma</td>
</tr>
<tr>
<td><strong>Inflammatory</strong></td>
<td>Mucosal prolapse-associated polyp (includes polypoid</td>
</tr>
<tr>
<td></td>
<td>prolapsing mucosal fold, inflammatory cloacogenic polyp,</td>
</tr>
<tr>
<td></td>
<td>inflammatory myoepithelial polyp, inflammatory cep polyp)</td>
</tr>
<tr>
<td></td>
<td>Inflammatory pseudo-polyp</td>
</tr>
<tr>
<td></td>
<td>Polypoid granulation tissue</td>
</tr>
<tr>
<td></td>
<td>Infection-associated polyp (cytomegalovirus, schistosomiasis)</td>
</tr>
<tr>
<td><strong>Hamartomatous</strong></td>
<td>Peutz-Jeghers polyp</td>
</tr>
<tr>
<td></td>
<td>Juvenile polyp</td>
</tr>
<tr>
<td></td>
<td>Cowden syndrome and Bannayan-Riley-Ruvalcana syndrome</td>
</tr>
<tr>
<td></td>
<td>Cronkite–Canada syndrome</td>
</tr>
<tr>
<td><strong>Stromal</strong></td>
<td>Inflammatory fibroid polyp</td>
</tr>
<tr>
<td></td>
<td>Fibroblastic polyp/pseudo-neuroma</td>
</tr>
<tr>
<td></td>
<td>Schwann cell hamartoma</td>
</tr>
<tr>
<td></td>
<td>Neurilemmoma and nerve sheath tumour variants</td>
</tr>
<tr>
<td></td>
<td>Ganglio-neuroma</td>
</tr>
<tr>
<td></td>
<td>Leiomyoma of muscularis mucosae</td>
</tr>
<tr>
<td></td>
<td>Lipoma</td>
</tr>
<tr>
<td></td>
<td>Lipohyperplasia of ileo-caecal valve</td>
</tr>
<tr>
<td></td>
<td>Gastrointestinal stromal tumour</td>
</tr>
<tr>
<td></td>
<td>Neurofibroma</td>
</tr>
<tr>
<td></td>
<td>Granular cell tumour</td>
</tr>
<tr>
<td><strong>Lymphoid</strong></td>
<td>Prominent lymphoid follicle/rectal tonsil</td>
</tr>
<tr>
<td></td>
<td>Lymphomatous polyposis</td>
</tr>
<tr>
<td><strong>Endocrine</strong></td>
<td>Well differentiated endocrine (carcinoid) tumour</td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td>Prominent mucosal fold</td>
</tr>
<tr>
<td></td>
<td>Everted appendiceal stump or caecal diverticulum</td>
</tr>
<tr>
<td></td>
<td>Elastotic (elastofibromatous) polyp</td>
</tr>
<tr>
<td></td>
<td>Endometriosis</td>
</tr>
<tr>
<td></td>
<td>Mucosal xanthoma</td>
</tr>
<tr>
<td></td>
<td>Melanoma/clear cell sarcoma</td>
</tr>
<tr>
<td></td>
<td>Metastasis</td>
</tr>
</tbody>
</table>
Polypoid lesions of the gastrointestinal tract

Case 1
Case 1

64M. 96mm polypoid mass in stomach. Wedge resection and second resection of adjacent stomach with thickened area.
96mm polypoid lesion
Gastric adenoma

- type 1: intestinal
- type 2: foveolar
- others: pyloric gland adenoma (rare)
**Gastric adenoma**

34 intestinal-type adenomas (56%) in 31 patients

25 gastric-type adenomas (41%) in 18 patients (but 10 with FAP)

intestinal-type adenomas significantly more likely to show:
- high-grade dysplasia
- adenocarcinoma within the polyp
- intestinal metaplasia in the surrounding stomach
- gastritis in the surrounding stomach
- separate adenocarcinoma

Gastric type 2/foveolar adenoma

- rarer
- often large and protuberant
- lower grades of dysplasia
- dysplasia subtle – often mistaken for hyperplastic polyp of the stomach
- less carcinoma
Second resection of adjacent stomach with thickened area
The adjacent mucosa.....
Second resection of adjacent stomach with thickened area
Second resection of adjacent stomach with thickened area
Second resection of adjacent stomach with thickened area

synaptophysin
Gastric neuro-endocrine tumour (NET) (formerly carcinoid)

