

OLYMPUS

High-Definition Narrow Band Imaging

Sample Clinical Images: Esophagus and Colon





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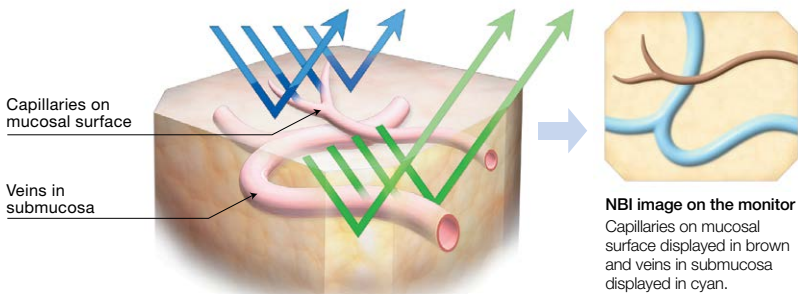
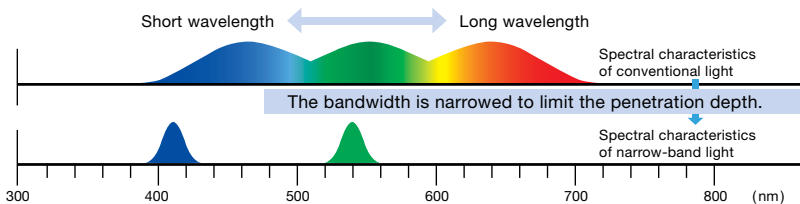
Narrow Band Imaging (NBI)

What is Narrow Band Imaging (NBI)?

NBI is an optical imaging technology that enhances the visibility of vessels and other structures on or near the mucosal surface. The gastrointestinal tract is mainly composed of blood vessels and mucosa. NBI, which is strongly absorbed by hemoglobin and penetrates only the surface of tissues, is ideal for enhancing the contrast between the two. NBI works by filtering the white light into specific light wavelengths that are absorbed by hemoglobin and penetrate only the surface of human tissue. As a result, under NBI, capillaries on the mucosal surface are displayed in brown and veins in the submucosa are displayed in cyan on the monitor.

Additionally, with 1080 effective scanning lines of picture information, HDTV delivers picture quality that is more than twice that of conventional TV. Increased pixel density produces a smooth, clear picture where remarkable detail and natural colors are unmarred by the pixelation seen in lower-resolution images.

Penetration Depth of Light According to Wavelength

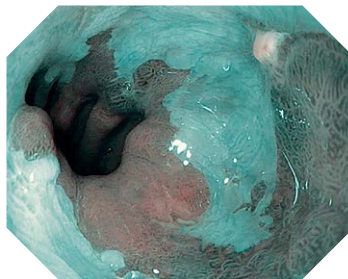




Narrow Band Imaging (NBI)

Benefits of NBI in the Upper Gastrointestinal Tract

In the upper gastrointestinal tract, NBI may help improve observation of abnormal areas in the distal esophagus. It can also improve observation of specific patterns associated with Barrett's Esophagus. NBI may also make it possible to more accurately identify target biopsies in patients with Barrett's Esophagus. In other parts, such as the stomach or the duodenum, NBI may enhance the observation of lesions which are barely visible under white light (W/L).



NBI

NBI in EVIS EXERA III 190-Series scopes provides twice the viewable distance of EVIS EXERA II 180-Series scopes and offers significantly brighter images.

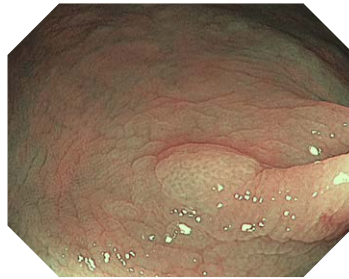
- **Fewer Biopsies:** Using HD NBI to target suspicious areas in patients with Barrett's esophagus can result in significantly fewer biopsies than white light examination with the Seattle protocol.
- **Less Time:** HD NBI facilitates targeted biopsies in patients with Barrett's esophagus, which can save valuable procedure time.
- **Better Interpretation Tool:** HD NBI provides contrast, which may aid in the interpretation of mucosal morphology, vascular patterns, and blood vessel appearance in patients with Barrett's esophagus.
- **Improved View:** HD NBI in EVIS EXERA III is significantly brighter and provides up to twice the viewable distance in the lumen.



