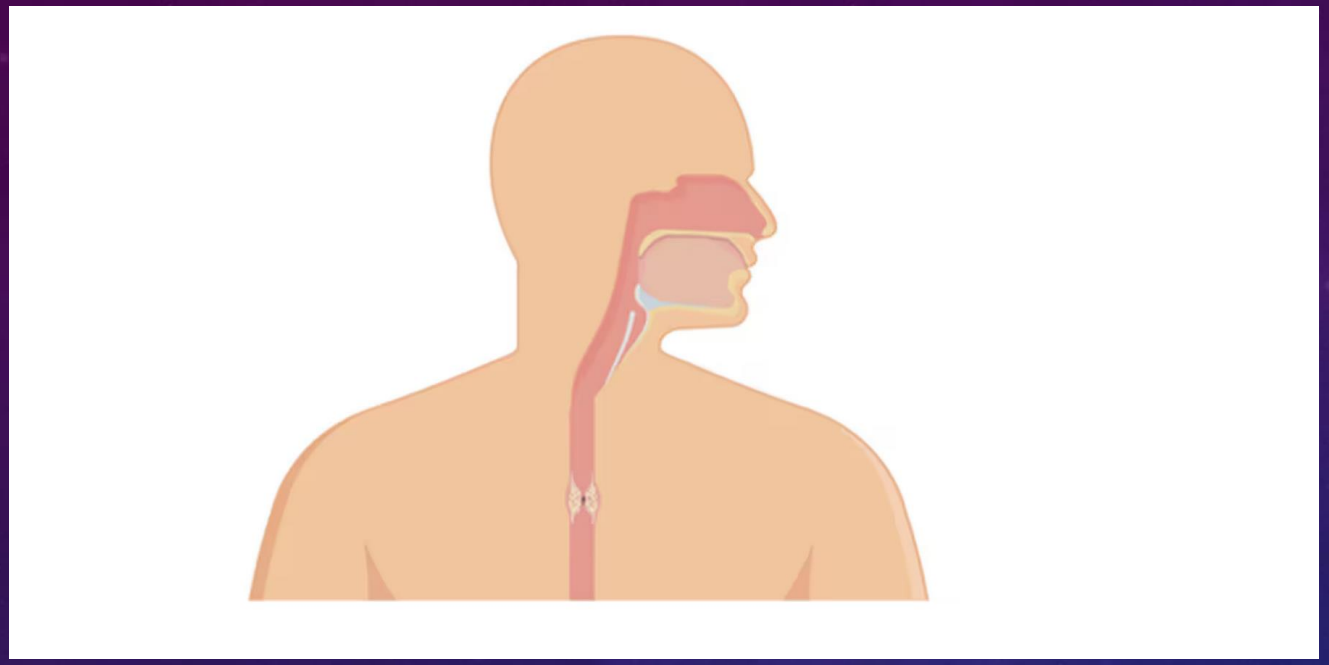


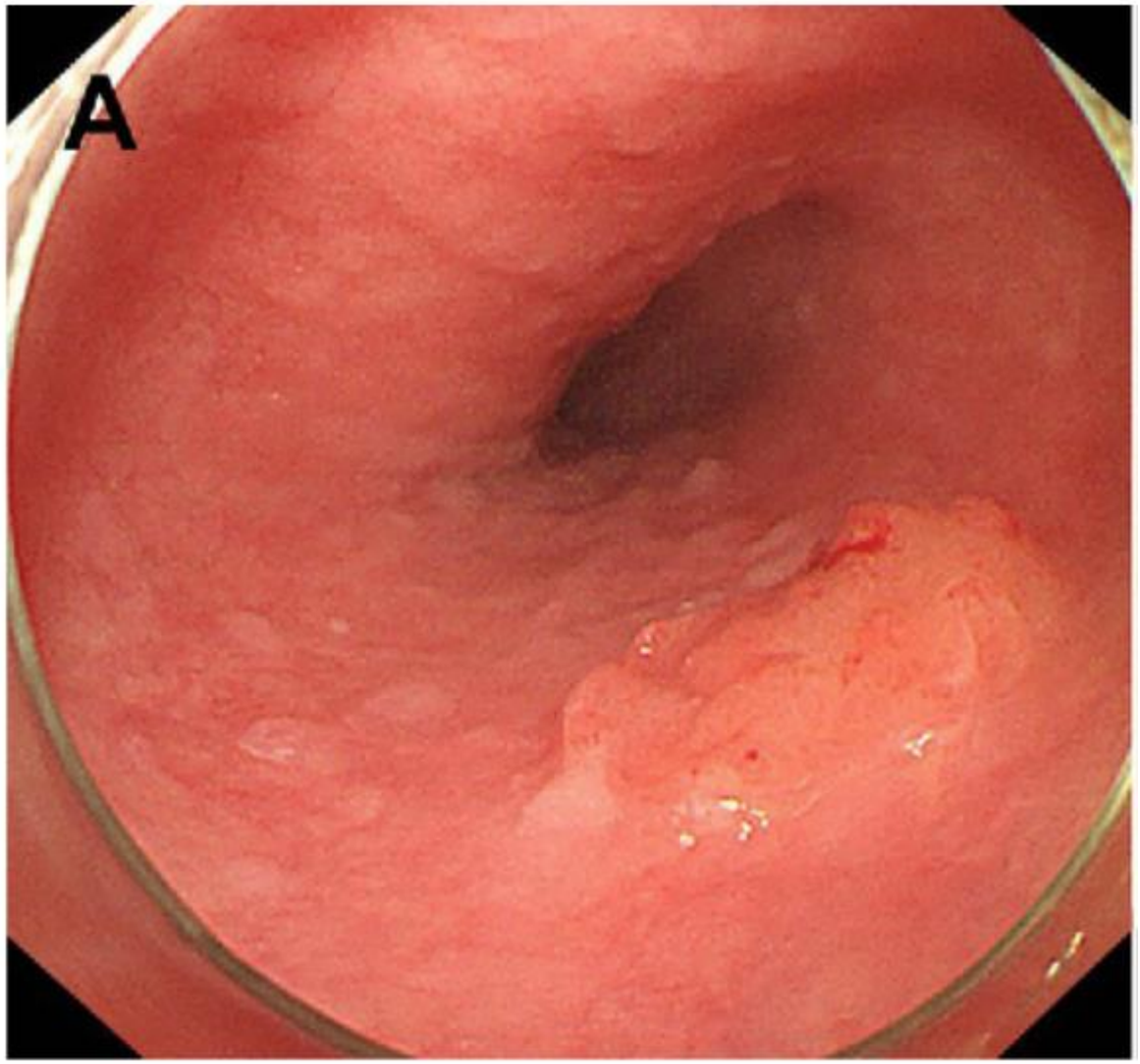


Diagnosis of Superficial Esophageal Cancer and invasion depth based on endoscopic White Light and optical enhancement images





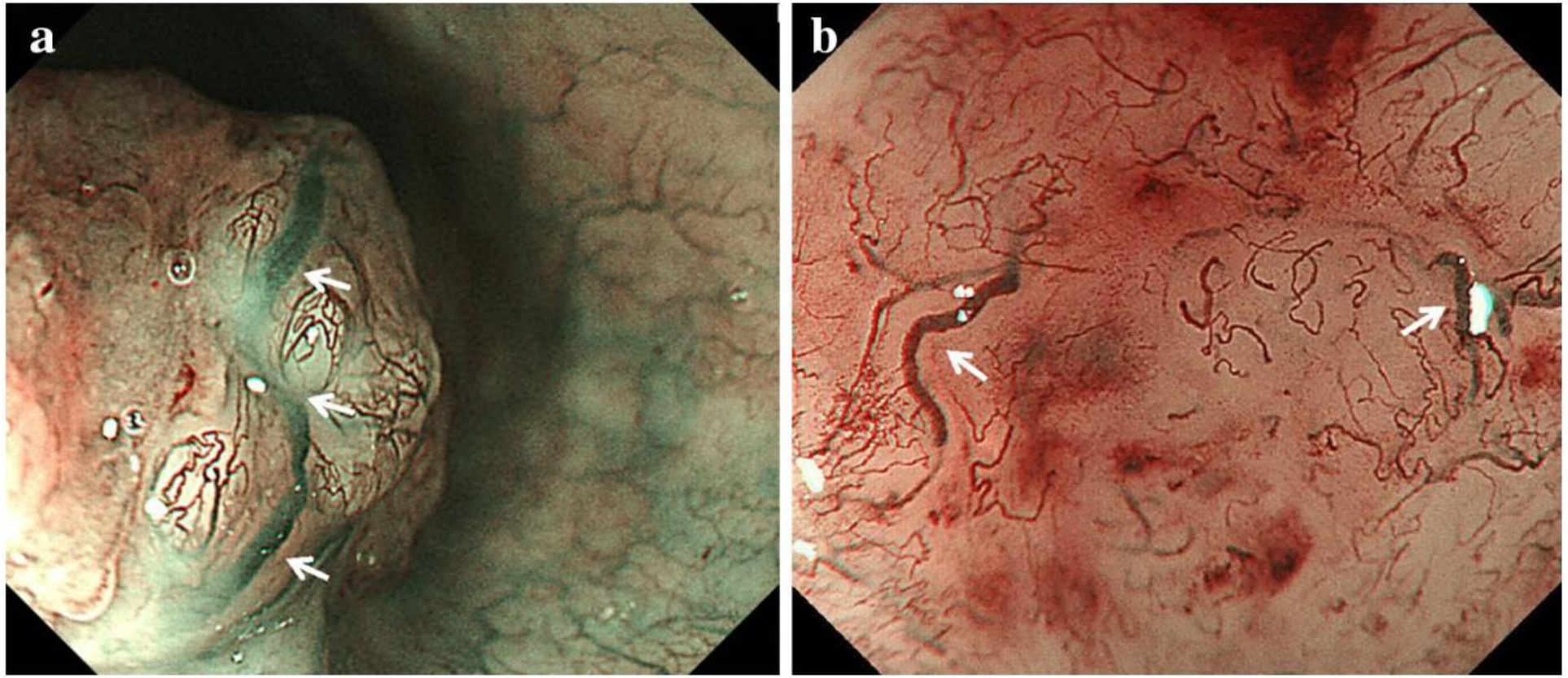
MOJGAN FOROOTAN
PROFESSOR Of Gastroenterology SBMU TEHRAN IRAN
INTERESTED IN GI IMAGING and INTERVENSION



