How to report a normal Barrett’s esophagus?

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Introduction: how to diagnose?

• Definition has changed over the years, mainly due to different histological cell types
  – Gastric fundus type
  – Junctional (cardiac) type
  – Intestinal type: with goblet cells

• What is changed?
Introduction: how to diagnose?

• Barrett’s esophagus
  – is an acquired condition resulting from chronic gastro-esophageal reflux
  – characterised by the displacement of the squamocolumnar junction proximal to the gastroesophageal junction
    • with the presence of intestinal metaplasia (everybody)
    • which is visible macroscopically (BSG): no SIM required
    • ≥ 1 cm above GEJ

Sharma et al Gastroenterology 2004; 127: 310–330
BSG guidelines Fitzgerald et al Gut 2013
ASGE guideline GIE 2012 76 1087
Introduction: how to diagnose?

• Barrett’s esophagus
  – is an acquired condition resulting from chronic gastro-esophageal reflux
  – characterised by the displacement of the squamocolumnar junction proximal to the gastroesophageal junction
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    • which is visible macroscopically (BSG): no SIM required
    • $\geq 1$ cm above GEJ

First step in diagnosis is endoscopic identification of a columnar lined esophagus to take a biopsy to confirm columnar lined esophagus (CLE) or specialized intestinal metaplasia (SIM)
Example 1

Do you think this is a Barrett’s Esophagus?

1. Yes
2. No
Example 1

How long is this Barrett?

1. >2 cm
2. <2 cm
Example 1

Would you take a biopsy?

1. Yes
2. No

[Graph showing 100%, 80%, 60%, 40%, 20%, 0% for Yes and No]
Example 2

Do you think this is a Barrett’s Esophagus?

1. Yes
2. No
Example 2

How long is this Barrett?

1. >2 cm
2. <2 cm

[Graph showing percentages for >2 cm and <2 cm]
Example 2

Who would take a biopsy?

1. Yes
2. No
This is the same Gastroesophageal junction

Biopsy contained SIM but now this is not regarded as Barrett because < 1 cm.

DO NOT TAKE A BIOPSY (unless visible lesion at cardia)
## How to report Barrett’s esophagus

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<td>Visible lesions</td>
<td>Paris classification</td>
<td></td>
</tr>
<tr>
<td>Biopsies</td>
<td>Location and number of samples taken</td>
<td>Xxyy (xx = distance in cm from incisors yy is location with 00 for random)</td>
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Prague classification: Step 1: recognize hiatal hernia
Developed by the Barrett’s Oesophagus Subgroup of the International Working Group for the Classification of Reflux Oesophagitis (IWGCO)

Prague classification: Step 1: recognize hiatal hernia

1. Ensure Hiatus Hernia Is Recognised By Distinguishing Diaphragmatic Hiatal Impression From Gastroesophageal Junction

2. Locate Gastroesophageal Junction By Depth Of Endoscope Insertion* At Level Of:
   - tops of gastric mucosal folds
   - sphincter “pinch”
   - = 36 cm

3. Look For Displacement Of Squamocolumnar Junction Above Gastroesophageal Junction

4. Measure Depth Of Endoscope Insertion* At The Most Proximal Circumferential Extent Of Suspected Columnar Metaplasia*
   - = 33 cm

5. Measure Depth Of Endoscope Insertion* At The Maximum Extent Of Suspected Columnar Metaplasia*
   - = 29 cm

6. Subtract the Depth of Insertion for Circumferential and Maximum Extents from the Depth of Endoscope Insertion at the Gastroesophageal Junction:
   - 36 cm - 33 cm = C3
   - 36 cm - 29 cm = M7
   - Prague C3 and M7
Prague classification: Step 2: locate GEJ

1. Ensure Hiatus Hernia is recognised by distinguishing diaphragmatic hiatal impression from gastroesophageal junction.

2. Locate gastroesophageal junction by depth of endoscope insertion at level of:
   - tops of gastric mucosal folds
   - sphincter “pinch”

3. Look for displacement of squamocolumnar junction above gastroesophageal junction.

4. Measure depth of endoscope insertion at the most proximal circumferential extent of suspected columnar metaplasia:
   - 33 cm

5. Measure depth of endoscope insertion at the maximum extent of suspected columnar metaplasia:
   - 29 cm

6. Subtract the depth of insertion for circumferential and maximum extents from the depth of endoscope insertion at the gastroesophageal junction:
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How to determine GEJ?

Anatomically the GEJ is defined as the level of the Angle of His. This corresponds best with endoscopically defined top of gastric folds. The difference between GEJ and endoscopic junction was < 5 mm.
Prague classification: step 3

1. Ensure Hiatus Hernia is recognised by distinguishing diaphragmatic hiatal impression from gastroesophageal junction.
2. Locate gastroesophageal junction by depth of endoscope insertion at level of:
   - tops of gastric mucosal folds
   - sphincter "pinch"
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Prague classification : step 3
What is a regular Z-line

- Savary and Miller: “It is serrated and shows 4 to 6 small, long or short tongues toward the esophagus.”
- DeNardi and Riddell: “The Z-line consists of small projections of red gastric epithelium, up to 5 mm long and 3 mm wide, extending upward into the pink-white squamous epithelium”

What is a regular Z-line

ZAP grade 0.
The Z-line is sharp and circular. The Z-line may be wave-like, due to the mucosal folds, but no tongues or islands of columnar epithelium is allowed in the esophagus.