Four types of gastric NET:

- @ chronic atrophic gastritis
- @ Zollinger-Ellison syndrome
- sporadic ET
- @ intrinsic abnormality of parietal cells

The first is the commonest, is usually benign and often treated very conservatively (EMR/ER/surveillance only)
Context in gastrointestinal neuro-endocrine tumours

Rectum

Stomach

Stomach
Case 1 - learning points

- always look at the background mucosa in any polyp pathology – this patient had chronic atrophic gastritis

- chronic atrophic gastritis predisposes to multiple neuro-endocrine tumours

- these NETs are mainly small, benign and treated conservatively

- BUT you also get adenomas, MANECs and frank adenocarcinomas complicating CAG

- ‘Multiple neuro-endocrine tumours complicating chronic atrophic gastritis: the cloak that hides the dagger’ *Bamford & Shepherd, 2015*
Polypoid lesions of the gastrointestinal tract

Case 1 diagnosis:

Foveolar (type 2) adenoma and neuro-endocrine tumours complicating chronic atrophic gastritis
Polypoid lesions of the gastrointestinal tract

Case 2
Case 2

Female 27 years. Multiple polyps in colon.
Is this dysplasia?
Is this dysplasia?
<table>
<thead>
<tr>
<th>Type of polyp</th>
<th>Pathogenesis</th>
<th>Polyposis syndrome</th>
<th>Distribution</th>
<th>Inheritance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mucosal</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adenoma</td>
<td>Neoplastic</td>
<td>Familial adenomatous polyposis</td>
<td>Initially large bowel but eventually throughout GI tract</td>
<td>Autosomal dominant</td>
</tr>
<tr>
<td>Juvenile</td>
<td>Hamartoma</td>
<td>Juvenile polyposis</td>
<td>Stomach to rectum predominantly large bowel</td>
<td>Autosomal dominant</td>
</tr>
<tr>
<td>Peutz–Jeghers</td>
<td>Hamartoma</td>
<td>Peutz–Jeghers syndrome</td>
<td>All GI tract but mainly small intestine</td>
<td>Autosomal dominant</td>
</tr>
<tr>
<td>Metaplastic</td>
<td>Unknown</td>
<td>Metaplastic polyposis</td>
<td>Large intestine</td>
<td>Sporadic</td>
</tr>
<tr>
<td>Inflammatory (and inflammatory 'cap')</td>
<td>Inflammation</td>
<td>Inflammatory polyposis and 'cap' polyposis</td>
<td>Large intestine</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Lymphoid</td>
<td>Hyperplasia</td>
<td>Lymphoid polyposis</td>
<td>Large and small intestine</td>
<td>Sporadic</td>
</tr>
<tr>
<td>Cowden's</td>
<td>Hamartomas</td>
<td>Cowden's syndrome</td>
<td>All GI tract</td>
<td>Autosomal dominant</td>
</tr>
<tr>
<td>Cronkhite–Canada</td>
<td>Unknown</td>
<td>Cronkhite–Canada syndrome</td>
<td>All GI tract</td>
<td>Sporadic</td>
</tr>
<tr>
<td><strong>Submucosal</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lipoma</td>
<td>Neoplastic</td>
<td>Lipomatous polyposis</td>
<td>All GI tract</td>
<td>Not known</td>
</tr>
<tr>
<td>Neurofibroma</td>
<td>Neoplasia</td>
<td>Neurofibromatosis</td>
<td>All GI tract</td>
<td>Autosomal dominant</td>
</tr>
<tr>
<td>Ganglioneuroma*</td>
<td>?Hamartoma ?Neoplasia</td>
<td>Ganglioneuromatosis or neurofibromatosis</td>
<td>All GI tract</td>
<td>Not known</td>
</tr>
<tr>
<td>Inflammatory fibroid polyp</td>
<td>?Trauma</td>
<td>Inflammatory fibroid polyposis</td>
<td>Mainly small intestine</td>
<td>Usually sporadic, one family apparent sex-linked</td>
</tr>
</tbody>
</table>
Case 2

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Juvenile polyposis

- 1 in 80,000
- Genetics becoming clearer but polymorphic: SMAD4 implicated in 25%; BMPR1A in 20%
- High rates of colorectal cancer: lifetime risk - ? up to 60%
- Dysplasia in *atypical juvenile polyps*
- ? Surveillance  ? Prophylactic colectomy
SMAD 4 mutation is implicated in about a quarter of cases of juvenile polyposis. What does SMAD stand for?