A 1.5 cm-sized flat elevated lesion with nodular and granular protuberance on the posterior wall in middle thoracic esophagus **on** White – light imaging **(WLI)**

- **Paris classification : IIa**
- **The depth of invasion**

is expected to be **beyond SM1**

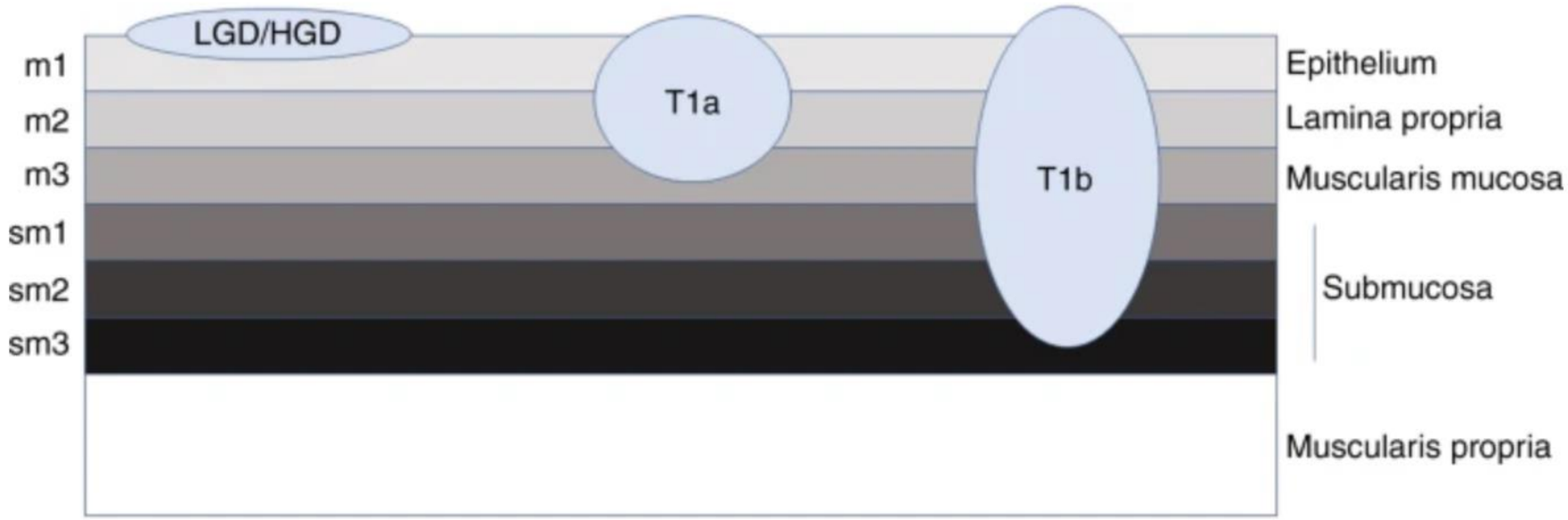


On M-NBI (Magnifying Narrowband Imaging) revealed Japan Esophageal Society (JES) Classification Type B3 Highly dilated abnormal vessels (white arrows) whose caliber will be more than three times that of the B2 vessels around the B3 vessels