Narrow Band Imaging (NBI)

NBI in the Lower Gastrointestinal Tract

In the lower gastrointestinal tract, NBI enhances the observation of capillaries in high contrast to the surrounding mucosa, allowing experienced endoscopists to conduct real time optical assessment of colorectal polyps through application of the NICE classification. This Atlas shows various clinical images taken under white light and NBI in the colon to show the possible clinical benefits of this technology.



NBI



New NBI NICE Claims

When used with Olympus 190 Series Endoscopes



DISTINGUISHABLE
DIFFERENCES

Narrow Band Imaging assists an experienced endoscopist employing a validated polyp classification system such as the NBI International Colorectal Endoscopic (NICE) classification with **high confidence, in distinguishing diminutive adenomatous polyps from non-adenomatous polyps during colonoscopy.**

Experienced endoscopists using Narrow Band Imaging demonstrated **93% sensitivity** (89-96%, 95% Confidence Interval, 59-98% range) in predicting adenomatous histology of diminutive polyps during colonoscopy when made with high confidence.

93%
SENSITIVITY

85%
SPECIFICITY

Endoscopists using Narrow Band Imaging demonstrated **85% specificity** (74-92%, 95% Confidence Interval, 44-99% range) in predicting adenomatous histology of diminutive polyps during colonoscopy when made with high confidence.

Experienced endoscopists using Narrow Band Imaging demonstrated **>90% Negative Predictive Value** in predicting adenomatous histology of diminutive polyps during colonoscopy when made with high confidence.

GREATER THAN
85%
NEGATIVE
PREDICTIVE
VALUE



New NBI NICE Claims

When used with Olympus 190 Series Endoscopes

 **HIGH**
CONFIDENCE
PREDICTIONS

In a randomized clinical trial, endoscopists using near focus mode colonoscopes with NBI were more likely to make **high confidence predictions** of diminutive polyp histology than those using standard focus colonoscopies.

Narrow Band Imaging-assisted endoscopists have achieved **>90% agreement with pathological analysis** in assigning post-polypectomy patient surveillance intervals following colonoscopy.

GREATER THAN

90%

AGREEMENT WITH
PATHOLOGICAL
ANALYSIS

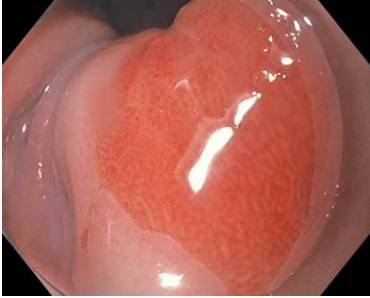


Narrow Band Imaging has met the American Society for Gastrointestinal Endoscopy (ASGE) Preservation and Incorporation of Valuable Endoscopic Innovations (PIVI) thresholds for real-time assessment of diminutive colorectal polyps by expert endoscopists when optical biopsy assessment was made with high confidence.



