Diminutive polyps:
Real time endoscopic histology

Predict, Resect and discard:
Yes we can!
(at least in some hands)...

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Hôpital Avicenne
AP-HP & Paris 13 University
France
Why it is important?

Increase in Adenoma detection rate (ADR)
 mostly small polyps

Increased time to detect and resect small polyps & Increased costs
Polyp histological examination
A standard and critical step

• Characterization of carcinomas and advanced adenomas (Size, HGD, Villous component)

• Surveillance recommendation depends:
  - size (> or < 10mm)
  - number of adenomas
  - presence of advanced histology.
Diminutive polyp ≤ 5 mm

- **Cancer**: 0 to 0.05%
- **HGD**: 1 to 3%
- **Advanced Adenoma**: < 4%
- **Adenoma**
  - Distal colon: 14-40%
  - Proximal colon: 50-65%
- **Hyperplastic polyps**
Diminutive polyp evaluation
clinical issues

• Some polyp are not retrieved
  - surveillance interval estimated according the possible worst figure?

• All histology are not adequate
  - Good agreement in differentiating hyperplastic polyp from adenoma
  - Poor agreement for villous component and dysplasia grade
  - HPs are not equal (« the serrated issue »)
Ressources optimization

• Risk associated with no necessary polypectomy
• Pathological cost
• Need for a new visit to communicate the post-pathological surveillance interval

• Changes in surveillance interval
  - Expected delay in post polypectomy surveillance in only 1-5% of patients?
  - Anticipating post polypectomy surveillance in few patients?
ASGE PIVI initiative « requirements »

• Accuracy in prediction of post colonoscopy surveillance intervals to allow diminutive colorectal polyps ≤ 5 mm in size to be resected and discarded
  - Should provide > 90% agreement in post-polypectomy surveillance intervals

• Accuracy required to leave recto-sigmoid polyp ≤ 5 mm in size in place
  - Avoid polypectomy risk and cost
  - Should provide > 90% negative predictive value
ASGE PIVI strategy

- <5 mm polyp
  - EC-prediction
    - High confidence
      - Hyperplastic
        - Rectosigmoid
          - Discard
  - Low confidence
    - Adenomatous
      - Non rectosigmoid
        - Resect
  - Resect
Real time endoscopic « histology »

• WL: inaccurate with low sensitivity
• HD WL: increase in sensitivity for small polyps
• FUSE
• Chromoendoscopy
• Electronic chromoendoscopy (EC)
  - NBI
  - FICE
  - i-scan
• Endomicroscopy
• Others
Nice classification

Color

Hyperplastic
Same or lighter in color than surrounding area

Adenoma
More brown relative to surrounding area
(Verify brown color is coming from vessels)

Same

Lighter

Brown

Courtesy Dr D Rex
Nice classification: Vessels

Hyperplastic:
None, or isolated lacy vessels may be present coursing across the lesion

Adenoma:
Thick brown vessels surrounding white structures

None, Isolated lacy vessels, Thick brown vessels

Courtesy Dr D Rex
Nice classification
Surface pattern

Hyperplastic
Dark or white spots of uniform size, or homogenous absence of pattern

Adenoma
Oval, tubular or branched white structures surrounded by brown vessels

Courtesy Dr D Rex
### NICE classification

#### Polyp classification using NBI

<table>
<thead>
<tr>
<th>Color</th>
<th>Same or lighter than background</th>
<th>Browner relative to background</th>
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<tbody>
<tr>
<td></td>
<td>(verify color arises from vessels)</td>
<td></td>
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<tr>
<td>Vessels</td>
<td>None, or isolated lacy vessels</td>
<td>Thick brown vessels surrounding</td>
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<tr>
<td></td>
<td>coursing across the lesion</td>
<td>white structures*</td>
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<tr>
<td>Surface Pattern</td>
<td>Dark or white spots of uniform size,</td>
<td>Oval, tubular or branched white</td>
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<td></td>
<td>or homogenous absence of pattern</td>
<td>structures* surrounded by brown vessels</td>
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</table>

#### Most likely pathology

<table>
<thead>
<tr>
<th>Hyperplastic</th>
<th>Adenoma</th>
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* These structures may represent the pits and the epithelium of the crypt opening
Should we 'Remove and discard': Validation of the concept

- DISCARD trial (Detect InSpect ChAracterize Resect and Discard)

  130 patients

  82 patients in whom surveillance interval based on OD was possible

  - 80 patients had same surveillance interval between OD and formal histology
  - 2 patients by BSG had a later FU after formal histology
  - 0 patient by BSG had a shorter FU after formal histology

- Potential to save 77% of costs (i.e. 22000 USD)

  Ignatovic et al., Lancet Oncol 2009
Accuracy of NBI-EC in predicting histology of diminutive polyps

- NBI prediction for adenomatous histology in polyps ≤ 5 mm
  - 5 centers
  - 278 patients (mean age, 63 years; 58% male)
  - 429 ≤ 5 mm (60% adenomatous) were retrieved for histologic analysis

- High confidence in 88%
- Correct surveillance interval in 92%

<table>
<thead>
<tr>
<th></th>
<th>Se</th>
<th>90%</th>
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<tbody>
<tr>
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<td>Sp</td>
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<tr>
<td>Accuracy</td>
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</table>

*Repici et al, Gastrointest Endosc 2013*
Accuracy of EC in predicting histology of distal diminutive polyps by non experts

- 1673 patients
- 1858 ≤ 5 mm (62% adenomatous) were retrieved for histologic analysis

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<tr>
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Accuracy > 90%

*Ladabaum et al, Gastroenterol 2013*
Some experts achieved expected goals but not all gastroenterologists

<table>
<thead>
<tr>
<th>Author</th>
<th>Country</th>
<th>No. of points</th>
<th>No. of polyps</th>
<th>High/low confidence</th>
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Hassan et al, Clin Endosc 2013
Surveillance agreement
non experts

- 13% shorter and 7% longer surveillance intervals
- Below the 90% agreement recommended by PIVI
- Idem Rogart et al, Rastogi & al DDW 2013

Ladabaum et al, Gastroenterol 2013
Predictors of accuracy

• High confidence assessment with NBI was predictor associated with accuracy
• Endoscopist’s years in practice, colonoscopy volume, adenoma detection rate, ex vivo pretest score, and change in score were not associated with accuracy
• Odds ratios for being a true adenoma varied by location ($P \leq 0.001$):
  - 7.5 (95% CI, 3.6 - 15.3) proximal to the rectosigmoid

Ladabaum et al, Gastroenterol 2013
Conclusion

- Diminutive polyps are more often detected
- The risk of carcinoma and advanced adenoma is very low
- HDE + electronic chromoendoscopy allow to differentiate hyperplastic polyps from adenoma
- Validation studies have been done
- Cost effective
Predict, Resect and discard: Yes we can!