ZAP grade I.
The Z-line is irregular and shows tongue-like protrusions (filled arrows) and an island (open arrow) of columnar epithelium.

Wallner et al GIE 2002;55:65-9.)
What is a regular Z-line

ZAP grade II.
A distinct, obvious tongue of columnar epithelium < 3 cm is seen. A minimum requirement is that the base of the tongue is clearly shorter than the height.

ZAP grade III.
Distinct tongues of columnar epithelium > 3 cm, or a cephaled displacement of the Z-line > 3 cm.

Wallner et al GIE 2002;55:65-9.)
What is the prevalence of SIM at the GEJ?

- Retrospective analyses of 2000 gastroscopies
  - 166 identified with “irregular Z-line”
  - No previous diagnosis of Barrett
- 43.5% of these had specialized intestinal metaplasia
  - Risk factors: male, hiatal hernia

Baseline 171 (3%) patients with SIM without BE

125 follow-up at 2 year and 68 at 5 year

ProGERD study

• Risk factors for progression
  – All patients had esophagitis at baseline, so none of the NERDs progressed
  – Multivariate analysis:
    • Smoking
    • Long history of GERD (> 5 years)
    • Severe esophagitis
  – Male (13.9%) more than women (7.9%)

## Table 3  Base-case analysis

<table>
<thead>
<tr>
<th></th>
<th>Barrett prevalence, in the general population (%)</th>
<th>Barrett distribution in patients with cancer (%)</th>
<th>Cancer incidence, per 100 000 population</th>
<th>Annual cancer transition rate per 1000</th>
<th>NNT</th>
<th>1/d</th>
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<tr>
<td><strong>Long</strong></td>
<td>1.5</td>
<td>56.3</td>
<td>3.3</td>
<td>2.2</td>
<td>450</td>
<td></td>
</tr>
<tr>
<td><strong>Short</strong></td>
<td>4.7</td>
<td>23.6</td>
<td>1.4</td>
<td>0.3</td>
<td>3440</td>
<td></td>
</tr>
<tr>
<td><strong>Ultra-short</strong></td>
<td><strong>14.4</strong></td>
<td><strong>20.1</strong></td>
<td><strong>1.2</strong></td>
<td><strong>0.1</strong></td>
<td><strong>12 364</strong></td>
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Estimates of Barrett to cancer transition rates and number of patients needed to be tested (NNT) to find one cancer based on the observed Barrett prevalence among patients with T1 cancer, published Barrett prevalence rates in the population, and assuming a German cancer incidence of 5.8 per 100 000 persons (German Cancer Registry 2010).
Prague classification: Step 4

Measure depth of endoscope insertion at the most proximal Circumferential extent of suspected columnar metaplasia.
Step 4: determine C

GEJ 40 cm

C = 39 cm
Prague classification: step 5

Measure depth of endoscope insertion at the maximum extent of suspected columnar metaplasia.
Step 5: determine $M$

GEJ 40 cm

$C = 39 \text{ cm}$

$M = 36 \text{ cm}$
Prague classification: step 6

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Subtract the depth of insertion for circumferential and maximum extents from the depth of endoscope insertion at the gastroesophageal junction.

Developed by the Barrett’s Oesophagus Subgroup of the International Working Group for the Classification of Reflux Oesophagitis (IWGCO)
Step 6: calculate CM

GEJ 40 cm

C = 39 cm

M = 36 cm

C1
Step 6: calculate CM

GEJ 40 cm
C = 39 cm
M = 36 cm
C1M4
Do not count islands
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A visible lesion? Use Paris classification.
A visible lesion? Use Paris classification

Type Is lesion
With erosions

Paris classification GIE 2003;58 S3
A visible lesion? Use Paris classification

Type IIa lesion

LGD on biopsy
T1a M2 after ER

Paris classification GIE 2003;58 S3
A visible lesion? Use Paris classification

Type IIb lesion

Paris classification GIE 2003;58 S3

T1a M3
A visible lesion? Use Paris classification

Type II-c lesion

Paris classification GIE 2003;58 S3
How to take biopsies?

• Seattle protocol: AFTER inspection
  – First targeted biopsies of suspicious areas
  – 4 quadrant biopsies each 2 cm
  – Preferably in different containers
How to report biopsies?

- Proposal for use of a standardized reporting system (xxyy)
  - xx = distance from incisors
  - yy = orientation circumferentially (clock system) (from 01-12)
  - yy=00 for random biopsies

Lesser curvature of stomach
How to report biopsies?

C8M9 Barrett

Lesion at 5 o’clock
32 cm from incisors

Ilb lesion at 3205
How to report biopsies?

- C8M9 Barrett
- Lesion at 5 o’clock 34 cm from incisors
- Ilb lesion at 3405
How to report biopsies?
Conclusion

• Quality in reporting Barrett’s esophagus:
  – Using Prague classification
  – Pay attention to the identification of GEJ
  – Measure hiatal hernia
  – Measure C and M (islands do not count)
  – Use Paris classification for visible early lesion

• Quality biopsies in Barrett’s esophagus
  – FIRST look and target biopsies
  – Seattle protocol
  – Mark different containers according to xyy principle.