T1b Sm2 or deeper

ESOPHAGUS : SQUAMOUS CELL CARCINOMA

Endoscopic staging

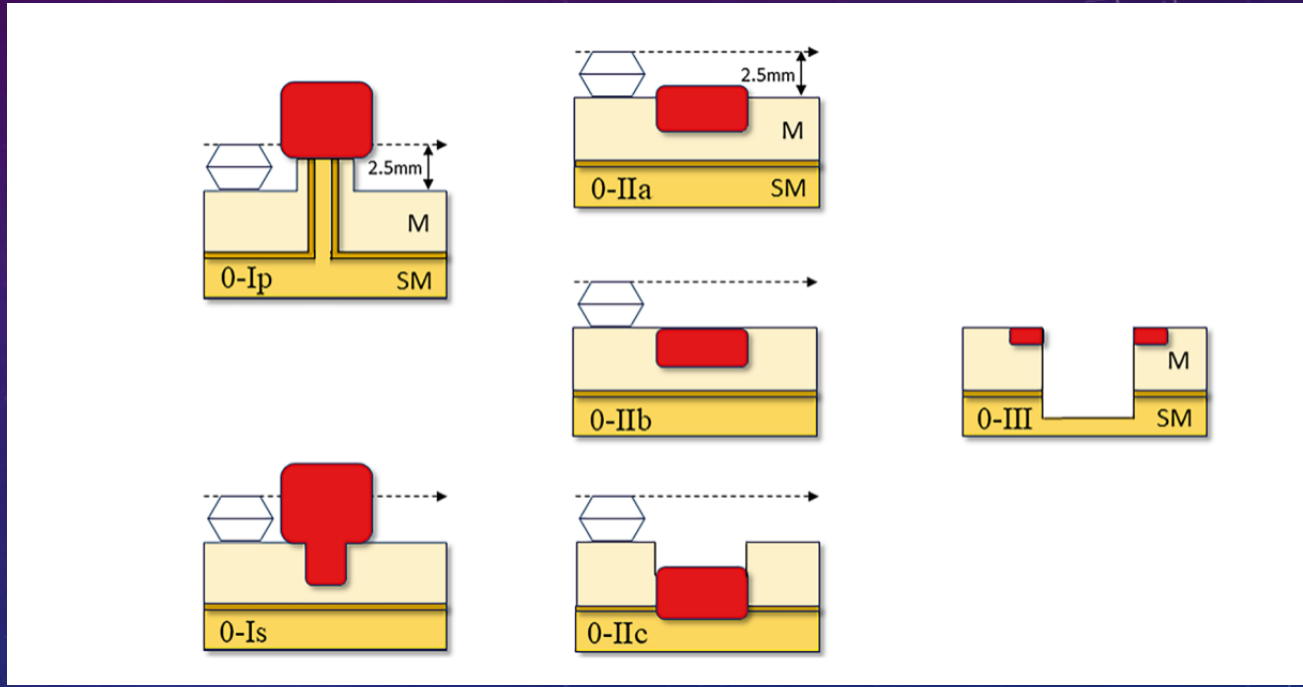


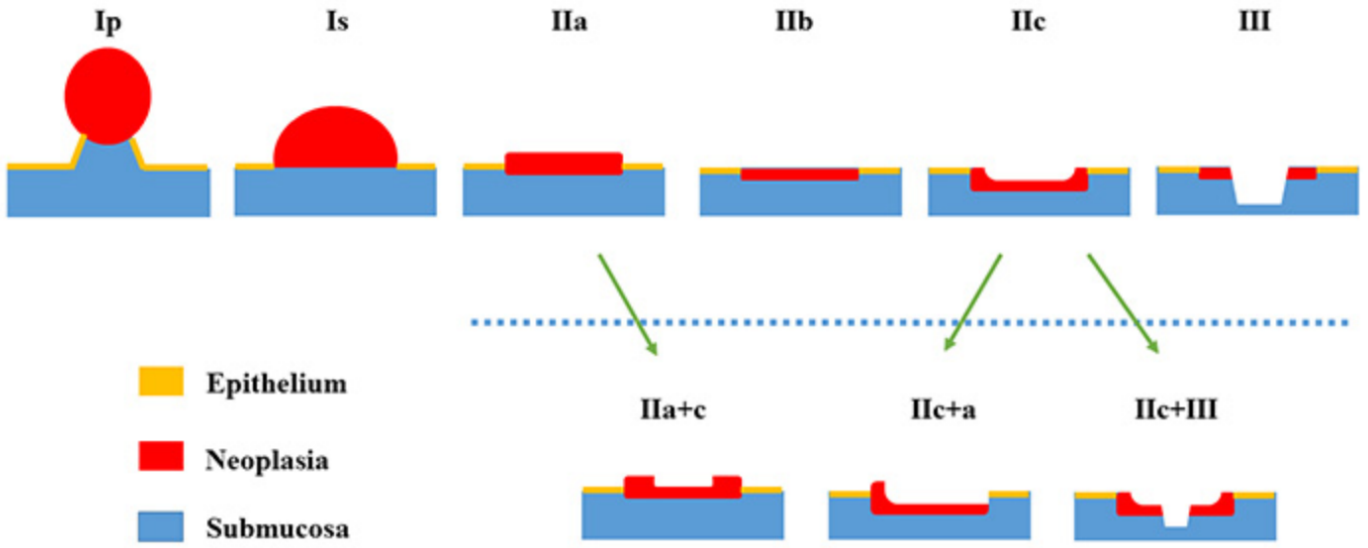
THE PARIS ENDOSCOPIC CLASSIFICATION FOR SUPERFICIAL GI LESIONS

- **Definition of Endoscopic Morphology**
- **Endoscopic Staging**

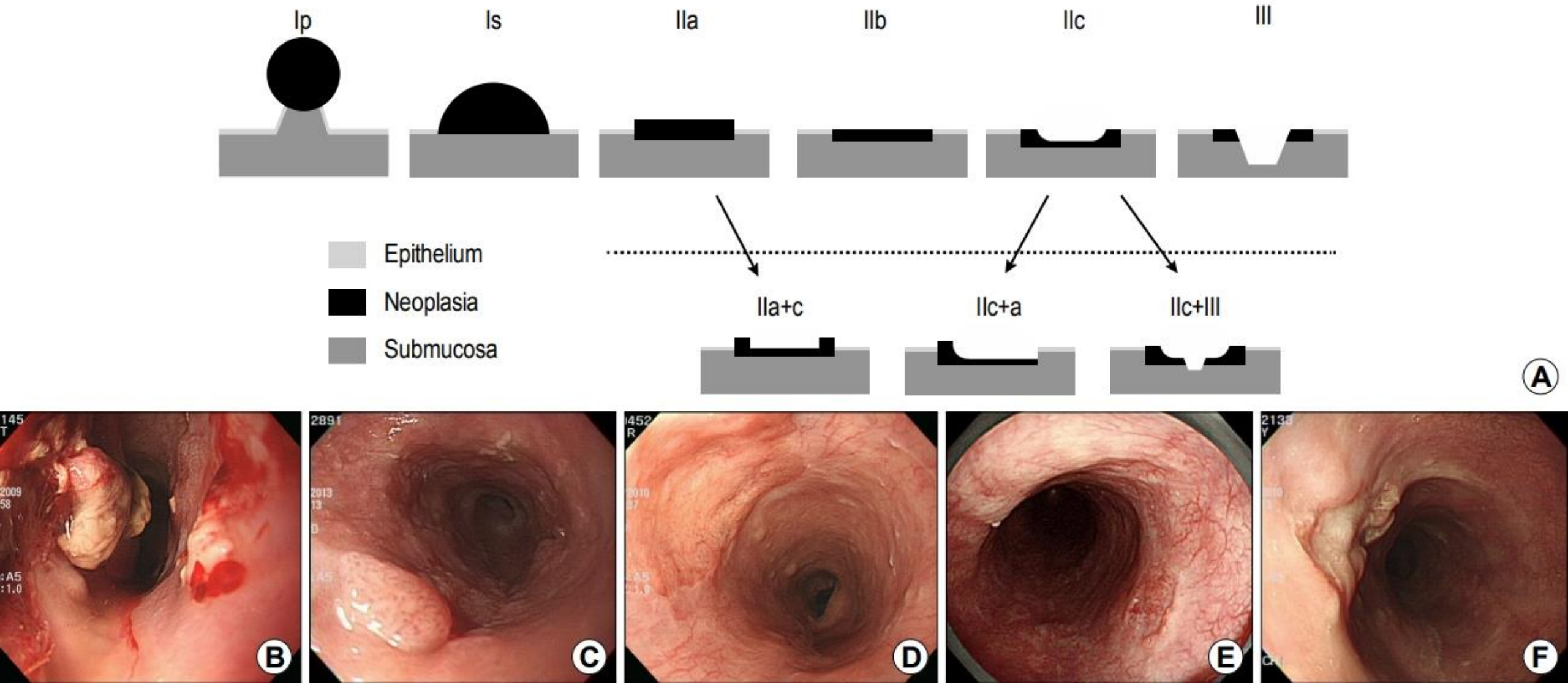
Definition of endoscopic morphology :

Polypoid (1p and 1s) , non polypoid (IIa,IIb and IIc) , non – polypoid and excavated (III)





Paris Classification: Early Squamous Cell Cancers Esophagus



Endoscopic Techniques for Early Detection of Esophageal Cancer

- Predicting invasion depth of superficial esophageal squamous cell carcinoma is crucial in determining the precise indication for endoscopic resection (ER) because the rate of lymph node metastasis increases in proportion to the invasion depth of the carcinoma .

THE JES CLASSIFICATION

THE JAPAN ESOPHAGEAL SOCIETY CLASSIFICATION

TYPE OF VESSELS


DISCOVER
LIGHT ENHANCED
ENDOSCOPY
Capturing clear structures with
4-LED Multi Light™ technology

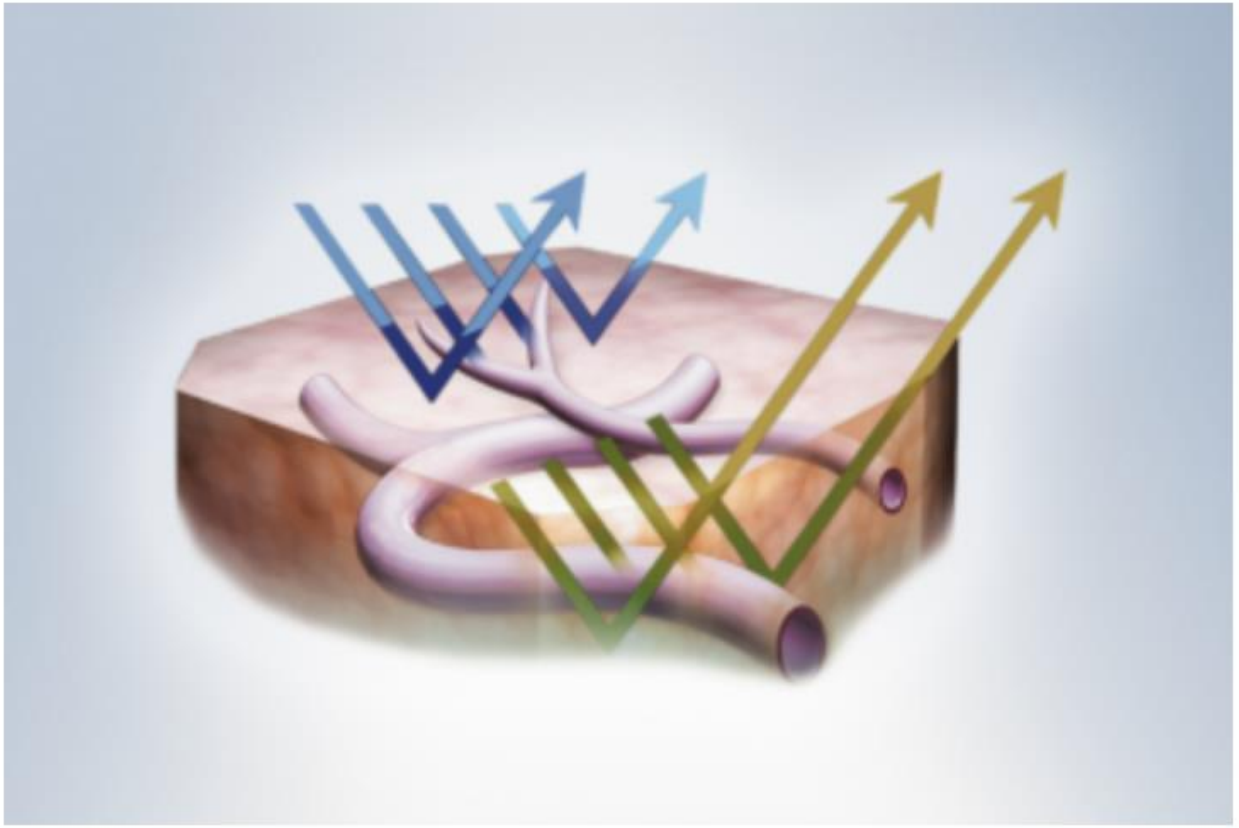
NBI

The Power of Accurate Diagnosis

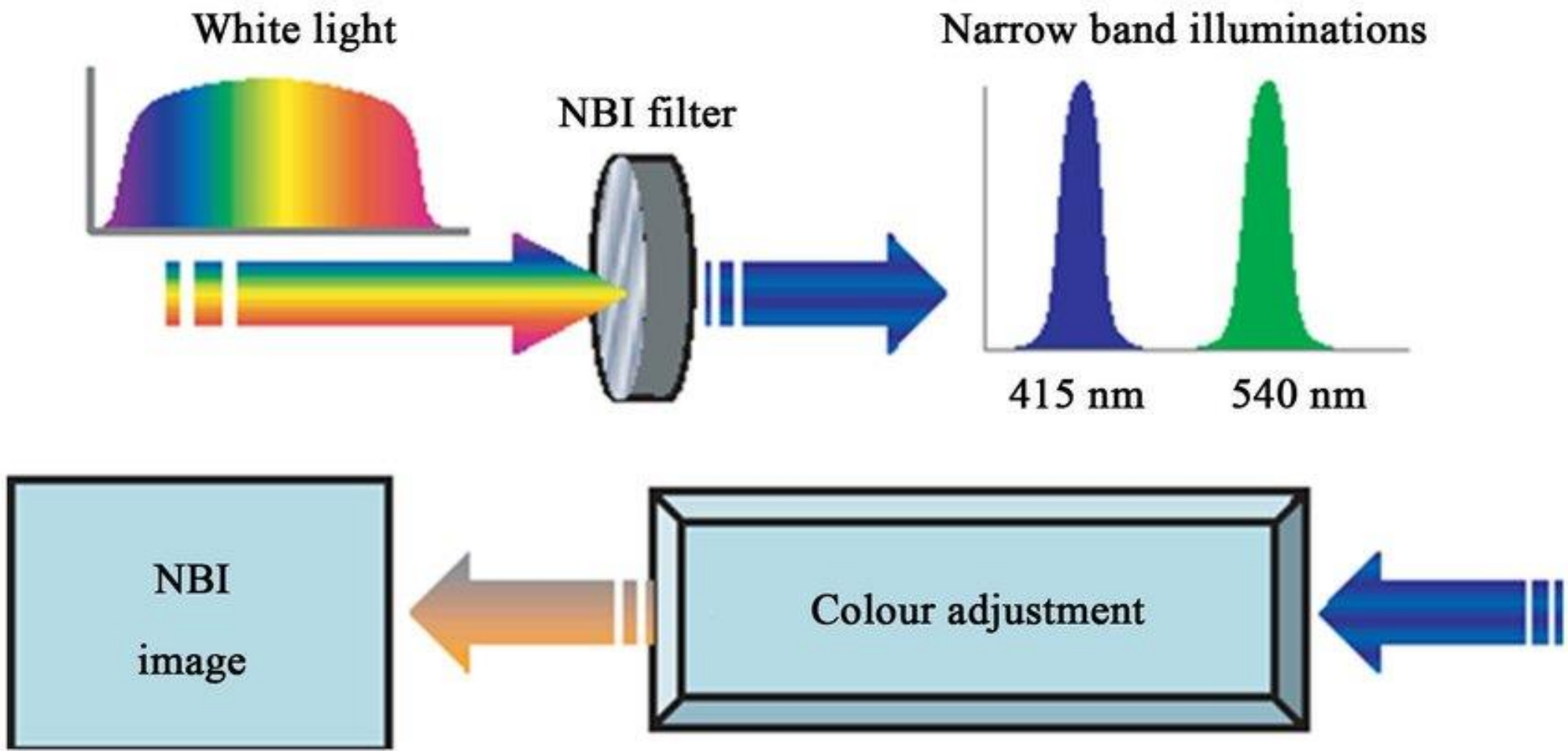


NBI is a powerful and proven optical technology that allows for a reliable optical diagnosis of major indications in the gastrointestinal tract.