1. small mothers against decapentaplegia

2. serine-methionine-arginine deletion

3. somatic mutation in Aleutian drosophila
SMAD 4 mutation is implicated in about a quarter of cases of juvenile polyposis. What does SMAD stand for?

1. small mothers against decapentaplegia

2. serine-methionine-arginine deletion

3. somatic mutation in Aleutian drosophila
Mutations of the gene BMPR1A are implicated in about 20% of cases of juvenile polyposis. What does BMPR stand for?

1. bowel matrix protein regulator?
2. bone morphogenetic protein receptor?
3. biotin muscle protein resorption?
Mutations of the gene BMPR1A are implicated in about 20% of cases of juvenile polyposis. What does BMPR stand for?

1. bowel matrix protein regulator?

2. bone morphogenetic protein receptor?

3. biotin muscle protein resorption?
Case 2 - learning points

• juvenile polyps are common – commonest polyp in the under 20s – and have classic pathology

• juvenile polyposis causes strange-looking polyps (‘atypical juvenile polyps’) which are multiple although not of the number, usually, seen in FAP (often 50-200)

• atypical juvenile polyps show high levels of dysplasia

• significant cancer risk for JP and it may affect the whole gut
Case 2

Diagnosis: ‘atypical juvenile polyp’ in juvenile polyposis
Polypoid lesions of the gastrointestinal tract

Case 3
Case 3

Female 45 years. 40mm polypoid nodule in ascending colon.
? diagnosis

? immunohistochemistry
Gastrointestinal schwannoma: the peritumoral lymphoid hyperplasia is almost pathognomonic
Gastrointestinal schwannoma

- can occur anywhere in the GI tract, but commonest in the stomach (60-70%), then colorectum

- microscopic features different from conventional schwannomas

- lack NF2 gene mutations unlike conventional schwannomas → probably “different tumours”

- almost always behave in a benign fashion
Gastrointestinal schwannoma

- 33 cases: 4 oesophagus, 24 stomach, 2 colon and 3 rectum
- mainly within muscularis propria and/or subserosa
- none encapsulated but all well circumscribed
- 32/33 cuff of lymphocytes
- only 12 originally called schwannoma
- S100 and vimentin positive; CD117, CD34, ASMA, desmin negative
- all showed some nuclear pleomorphism: ? longevity: no mitoses
- all benign

Hou et al, Histopathology 2006
Gastric schwannoma showing central ulcer

Levy et al. AJR 2005;184: 797-802.
Case 3 - learning points

• not all spindle cell tumours of the gut are GISTs

• all larger GISTs are potentially malignant and there are many benign mimics

• smaller stromal tumours, especially in the stomach and colorectum, often present as polyps

• in bowel cancer screening, you see any number of unusual small polyps including unusual stromal tumours (perineurioma, epithelioid mucosal neuroma, neurofibroma, leiomyoma of the muscularis mucosae, etc)
Case 3

Diagnosis: gastrointestinal schwannoma in colon
Case 4

68M. Three month history of diarrhoea, especially mucus diarrhoea, loss of weight and fatigue. Colonoscopy.
Gloucestershire Cellular Pathology Laboratory

Colonoscopy

Instrument 2500202

Report
The bowel preparation with Moviprep was Excellent/Good. The instrument was inserted to the Caecum.
unique appearance
rectum and lower sigmoid oedematous and inflammed
above this extensive continuous symmetrical inflammation to caecum, with huge polyps/pseudopolyps
Mult Bx taken

Diagnosis
Inflammatory bowel disease.

Procedures
Biopsy: Vial 1 from whole colon x 1.
Gloucestershire Cellular Pathology Laboratory

Biopsy pathology
‘in keeping with active chronic inflammatory bowel disease of ulcerative colitis type’
Management

- working diagnosis: chronic inflammatory bowel disease, probably ulcerative colitis with inflammatory polyp formation
- treated with mesalazine and high dose steroids with poor response
- infliximab tried but continued deterioration
- continuing severe mucus diarrhoea and hypokalaemia
- subtotal colectomy one month after initial presentation
Colon - low and high power
Histology of ileum and typical colon
Polypoid areas in colon
Further management

- treated as inflammatory bowel disease of ulcerative colitis type
- but discussed in MDTM and agreed that a second opinion was required
That second opinion – guess who by?!?

