Serrated Polyps: Detection, Treatment, Surveillance

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Disclosures

• Speakers’ Bureau
  • Cook Medical
Main Messages

- Serrated polyp-adenocarcinoma sequence
- Malignant risk of serrated polyps of colorectum
- Management and Surveillance: New guidelines needed
Colorectal Polyps

- **Adenoma**
  - Tubular adenoma
  - Tubulovillous adenoma
  - Villous adenoma
- **Hyperplastic polyp/Serrated polyp**
- **Harmatoma**
  - Juvenile polyp
  - Peutz-Jeghers polyps
- **Inflammatory polyp**
- **Lymphoid aggregates**
Serrated Polyps (WHO)

- **Hyperplastic polyp (HP):** Small distal
  - Microvesicular (MVHP)
  - Globet-cell rich (GCHP)
  - Mucin-poor
- **Traditional serrated adenoma (TSA)**
  - Distal (rare)
- **Sessile serrated adenoma/polyp (SSA/P)**
  - Proximal, large
- **Sessile serrated adenoma/polyp with dysplasia (SSA w/ dysplasia)**

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Sessile Serrated polyp (SSA/P)  

Traditional Hyperplastic polyp

But not so classic all the time and not so easy for pathologists to differentiate..... High inter-observer variability.
82 y M – Transverse Colon-SSP-mucus cap
38 y F- Splenic flexure polyp- SSP
52y F - Transverse colon polyp - SSP - No mucus cap, morphologically similar to HP
57 y F- Rectum- TSA (villous pattern, mostly rectal)
## Incidence of Colorectal Polyps

### Table 3. Polyp Characteristics

<table>
<thead>
<tr>
<th>Polyp type</th>
<th>Number (n = 414)</th>
<th>Location</th>
<th>Size (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Proximal</td>
<td>Distal</td>
</tr>
<tr>
<td>Serrated polyps</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Goblet cell rich</td>
<td>66 (16)</td>
<td>21 (32)</td>
<td>45 (68)</td>
</tr>
<tr>
<td>Microvesicular</td>
<td>54 (13)</td>
<td>14 (26)</td>
<td>40 (74)</td>
</tr>
<tr>
<td>SSA</td>
<td>36 (9)</td>
<td>27 (75)</td>
<td>9 (25)</td>
</tr>
<tr>
<td>TSA</td>
<td>3 (0.7)</td>
<td>2 (66)</td>
<td>1 (33)</td>
</tr>
<tr>
<td>MP</td>
<td>7 (1.7)</td>
<td>4 (57)</td>
<td>3 (43)</td>
</tr>
<tr>
<td>Conventional adenomas</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tubular adenoma</td>
<td>237 (57)</td>
<td>176 (74)</td>
<td>61 (26)</td>
</tr>
<tr>
<td>Tubulovillous adenoma</td>
<td>11 (2.7)</td>
<td>6 (55)</td>
<td>5 (45)</td>
</tr>
</tbody>
</table>

**NOTE.** All values are expressed as n (%).
Serrated Polyposis Syndrome (SPS)

- Extreme phenotype, multiple SSA/Ps, high risk of colon cancer (25%–42% - our own study-16%)
  - Underlying genetic basis is not known

- $\geq 5$ serrated polyps proximal to sigmoid colon with 2 or more $> 10 \text{mm}$ Or

- Any number of polyps proximal to sigmoid colon in subject with FDR with SPS Or

- $> 20$ serrated polyps of any size distributed throughout colon
Risk Factors for SSA/P

The Adenoma Carcinoma Sequence

10-15 Years

Normal epithelium → Abnormal epithelium → Small adenoma → Large adenoma → Colon carcinoma
Molecular Pathways to CRC

- Chromosomal Instability: Mutations, LOH, Aneuploidy - 70%
- Microsatellite Instability: Lynch Syndrome - <5%
- CIMP Pathway: Serrated/Epigenetic - 25%

Normal Epithelium → Colon Carcinoma
Serrated Polyps and CRC

- Genetic and pathological study →
  ~ 15-20% CRC from serrated pathway

- Large and proximal serrated polyps →
  more synchronous advanced neoplasia

- Sessile serrated adenomas →
  high metachronous CRC rate
Colorectal serrated pathway cancers- Disease Burden-2014
Serrated adenocarcinoma histology

- Serrated architecture
- Eosinophilic cytoplasm
- Villous structure (TSA)

Cancer risk in SSA/P’s

- Danish databases (1977-2009)
- 2045 CRC cases and 8105 controls
- The 10 year risk for CRC:
  - 4.4% - SSA/P’s with dysplasia
  - 4.5% - TSA’s
  - 2.3% - Conventional adenomas.

Proximal and Large Hyperplastic and Nondysplastic Serrated Polyps Detected by Colonoscopy Are Associated With Neoplasia

- 3121 asymptomatic patients (aged 50–75 years) who had screening colonoscopies; 1371 had subsequent surveillance.

RESULTS

- Patient with proximal ND-SP were more likely to have advanced neoplasia (17.3% vs 10.0%; OR, 1.90; 95% CI, 1.33-2.70).
- Patients with large ND-SP were also more likely to have synchronous advanced neoplasia (OR, 3.37; 95% CI, 1.7-6.65).

During surveillance,

- patients with baseline proximal ND-SP and no neoplasia were more likely to have neoplasia compared with subjects who did not have polyps (OR, 3.14; 95% CI, 1.59-6.20).
- Among patients with advanced neoplasia at baseline, those with proximal ND-SP were more likely to have advanced neoplasia during surveillance (OR, 2.17; 95% CI, 1.03-4.59).
The incidence of subsequent CRCs was significantly higher in SSA patients than in control patients with HP (12.5% vs. 1.8%) and AP (12.5% vs. 1.8%). All of the subsequent CRCs or APs with HGD developed in the proximal colon. Four of the 5 CRCs demonstrated a high microsatellite instability phenotype.