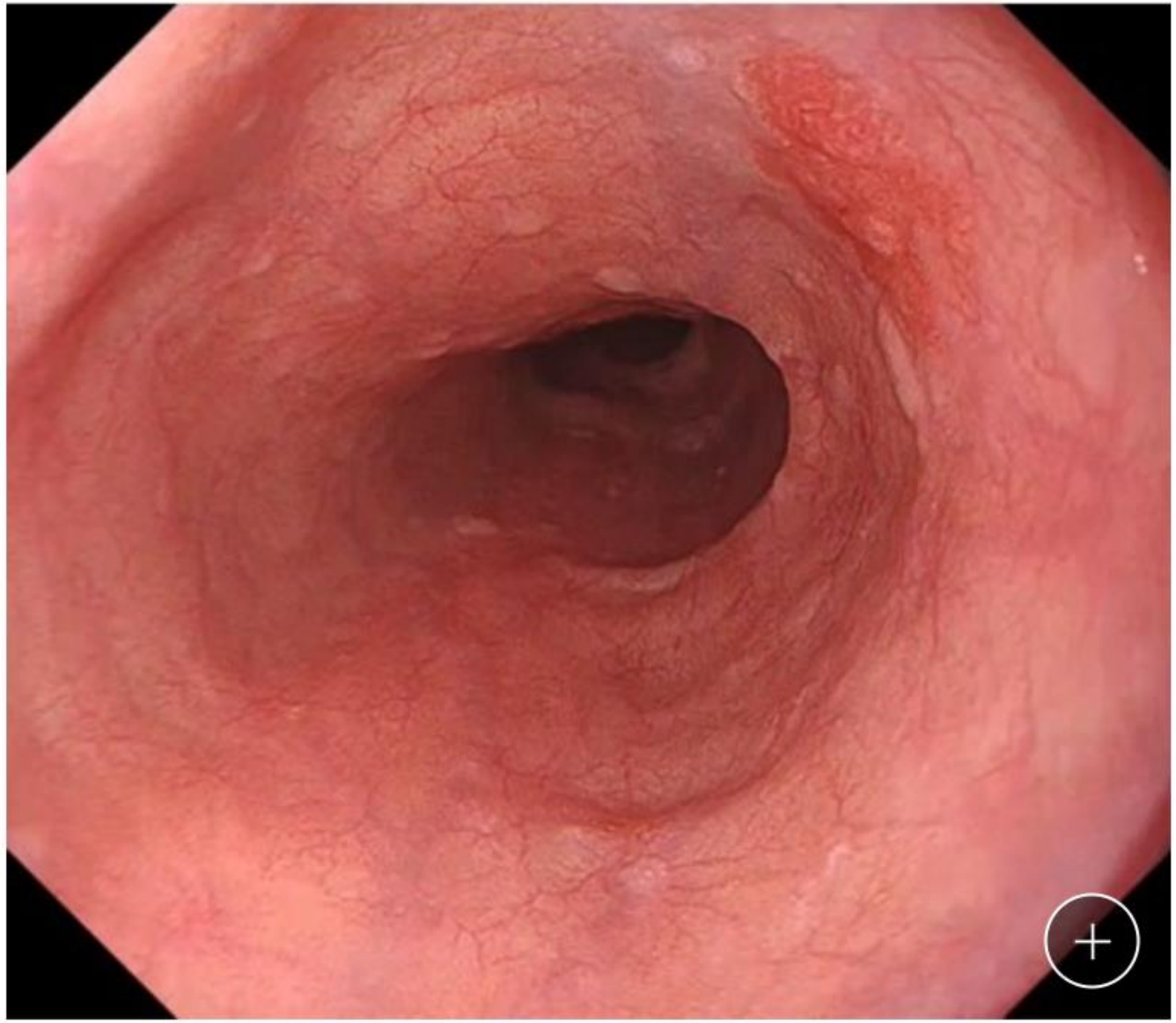




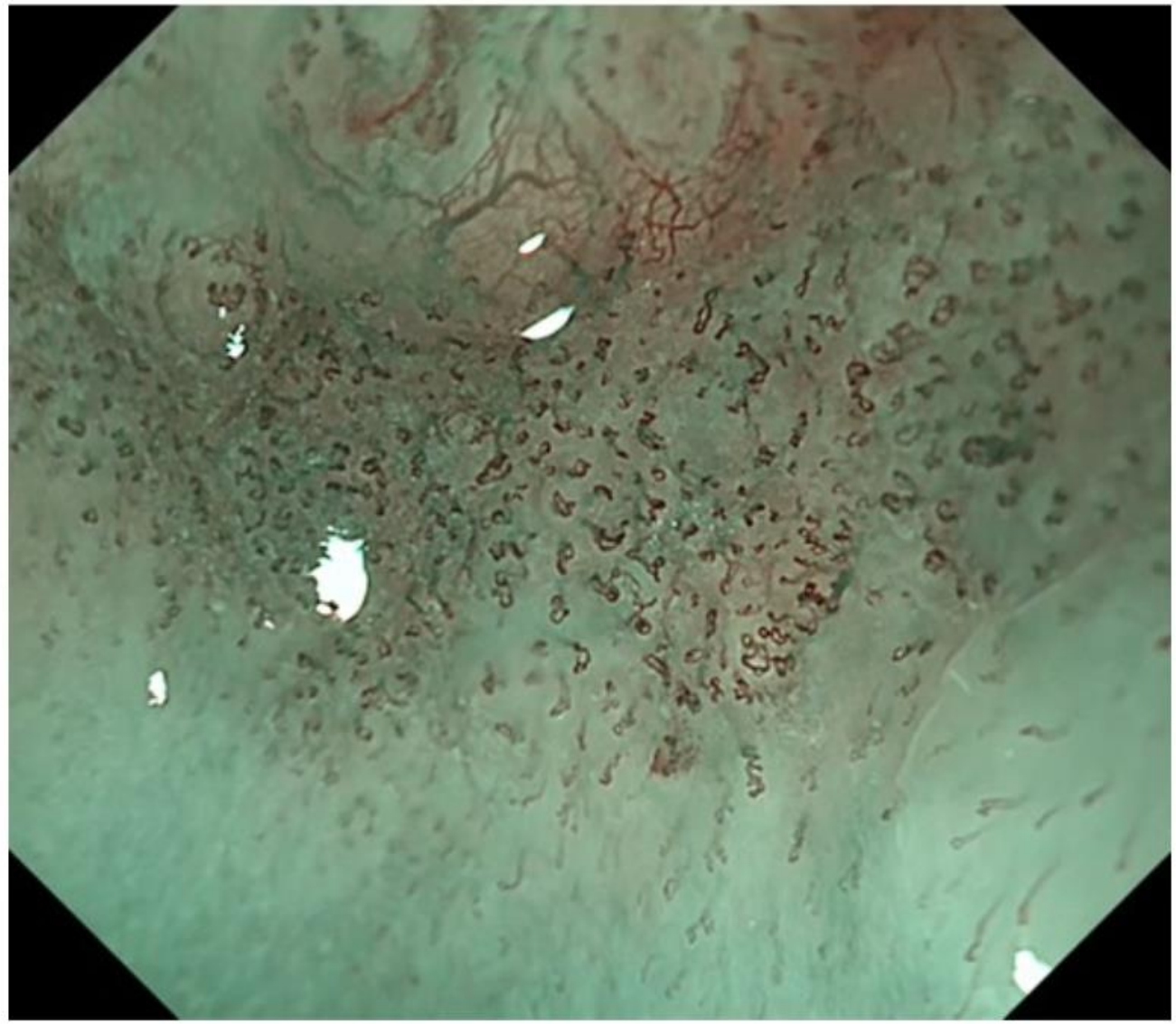
NARROW-BAND IMAGING (NBI)


White light
NBI filter
Narrow band illuminations
415 nm
540 nm
NBI
image
Colour adjustment

WLI



High-magnification NBI (1)