Esophagus

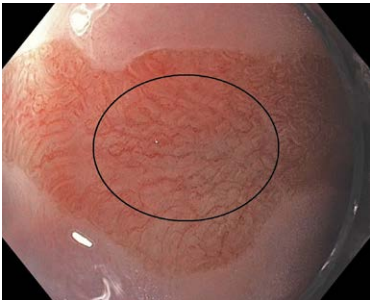
Regular Vascular Patterns



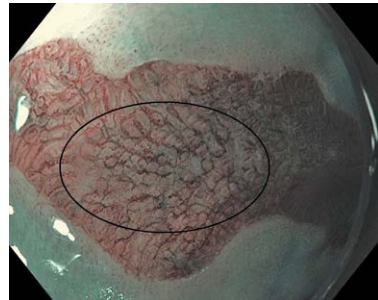
White Light



NBI



White Light

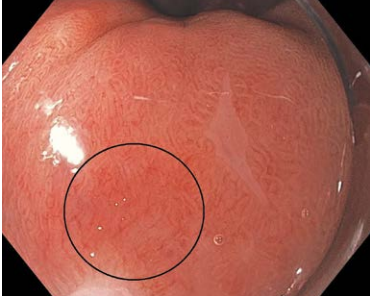


NBI

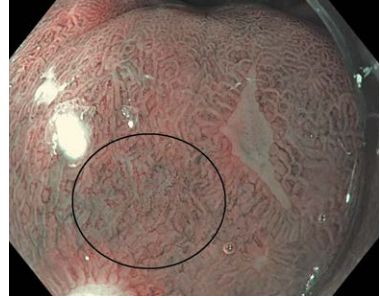


Esophagus

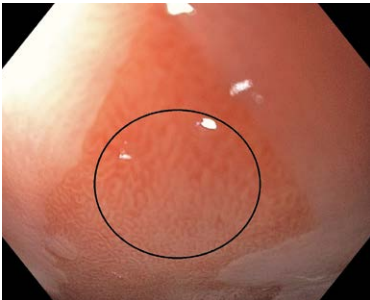
Regular Vascular Patterns



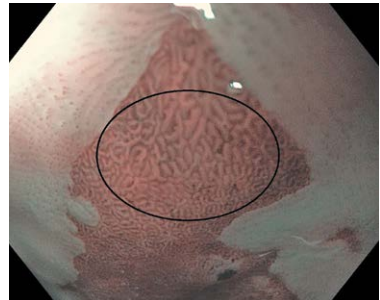
White Light



NBI



White Light

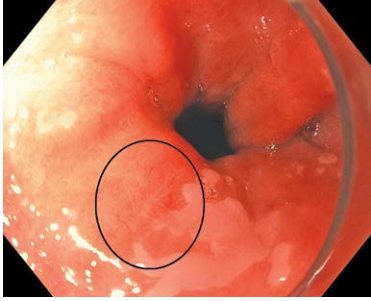


NBI

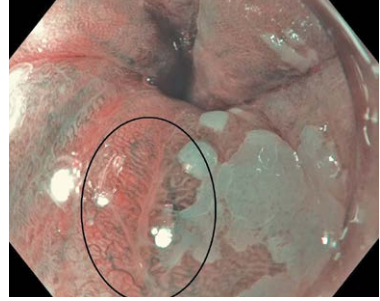


Esophagus

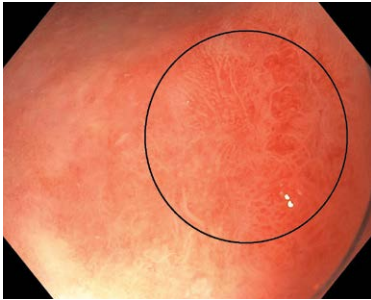
Regular Vascular Patterns



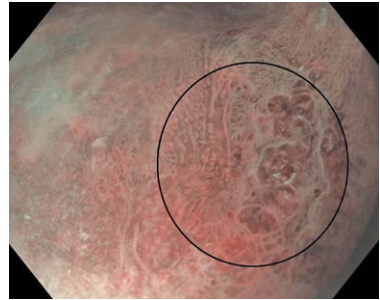
White Light



NBI



White Light

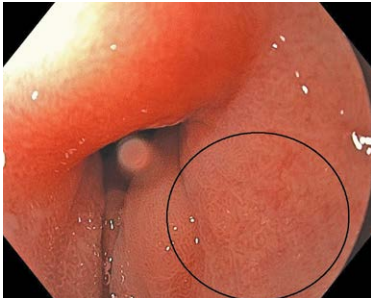


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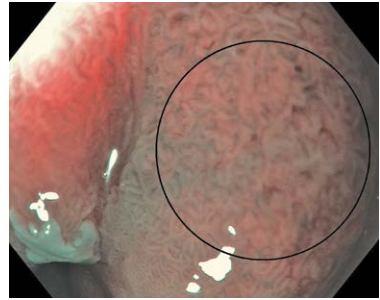


