Diminutive polyps
Real time endoscopic histology

Predict, Resect and discard: Not yet!

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CRNH IdF
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Ressources optimization

- Risk associated with not necessary polypectomy
- High pathological cost
  - Pathology costs are not similar according to various health care systems
  - i.e 33 to 61 euros in France
- Need for a new visit to communicate the postpathological surveillance interval

- Change in surveillance interval
  - Delay in post polypectomy surveillance
  - Anticipating post polypectomy surveillance
Diminutive polyp (≤ 5 mm)

- Cancer : 0.05%
- HGD : 1-3%
- Advanced Adenoma (HGD or TV) : 2-4%
- Adenoma
  - Distal : 14-40%
  - Proximal : 50-65%
- Hyperplastic polyp

- Histological examination is a critical step
- Surveillance recommendation
The effect of colonoscopy preparation quality on adenoma detection rates

Eric A. Sherer, PhD,¹ Timothy D. Imler, MD,²,³ Thomas F. Imperiale, MD¹,²,³

<table>
<thead>
<tr>
<th></th>
<th>Diminutive (1-5 mm), OR (95% CI)</th>
<th>Small (6-9 mm), OR (95% CI)</th>
<th>Large (≥10 mm), OR (95% CI)</th>
<th>Subcentimeter (1-9 mm), OR (95% CI)</th>
<th>Overall, OR (95% CI)</th>
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<td>0.45 (0.36-0.58)</td>
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<td>0.55 (0.44-0.69)</td>
<td>0.57 (0.46-0.71)</td>
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<td>2004</td>
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<td>0.58 (0.47-0.73)</td>
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<td>2005</td>
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<td>2006</td>
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<td>2007</td>
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<td>2008</td>
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(Gastrointest Endosc 2012;75:545-53.)
Real time endoscopic « histology »

**Methods**

- WL ?
- HD WL : increase in sensitivity for small polyps
- Chromoendoscopy
- Electronic chromoendoscopy (EC)
  - NBI
  - FICE
  - i-scan

- Endomicroscopy
- Others
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
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
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
# NICE classification

## Polyp classification using NBI

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

* These structures may represent the pits and the epithelium of the crypt opening
ASGE PIVI strategy

Diminutive Polyp

EC

Low confidence
- Resect

High confidence
- Adenomatous
  - Resect
- Hyperplastic
  - Recto-Sigmoid
    - Resect
  - Not rectosigmoid
    - Discard
    - Resect
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
Diminutive polyp evaluation

• Some polyps are not retrieved
  - Surveillance interval estimated according to 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
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%

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<tr>
<th></th>
<th>Se</th>
<th>90%</th>
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<td>Vpp</td>
<td>88%</td>
<td></td>
</tr>
<tr>
<td>Vpn</td>
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<tr>
<td>Accuracy</td>
<td>&gt; 90%</td>
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Repici et al, Gastrointest Endosc 2013
Accuracy of NBI-EC in predicting histology of distal diminutive polyps

- 224 consecutives colonoscopies
- 77 with 121 distal polyps
- Leaving distal diminutive polyps in place?

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<th>High Confidence (91%)</th>
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<tr>
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<tr>
<td>Accuracy</td>
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</table>

Neumann H et al, DDW 2013
Some experts achieved expected goals but not all gastroenterologists

<table>
<thead>
<tr>
<th>Author</th>
<th>Country</th>
<th>No. of points</th>
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<td>Ignjatovic et al.</td>
<td>UK</td>
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<td>Rastogi et al.</td>
<td>USA</td>
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<td>Gupta et al.</td>
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<td>Hewett et al.</td>
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<td>Ladabaum et al.</td>
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Hassan et al, Clin 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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<table>
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<td>Se</td>
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<td>Sp</td>
<td>78%</td>
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<tr>
<td>Vpp</td>
<td>91%</td>
</tr>
<tr>
<td>Vpn</td>
<td>89%</td>
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Accuracy > 90%
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 ($P < 0.001$):
  - 7.5 (95% CI, 3.6 - 15.3) proximal to the rectosigmoid

Ladabaum et al, Gastroenterol 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
Accuracy of i-scan-EC in predicting histology of «polyps» in daily routine

- NBI prediction for histology in polyps ≤5 mm
  - 10 private centers
  - HD/i-scan
  - 1069 screening colonoscopies
  - All polyps

- Correct surveillance interval in 69%

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<td>Se</td>
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Accuracy > 90%
Magnification did not increase NBI performance

- NBI prediction
  - 40 patients
  - One endoscopist
  - « Random » magnification
  - 102 polyps (mean 5.2 mm)

<table>
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<tr>
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<tr>
<td>Accuracy</td>
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Kim et al, DDW 2013
Is NBI-EC mandatory?

- 315 patients with 606 diminutive polyps
- High confidence in histological prediction: 74%
- Accuracy of surveillance: 82%
- NBI did not improve accuracy vs HD WL only
- Community and academic gastro equally accurate

Vu HT et al, DDW 2013

Singhal et al, DDW 2013
Basford et al, DDW 2013 (idem i-scan, n=209 polyps in 84 pts)
Is NBI-EC mandatory?

- 318 FIT+
  - 24 endoscopists in 2 hospitals
  - Olympus 160 and 180 series

- Suboptimal correct « optical » diagnosis
  - 523/460 adenomas (Se 88%, Sp 48%)
  - 74/185 HPs (Se 40%, Sp 14%)

Stegeman et al, DDW 2013
Training issue

Ladabaum et al, Gastroenterol 2013
« Gastro » issue

- Gasto are:
  - Aware of PIVI statement (70%)
  - Of these 70%, only 60% willing to implement

- Resistance due to
  - new paradigm
  - Skepticism
  - Medico-legal issues (30%)
  - Lack of incentive (75 $ for private practice)

Soudagar et al, DDW 2013
« Legal » issue
« Ethical » issue

• For your colonoscopy, do you prefer an histological evaluation by your well known pathologist or a discard process?
Predict, Resect and discard: Not yet!
PENDOMICROSCOPY: CELLVIZIO
## Diagnostic performances of pCLE, eCLE and NBI

<table>
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<tr>
<th>Modality</th>
<th>Author</th>
<th>Se (%)</th>
<th>Sp (%)</th>
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<td>pCLE</td>
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<tr>
<td>(mag-)</td>
<td>Ignatovic (2009)</td>
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<td>85-90</td>
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<td>(mag-)</td>
<td>Rastogi (2009)</td>
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