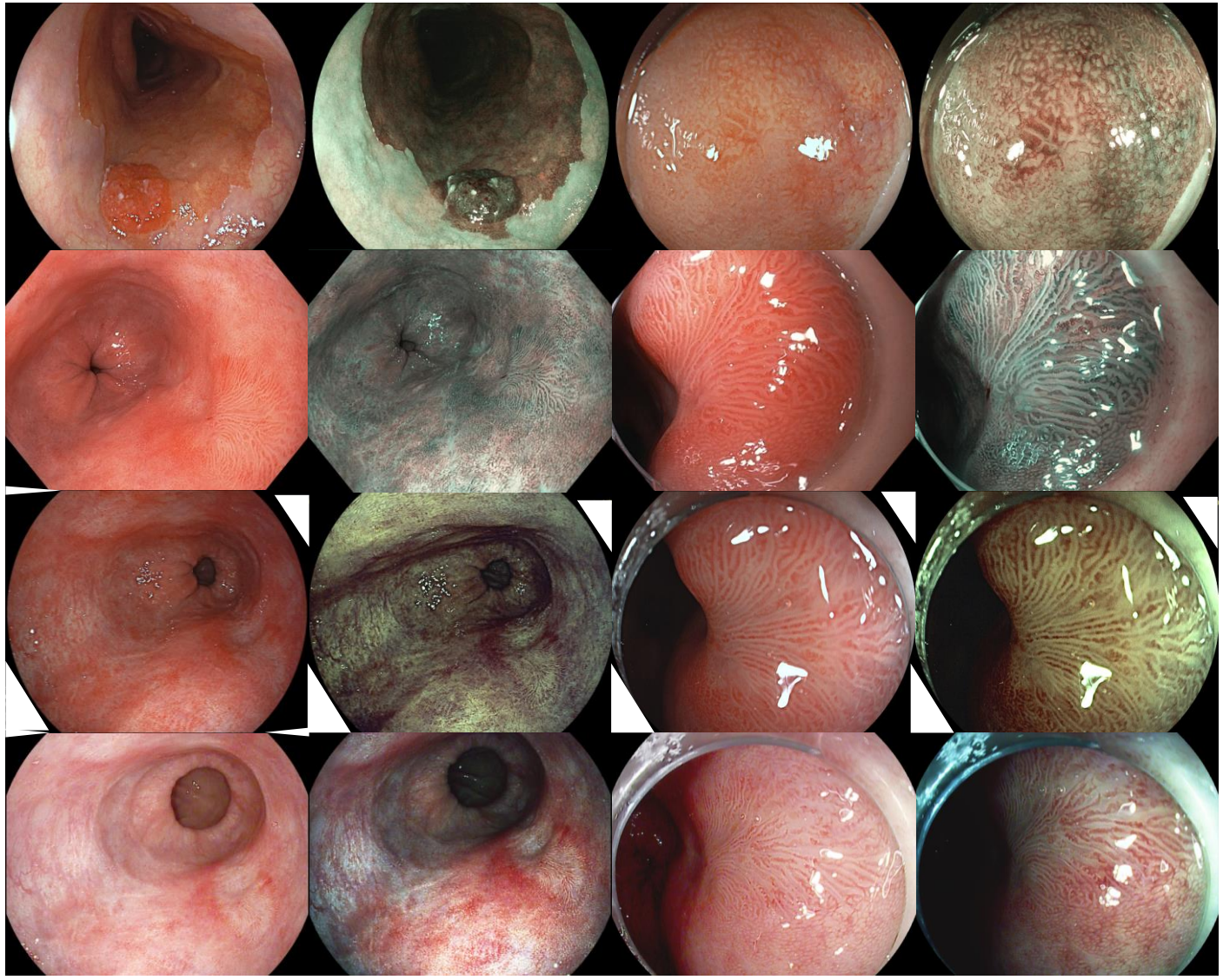
Optical Chromoscopy Techniques

BLI

NBI

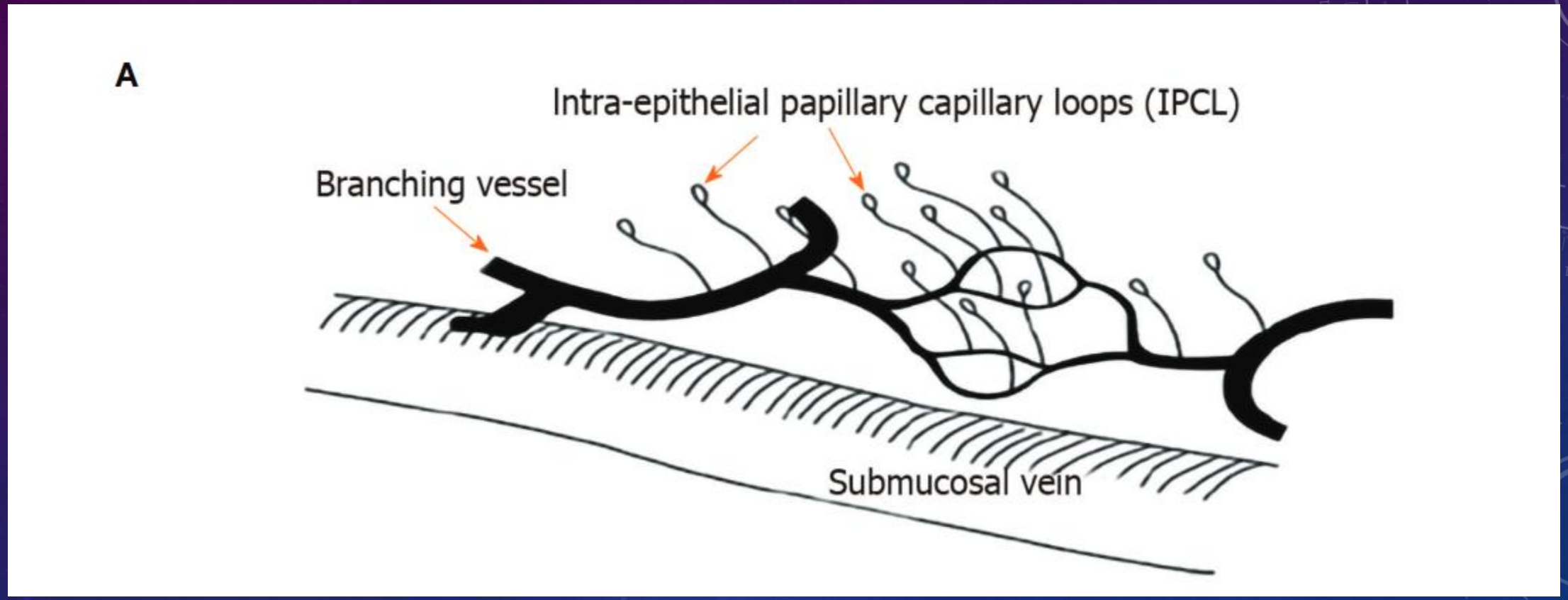
FICE

I-scan



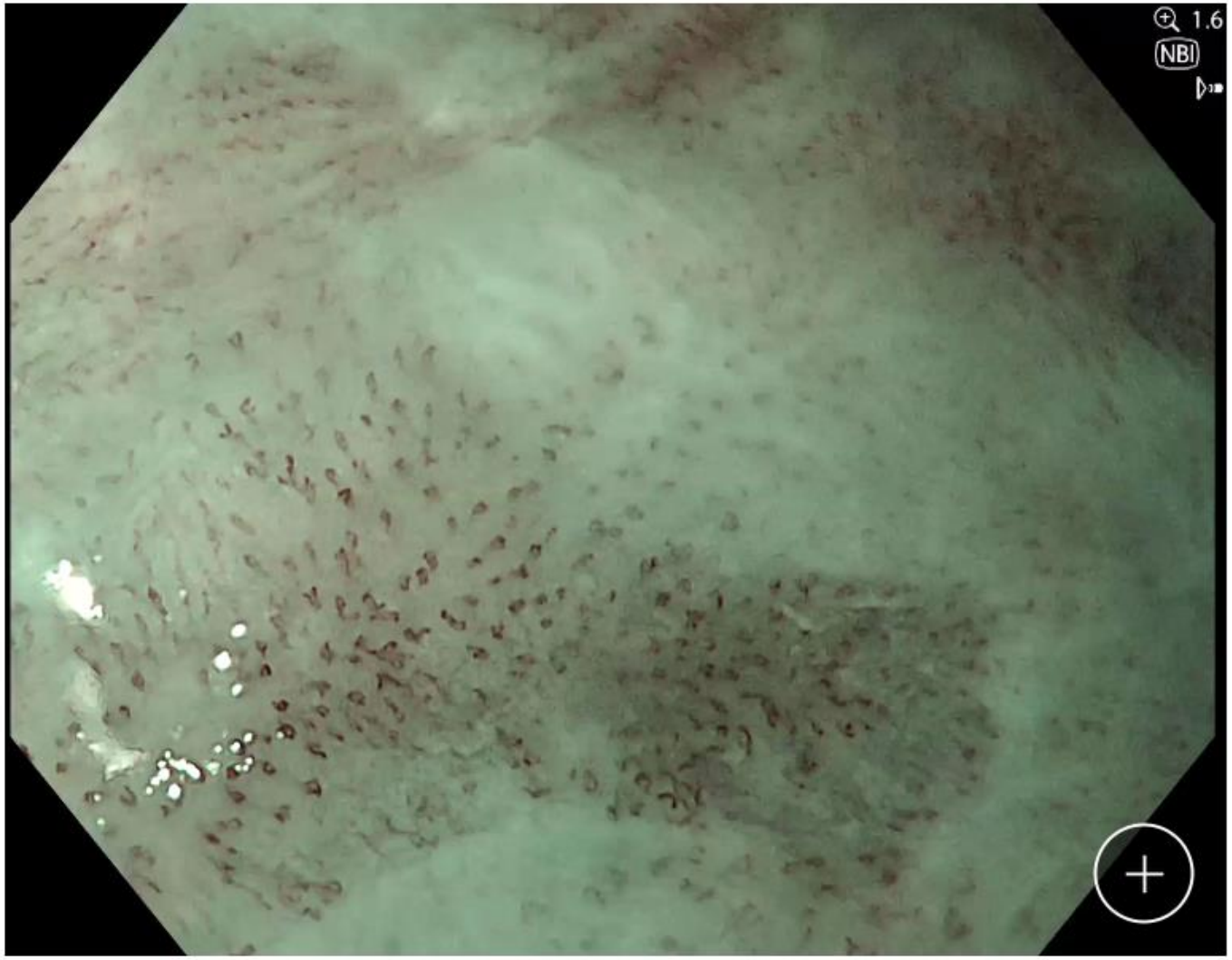
BEST ACADEMIA

TYPE OF VESSELS

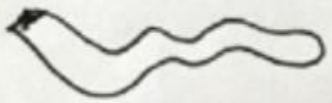

A
Intra-epithelial papillary capillary loops (IPCL)
Branching vessel
Submucosal vein



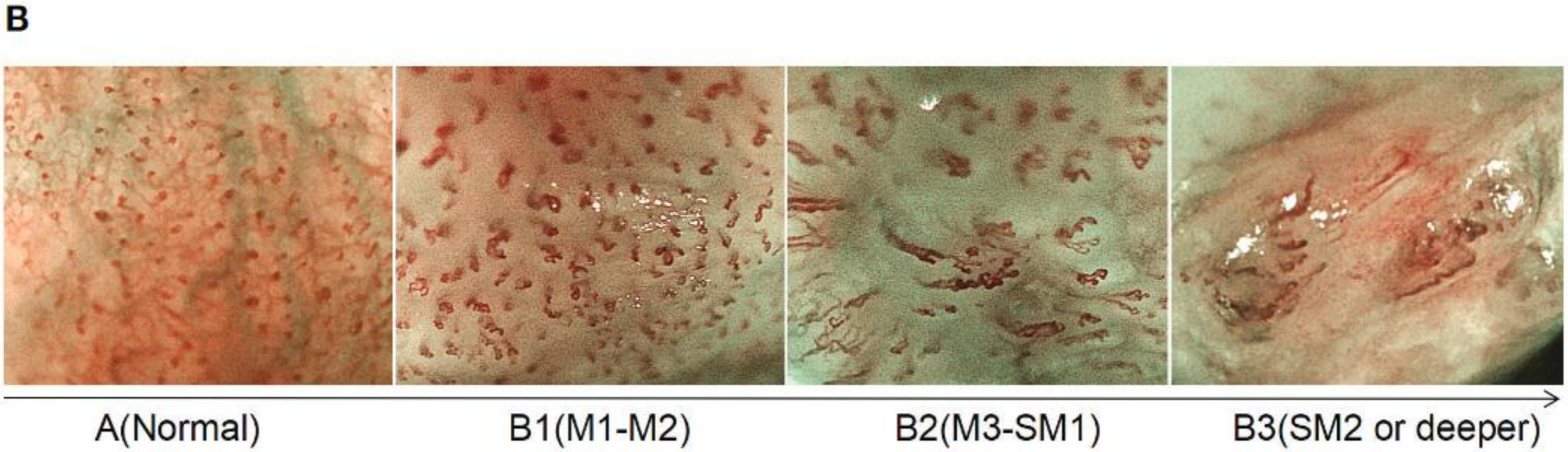
A suspicious reddish lesion can be identified at 6 to 9 o’clock.