Esophagus

Irregular Vascular Patterns



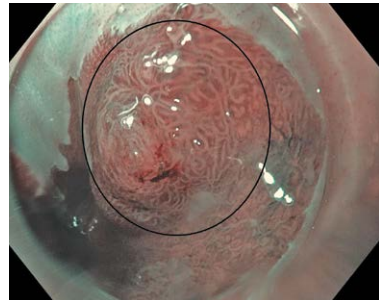
White Light



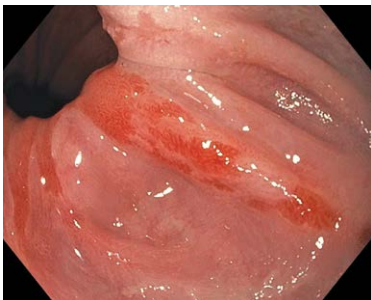
NBI



White Light



NBI



White Light



NBI



Colon

NICE Type 1 Polyp



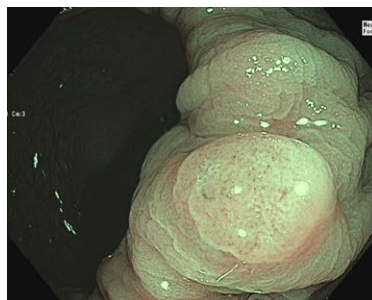
White Light



NBI



White Light



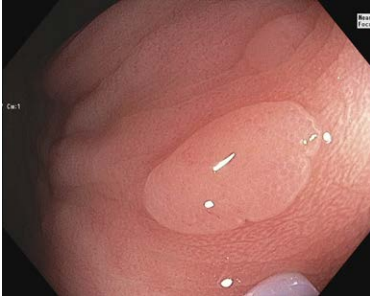
NBI

**Images courtesy of Dr. Douglas Rex, Indiana University School of Medicine.*

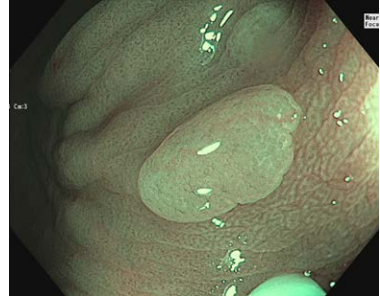


Colon

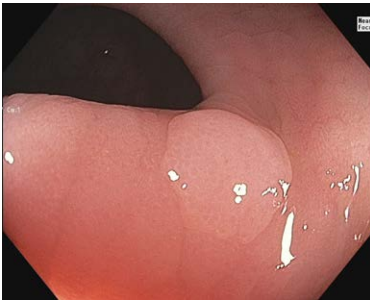
NICE Type 1 Polyp



White Light



NBI



White Light



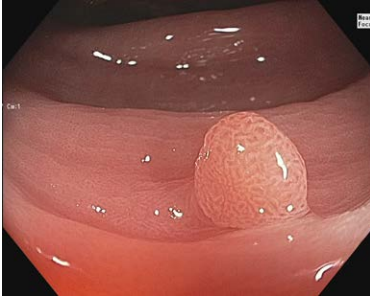
NBI

**Images courtesy of Dr. Douglas Rex, Indiana University School of Medicine.*

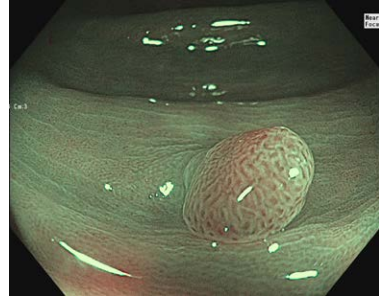


Colon

NICE Type 2 Polyp



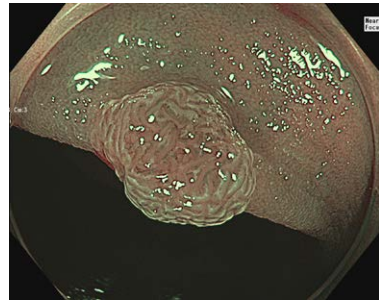
White Light



NBI



White Light



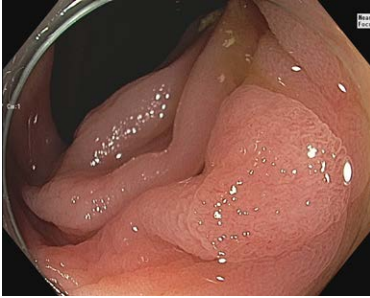
NBI

**Images courtesy of Dr. Douglas Rex, Indiana University School of Medicine.*

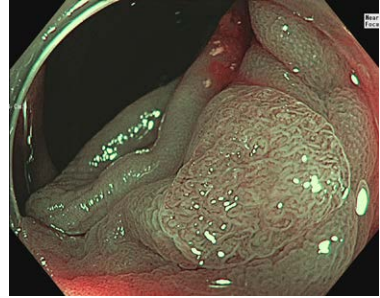


Colon

NICE Type 2 Polyp