“Now, normally, I would be a little hesitant about making dogmatic diagnoses in second opinion practice because this can be dangerous, perhaps particularly in somebody who has already been extensively treated, as in this case.

However, I am going to make a dogmatic diagnosis here. I think this is **Cronkhite-Canada syndrome**.”

“Cronkhite-Canada syndrome is an abnormality of ectodermal tissues, possibly a defect of apoptosis. It is an acquired condition, usually presenting in the 60s and is slightly more common in males. The colon is universally affected but most patients have gastric and small bowel involvement (an upper GI endoscopy in this patient would be interesting). To fully confirm the diagnosis, one requires to confirm the presence of the extra-alimentary manifestations of the disease (alopecia, hyperpigmentation, marked oedema, cataracts and onycholysis). A quick check for the clinician would be to look at this man’s fingernails and to make sure he has not got a wig......”
“Because of his recent diagnosis of Cronkhite-Canada syndrome, I brought him in for a gastroscopy which revealed extensive polyps in the distal half of his stomach and also his proximal duodenum.”
Generalized gastrointestinal polyposis — an unusual syndrome of polyposis, pigmentation, alopecia and onychotrophia

Leonard W. Cronkhite, Jr., M.D.†, and Wilma Jeanne Canada, M.D.‡

The Cronkhite-Canada Syndrome

AN ANALYSIS OF CLINICAL AND PATHOLOGIC FEATURES AND THERAPY IN 55 PATIENTS

ERNO S. DANIEL, M.D.*, SHELLY L. LUDWIG, M.D., KLAUS J. LEWIN, M.D., RUTH M. RUPRECHT, M.D., Ph.D., GEORGE M. RAJACICH, M.D., AND ARTHUR D. SCHWABE, M.D.

**Figure 1.** Age of onset and sex distribution in the 55 patients.

**CRONKHITE-CANADA SYNDROME**

Symptoms in 55 Patients

- Diarrhea: 46/50
- Weight Loss: 43/43
- Abdominal Pain: 24/30
- Anorexia: 20/24
- Weakness: 21/23
- Hemorrhage: 13/17
- Vomiting: 10/15
- Hypoglycemia: 10/13
- Paresthesias: 6/9
- Xerostomia: 4/6

**Legend:**
- Males
- Females

CRONKHITE-CANADA SYNDROME
Physical Findings in 55 Patients

Number of Patients

Nail Changes 51/54
Hair Loss 49/50
Hyperpigmentation 45/52
Edema 30/33
Tetany 10/13
Glossitis 8/8
Cataracts 4/7

Fig. 4. Dystrophic changes in the fingernails (Case 34).
Possible Associated Conditions

Carcinomas of the gastrointestinal tract were found in eight patients (14.5%) as previously detailed. Duodenal ulcers were present at the time of presentation in four (16, 22, 37, case 55) and antedated the symptoms of CCS by more than eight years in an additional three patients (20, 26, 27). Thrombo-embolic episodes, attributed to dehydration, congestive heart failure or coagulation abnormalities, were noted in seven patients (2, 14, 21, 26, 41, 50, 62).
**Cronkhite-Canada syndrome**

- a disease of ectoderm
- polyposis of the GI tract
- characteristic skin and nail changes
- 50s to 60s
- M > F
- likely a defect of ectodermal apoptosis
- mucus diarrhoea is a characteristic presentation
- poor prognosis – protein-losing enteropathy and colopathy, electrolyte disturbances
- colorectal neoplasia markedly increased
Polypoid lesions of the gastrointestinal tract

Case 4 diagnosis:

Cronkhite-Canada syndrome
Take home messages:
Polypoid lesions of the gastrointestinal tract

- the term ‘polyp’ merely describes any lesion raised above an epithelial surface
- in every part of the GI tract, there are many causes……..
- colonoscopists tend to equate ‘polyp’ with ‘adenoma’ and this can be very misleading
- it is always important to look at the background mucosa because this can give important clues about the diagnosis and pathogenesis (eg neuro-endocrine tumours and chronic atrophic gastritis; polyposis syndromes, etc)
- in bowel cancer screening, you see any number of unusual small polyps including neuro-endocrine tumours and unusual stromal tumours (perineurioma, epithelioid mucosal neuroma, neurofibroma, leiomyoma of the muscularis mucosae, etc)
Thank you for listening!