Conflict of interest statement

I herewith declare anything that may potentially be viewed as a conflict of interest during the past three years such as paid or unpaid consultancies, business interests or sources of honoraria payments:

*Nothing to declare*
Proximal serrated polyp detection rate and risk of interval post-colonoscopy colorectal cancer

D.E.F.W.M. van Toledo, M.D.1*, J.E.G. IJspeert, M.D. 1*, P.M.M. Bossuyt, Ph.D.2, A.G.C. Bleijenberg, M.D. 1, M.E. van Leerdm, M.D.3,4, M. Van der Vlugt, M.D. 1, I. Lansdorp-Vogelaar, Ph.D.5, M.C.W. Spaander, M.D.6, E. Dekker, M.D.1
Background

- Adenoma detection rate (ADR) is inversely associated with interval post-colonoscopy colorectal cancer (interval PCCRC)

  “All cancers detected after negative colonoscopy for CRC and before advised surveillance interval”

- Interval PCCRCs develop frequently from serrated polyps

- Proximal serrated polyp detection rate (PSPDR) as new quality indicator?

- PSPDR leaves out histopathological differentiation of serrated polyps
Aim

- To evaluate the association between endoscopists’ PSPDR and their patients’ risk for interval PCCRC
Method

- National FIT-based screening program
- January 2014 - December 2020
- Colonoscopy screening database + National Cancer Registry
- Multilevel proportional-hazard regression analysis
Method: flowchart

329,104 Colonoscopies were evaluated for eligibility

277,555 Colonoscopies were included to calculate the PSPDR

51,549 Colonoscopies were excluded wherein:
  27,322 A lesion suspicious for CRC was detected
  5,590 Cecal intubation was not achieved
  5,510 Boston Bowel Preparation Score was below six
  1,855 Procedure was prematurely aborted
  992 An endoscopist did the procedure who had performed fewer than 75 colonoscopies for the screening program during the study period
  437 The follow-up advice was a referral for CT-colonography or no follow-up advice was registered
  9,840 Lesions were sent for pathological evaluation but pathology data were missing
  3 CRC was registered before the date of colonoscopy

38,338 Colonoscopies were excluded wherein:
  15,916 Follow-up was less than 6 months
  911 CRC was detected within 6 months after colonoscopy
  13,909 Follow-up advice was an early evaluation of the polypectomy scar for completeness
  7,602 Follow-up advice was a referral for further endoscopic treatment

239,217 Colonoscopies were included to calculate interval PCCRCs
## Results: Baseline characteristics

<table>
<thead>
<tr>
<th></th>
<th>Colonoscopies (n=277,555)</th>
<th>Interval PCCRC (n=305)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, years</td>
<td>68</td>
<td>(63-72)</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>115,240</td>
<td>(42%)</td>
</tr>
<tr>
<td>Male</td>
<td>162,315</td>
<td>(58%)</td>
</tr>
<tr>
<td>Endoscopists, (n=441)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Median PSPDR, %</td>
<td>11.9</td>
<td>(8.3 -15.8)</td>
</tr>
<tr>
<td>Median ADR, %</td>
<td>66.3</td>
<td>(61.4-69-9)</td>
</tr>
</tbody>
</table>
Results: linear association PSPDR and interval PCCRC

- PSPDR 1%↑ = 7%↓ interval PCCRC risk

- Association also in subgroups:
  - females/males
  - proximal/distal interval PCCRC
  - advanced/non-advanced interval PCCRC
### Results: proximal /distal interval PCCRC

<table>
<thead>
<tr>
<th>Proximal</th>
<th>HR (95% CI)*</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSPDR</td>
<td>0.94</td>
<td>(0.91 - 0.98)</td>
</tr>
<tr>
<td>Age</td>
<td>1.05</td>
<td>(1.02 - 1.08)</td>
</tr>
<tr>
<td>Sex, female</td>
<td>1.54</td>
<td>(1.11 - 2.12)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Distal</th>
<th>HR (95% CI)*</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSPDR</td>
<td>0.91</td>
<td>(0.87 - 0.94)</td>
</tr>
<tr>
<td>Age</td>
<td>1.06</td>
<td>(1.02 - 1.09)</td>
</tr>
<tr>
<td>Sex, female</td>
<td>0.67</td>
<td>(0.47 - 0.95)</td>
</tr>
</tbody>
</table>

- Proximal cancers → females have higher risk
Results: association between PSPDR quintiles and interval PCCRC

- PSPDR in highest quintile $\rightarrow$ 66% lower interval PCCRC risk
Results: PSPDR and ADR together?
Conclusion

• Higher proximal serrated polyp detection rate (PSPDR) is associated with lower interval PCCRC risk

• PSPDR and ADR are only moderately correlated

• Endoscopists with a high PSPDR *and* high ADR have the lowest risk of interval PCCRC in their patients

→ We validated the PSPDR as new colonoscopy quality indicator in a FIT-based screening program
Implications

• Validation in different settings beyond FIT screening

• Training of endoscopists on awareness and diagnosis of serrated polyps

• Accurate classification of serrated polyps in endoscopy reports is essential to enable PSPDR registration
For full paper: The Lancet Gastroenterology & Hepatology (online publication May 9th 2022)

Contact: d.e.vantoledo@amsterdamumc.nl