Abnormal IPCLs can be confirmed under near focus with 1.6x electronic magnification, suggesting a squamous cell carcinoma.

Type of vessels	Scheme	Definitions	Invasion depth	Histology
A		Normal IPCL or abnormal micro vessels (7–10 μm) without severe irregularity	No invasion	Normal epithelium, inflammation, and low-grade intraepithelial neoplasia
B1		Abnormal micro vessels with severe irregularity or dilated abnormal (20 μm) vessels, Type B vessels with loop like formation	T1a-Epithelium, T1a-Lamina propria mucosa	High grade intraepithelial neoplasm or invasive squamous cell carcinoma
B2		Type B vessels with out a loop like formation	T1a-MM (muscularis mucous) or T1b-SM1 (submucosa)	
B3		Highly dilated blood vessels (60 μm) with calibers >3 times B2 vessels	T1b-SM2 or deeper	

Modified from Oyama et al.-criteria of the Japanese Endoscopic society (JES) magnifying endoscopic classification



The current state of artificial intelligence in endoscopic diagnosis of early esophageal squamous cell carcinoma

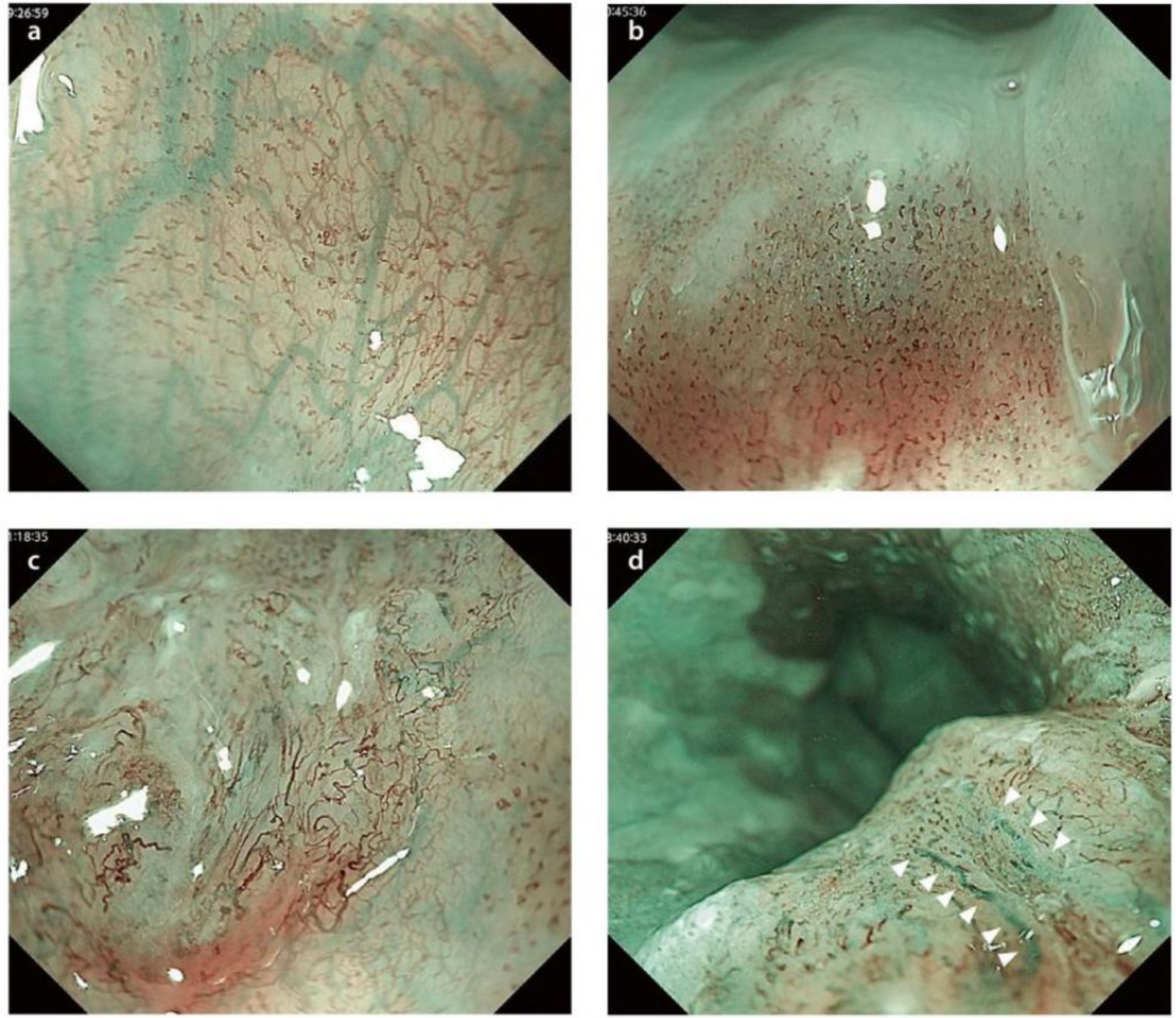
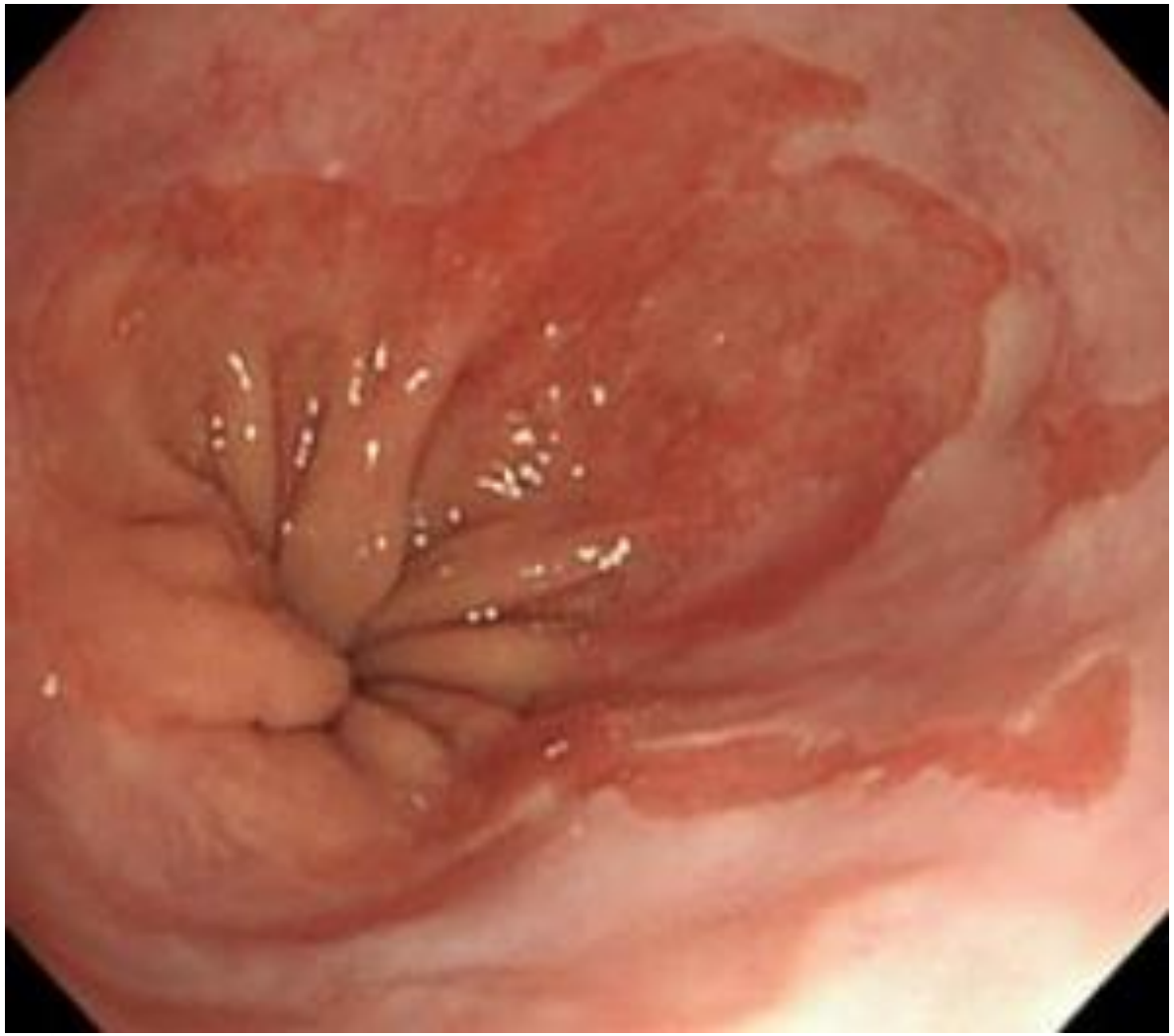


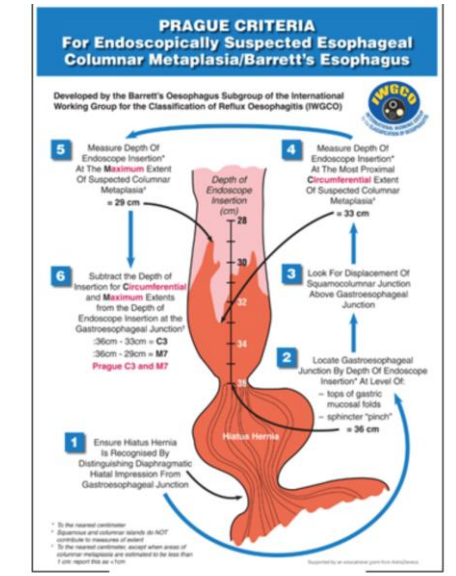
Fig. 1 **a** Type A microvessels, **b**Type B1 microvessels, **c** Type B2 microvessels, **d** Type B3 microvessels