We conclude that SSAs are high-risk lesions, with 15% of the SSA patients developing subsequent CRCs or APs with HGD.

support close endoscopic follow-up in patients harboring SSA
Management and Surveillance

- Complete removal of all serrated lesions
  - Except diminutive sigmoid/rectal lesions

- Multiple diminutive (<5mm) serrated appear lesion should be randomly Bx

- Piecemeal resection/ possible incomplete removal → surveillance colonoscopy 3-6 mth

- Surgical resection: not endoscopically resectable, numerous large serrated lesion of proximal colon, Serrated polyposis syndrome

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Figure 7. The risk of developing colorectal cancers through the serrated pathway parallels the number, size, type, and anatomic distribution of the serrated polyps. HPs, hyperplastic polyps; SSA/P, sessile serrated adenoma/polyp.
<table>
<thead>
<tr>
<th>Histology</th>
<th>Size</th>
<th>Number</th>
<th>Location</th>
<th>Interval in years</th>
</tr>
</thead>
<tbody>
<tr>
<td>HP</td>
<td>&lt; 10 mm</td>
<td>Any number&lt;sup&gt;b&lt;/sup&gt;</td>
<td>Rectosigmoid</td>
<td>10&lt;sup&gt;c&lt;/sup&gt;</td>
</tr>
<tr>
<td>HP</td>
<td>≤ 5 mm</td>
<td>≤ 3</td>
<td>Proximal to sigmoid</td>
<td>10</td>
</tr>
<tr>
<td>HP</td>
<td>Any</td>
<td>≥ 4</td>
<td>Proximal to sigmoid</td>
<td>5</td>
</tr>
<tr>
<td>HP</td>
<td>&gt; 5 mm</td>
<td>≥ 1</td>
<td>Proximal to sigmoid</td>
<td>5</td>
</tr>
<tr>
<td>SSA/P or TSA</td>
<td>&lt; 10 mm</td>
<td>&lt; 3</td>
<td>Any</td>
<td>5</td>
</tr>
<tr>
<td>SSA/P or TSA</td>
<td>≥ 10 mm</td>
<td>1</td>
<td>Any</td>
<td>3</td>
</tr>
<tr>
<td>SSA/P or TSA</td>
<td>&lt; 10 mm</td>
<td>≥ 3</td>
<td>Any</td>
<td>3</td>
</tr>
<tr>
<td>SSA/P</td>
<td>≥ 10 mm</td>
<td>≥ 2</td>
<td>Any</td>
<td>1–3&lt;sup&gt;d&lt;/sup&gt;</td>
</tr>
<tr>
<td>SSA/P w/dysplasia</td>
<td>Any</td>
<td>Any</td>
<td>Any</td>
<td>1–3&lt;sup&gt;e&lt;/sup&gt;</td>
</tr>
</tbody>
</table>
### Table 1. 2012 Recommendations for Surveillance and Screening Intervals in Individuals With Baseline Average Risk

<table>
<thead>
<tr>
<th>Baseline colonoscopy: most advanced finding(s)</th>
<th>Recommended surveillance interval (y)</th>
<th>Quality of evidence supporting the recommendation</th>
<th>New evidence stronger than 2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>No polyps</td>
<td>10</td>
<td>Moderate</td>
<td>Yes</td>
</tr>
<tr>
<td>Small (&lt;10 mm) hyperplastic polyps in rectum or sigmoid</td>
<td>10</td>
<td>Moderate</td>
<td>No</td>
</tr>
<tr>
<td>1–2 small (&lt;10 mm) tubular adenomas</td>
<td>5–10</td>
<td>Moderate</td>
<td>Yes</td>
</tr>
<tr>
<td>3–10 tubular adenomas</td>
<td>3</td>
<td>Moderate</td>
<td>Yes</td>
</tr>
<tr>
<td>&gt;10 adenomas</td>
<td>&lt;3</td>
<td>Moderate</td>
<td>No</td>
</tr>
<tr>
<td>One or more tubular adenomas ≥10 mm</td>
<td>3</td>
<td>High</td>
<td>Yes</td>
</tr>
<tr>
<td>One or more villous adenomas</td>
<td>3</td>
<td>Moderate</td>
<td>Yes</td>
</tr>
<tr>
<td>Adenoma with HGD</td>
<td>3</td>
<td>Moderate</td>
<td>No</td>
</tr>
<tr>
<td><strong>Serrated lesions</strong></td>
<td><strong>Sessile serrated polyp(s) &lt;10 mm with no dysplasia</strong></td>
<td><strong>Low</strong></td>
<td><strong>NA</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Sessile serrated polyp(s) ≥10 mm</strong></td>
<td><strong>Low</strong></td>
<td><strong>NA</strong></td>
</tr>
<tr>
<td>OR</td>
<td>Sessile serrated polyp with dysplasia</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OR</td>
<td>Traditional serrated adenoma</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Serrated polyposis syndrome&lt;sup&gt;a&lt;/sup&gt;</td>
<td>1</td>
<td>Moderate</td>
<td>NA</td>
</tr>
</tbody>
</table>

**NOTE.** The recommendations assume that the baseline colonoscopy was complete and adequate and that all visible polyps were completely removed.

NA, not applicable.

<sup>a</sup>Based on the World Health Organization definition of serrated polyposis syndrome, with one of the following criteria: (1) at least 5 serrated polyps proximal to sigmoid, with 2 or more ≥10 mm; (2) any serrated polyps proximal to sigmoid with family history of serrated polyposis syndrome; and (3) >20 serrated polyps of any size throughout the colon.
Notes
Thank you!