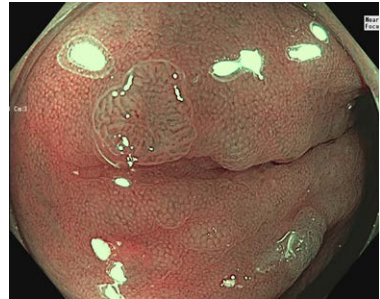
White Light



NBI



White Light



NBI

**Images courtesy of Dr. Douglas Rex, Indiana University School of Medicine.*

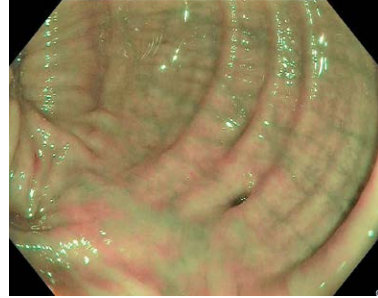


Colon

Diverticulum in Sigmoid



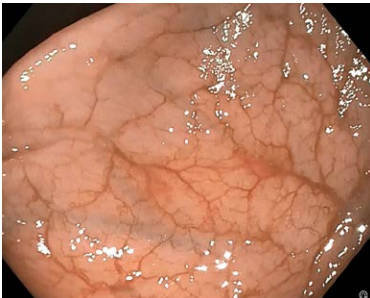
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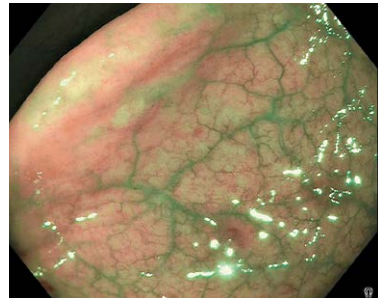
NBI

Abnormal Mucosa

Lesion



White Light



NBI



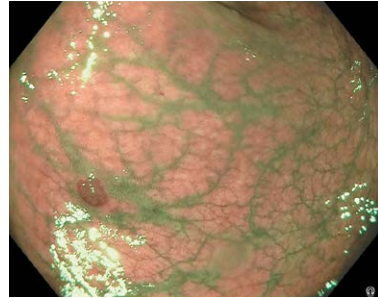
Colon

Abnormal Mucosa

Lesion – Diminutive Polyp



White Light



NBI

Abnormal Mucosa

Lesion – Diminutive Polyp



White Light



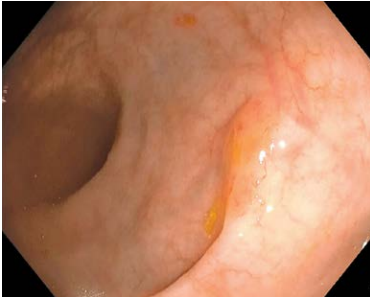
NBI



Colon

Abnormal Mucosa

Lesion – Ascending

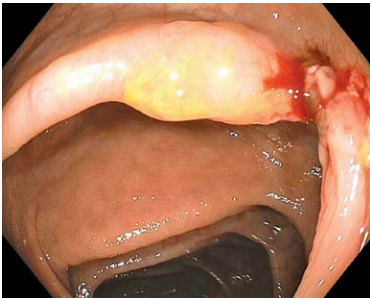


White Light

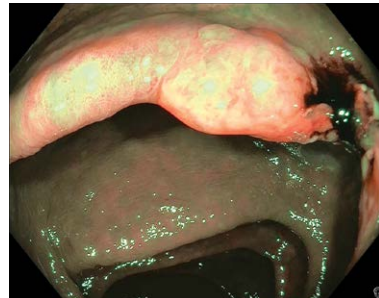


NBI

Lesion – Fold



White Light



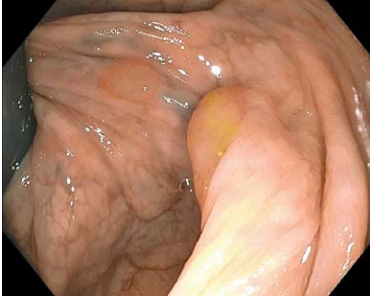
NBI



Colon

Abnormal Mucosa

Lesion – Cecum



White Light



NBI



Colon

Abnormal Mucosa

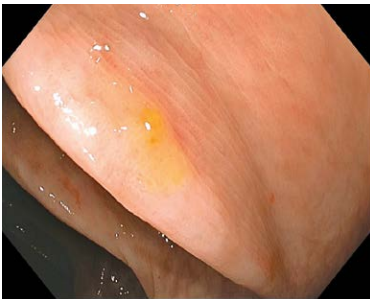
Lesion – Sessile Serrated Polyp (Mucous Cap)