- **JES integrated the two major classification Inoue and Arima**

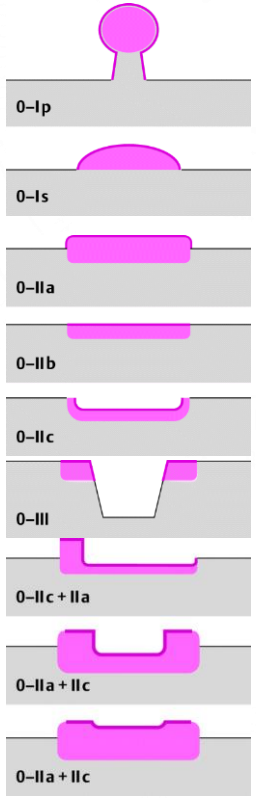
Barrett's Esophagus

Detection of early neoplastic lesion

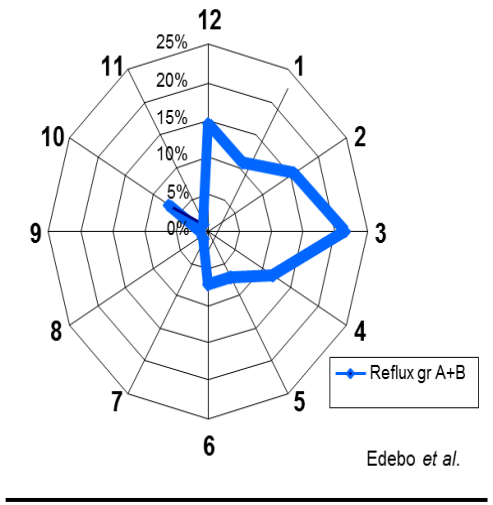




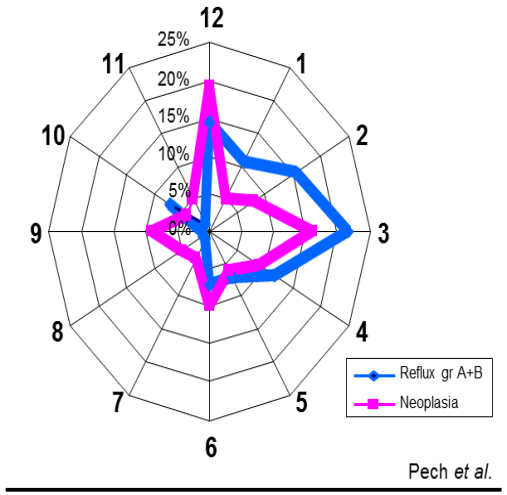
Prague classification



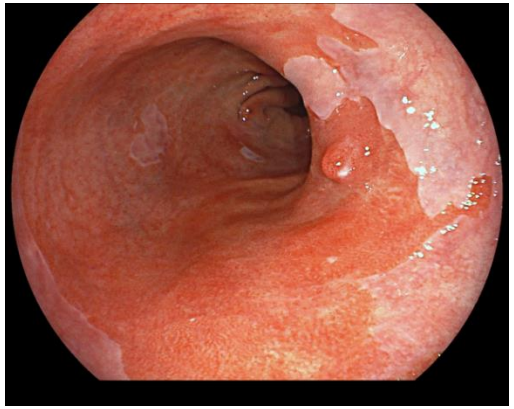
- Early Barrett’s lesions are more frequently located at the right side of your screen

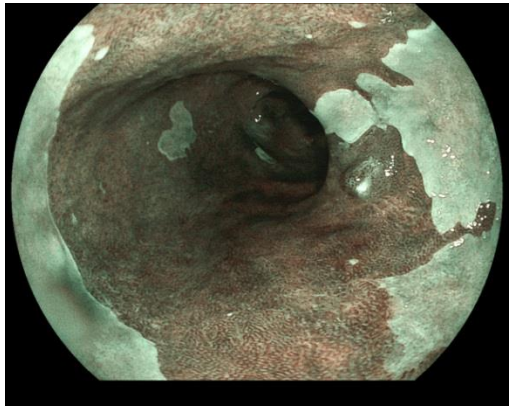


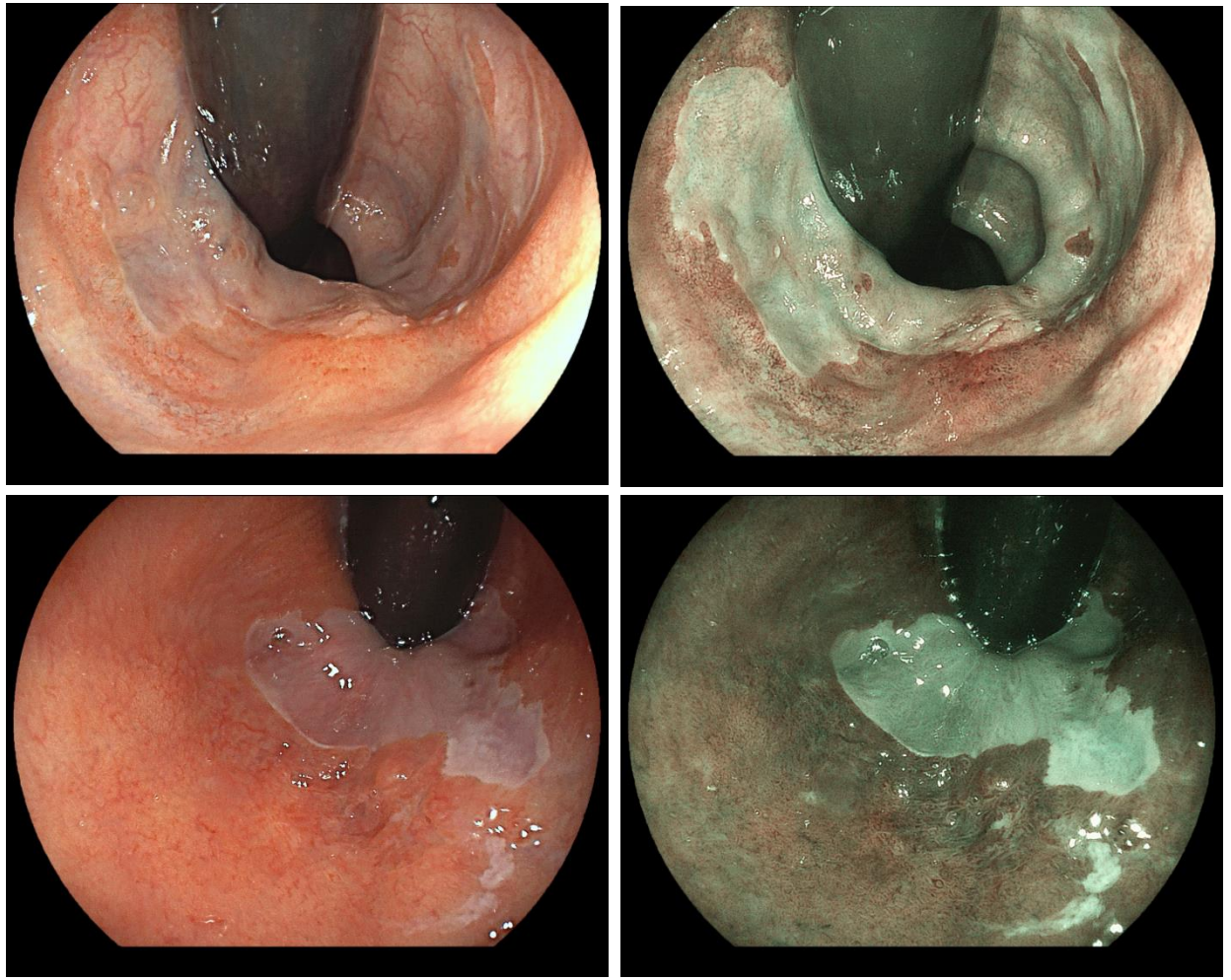
Edebo *et al.*



Pech *et al.*







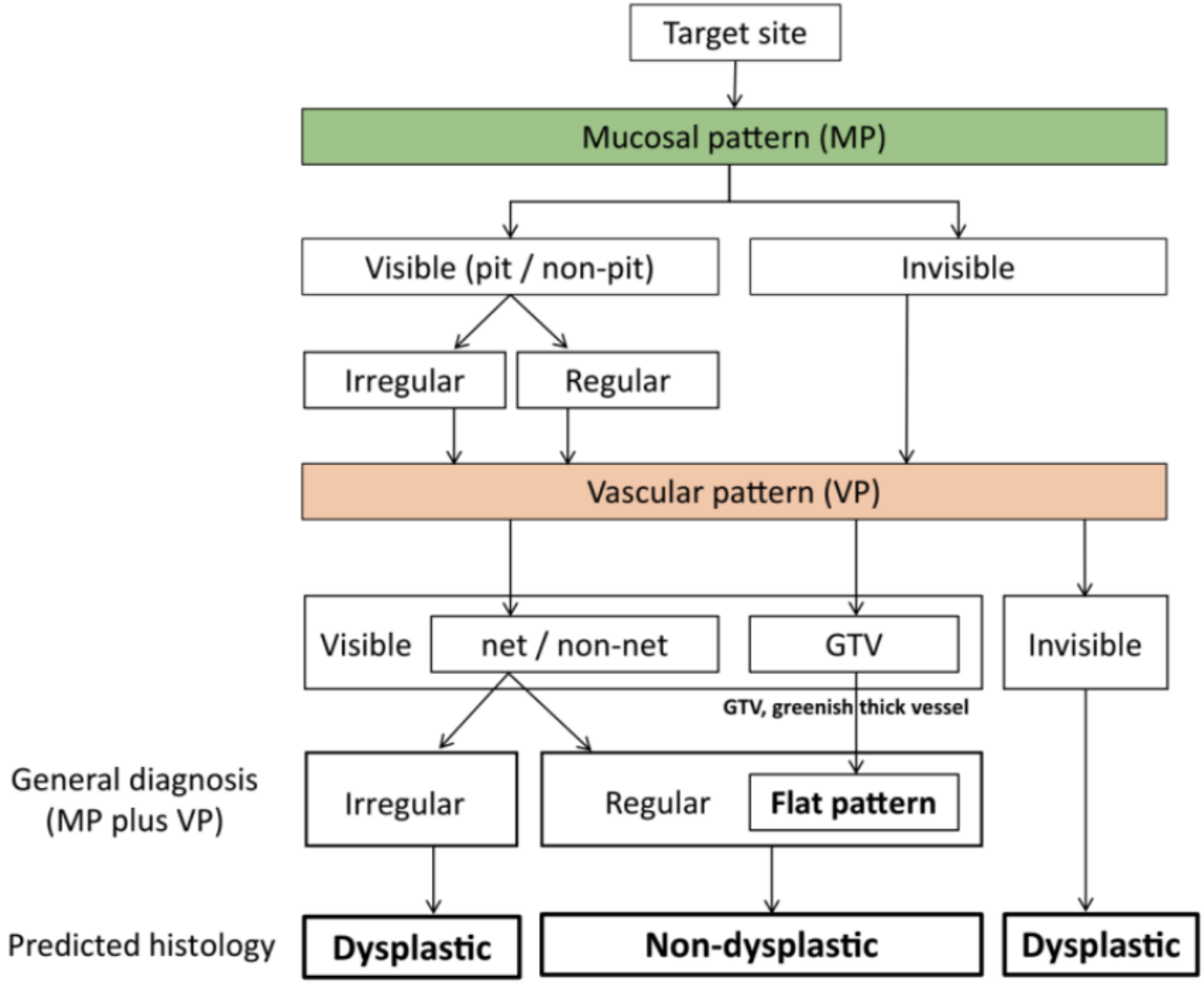
- Focus on the "danger zone": Retroflex!

THE BING CLASSIFICATION

The Barrett’s International NBI group

Table 1 BING classification of Barrett's epithelium

Morphological characteristics	Classification
Mucosal pattern	
Circular, ridged/villous, or tubular patterns	Regular
Absent or irregular patterns	Irregular
Vascular pattern	
Blood vessels situated regularly along or between mucosal ridges and/or those showing normal, long, branching patterns	Regular
Focally or diffusely distributed vessels not following the normal architecture of the mucosa	Irregular



Diagnostic flowchart using the JES-BE classification

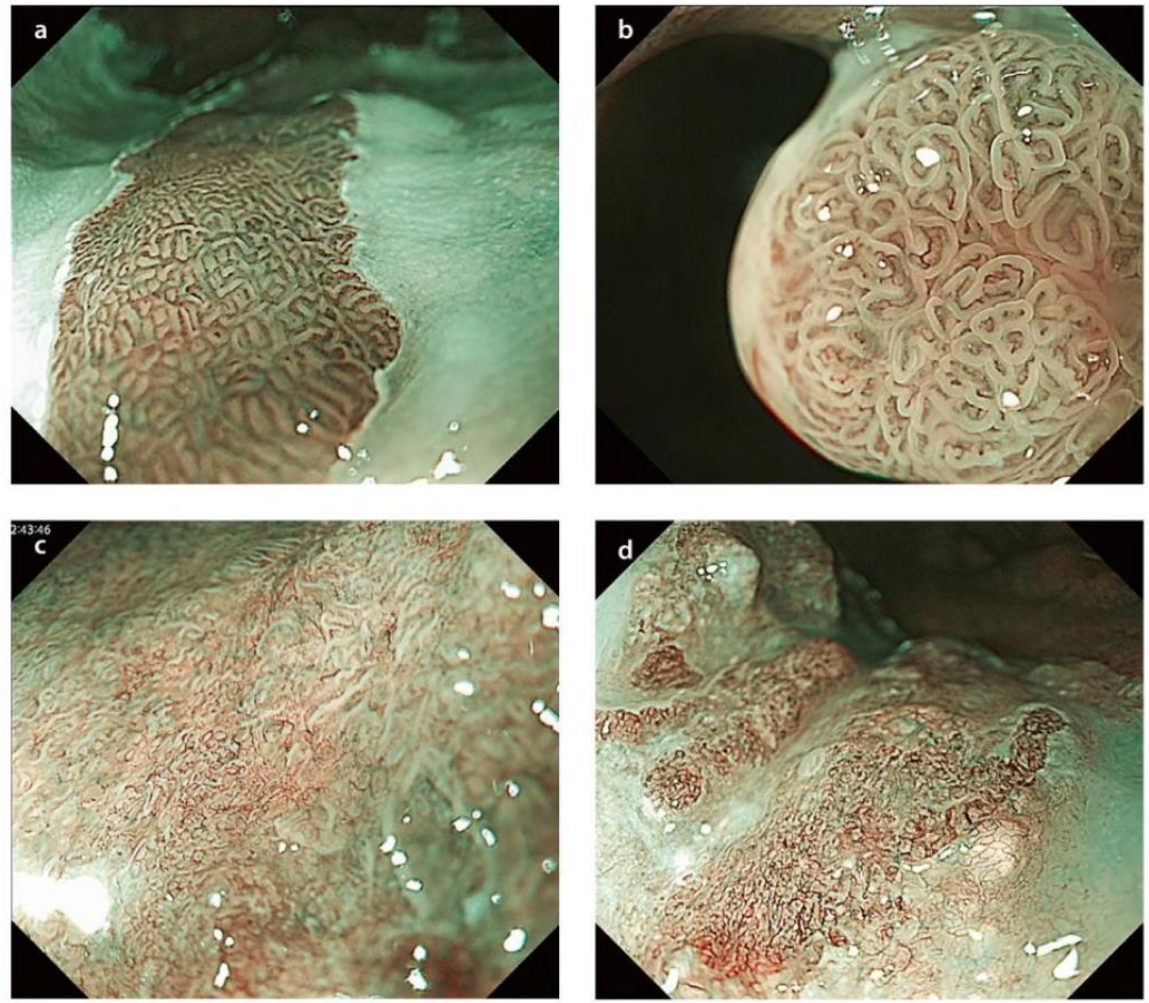
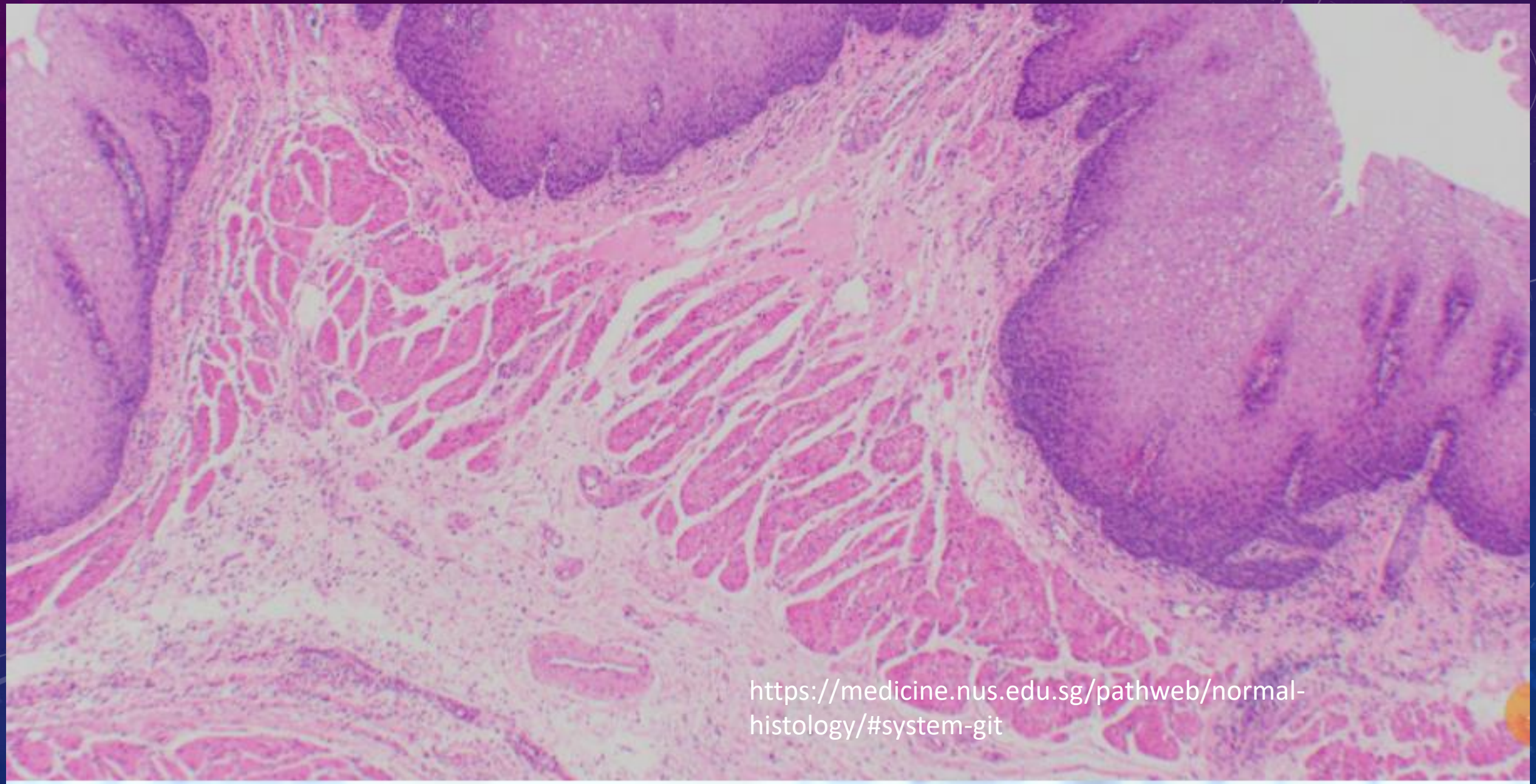


Fig. 4 **a** Regular pattern (MP, visible (pit), regular; VP, visible (net), regular) corresponding to non-dysplastic histology (oxyntocardiac glands without intestinal metaplasia). **b** Regular pattern (MP, visible (non-pit); VP, visible (non-net), regular) corresponding to non-dysplastic histology (cardiac-type glands with foveolar hyperplasia and intestinal metaplasia). **c** Irregular pattern (MP, invisible; VP, visible (**non-net and net**), irregular) corresponding to dysplastic histology (well-differentiated adenocarcinoma with low-grade atypia (noninvasive). **d** Irregular pattern (MP, invisible: VP, visible (**non-net and net**), irregular) corresponding to dysplastic histology (invasive differentiated adenocarcinoma (with submucosal invasion)

OESOPHAGUS - NORMAL HISTOLOGY



https://medicine.nus.edu.sg/pathweb/normal-histology/#system-git

Thanks!