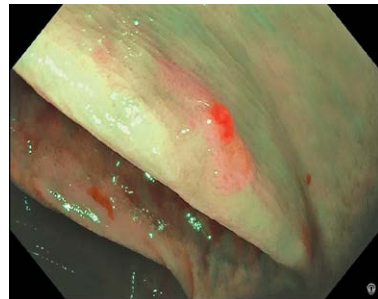
White Light



NBI



White Light



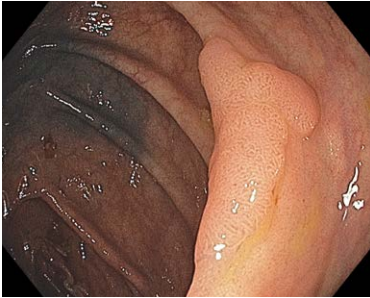
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Colon

Abnormal Mucosa

Lesion – Flat



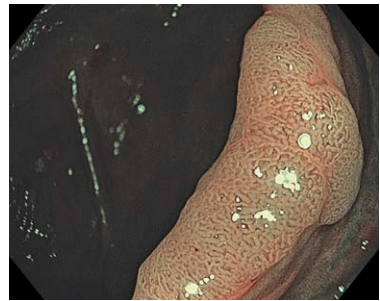
White Light



NBI



White Light



NBI



Colon

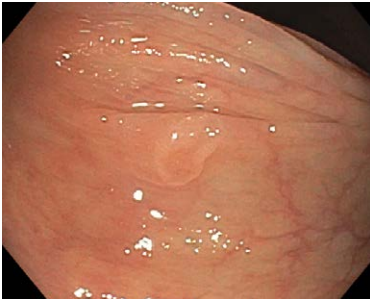
Polyps



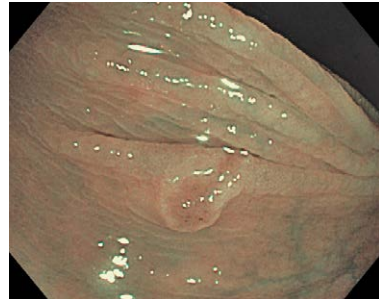
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NBI



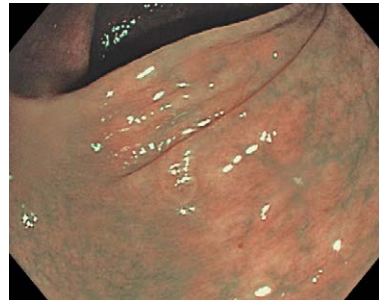
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NBI



White Light

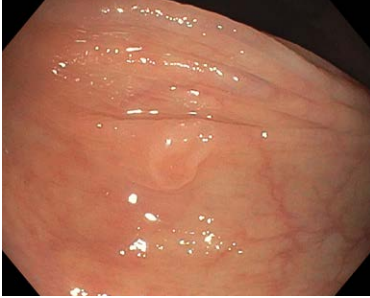


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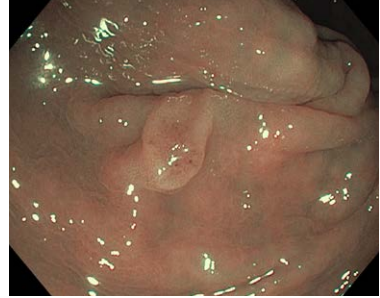


Colon

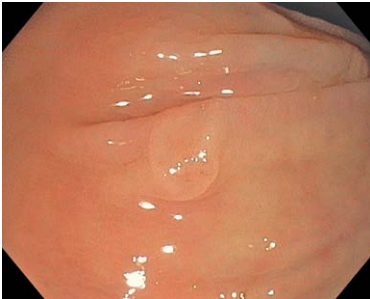
Polyps



White Light



NBI



White Light



NBI



Olympus Endoscopes

NBI Compatible GI Endoscopes Currently Offered

Colonoscopes

- **CF-HQ190L/I – Dual Focus Endoscope**

The EVIS EXERA III CF-HQ190L/I colonovideoscope utilizes an advanced Dual Focus optical system and NBI to produce clear, bright images for observation. Unique Responsive Insertion Technology (RIT) ensures ease of insertion and excellent scope handling during a complete colonoscopy.

- **PCF-HQ190L/I – Dual Focus Endoscope**

The EVIS EXERA III PCF-H190L/I colonovideoscope provides the same 170° field of view as the larger CF scope. This wide view, combined with a Dual Focus optical system and NBI produces clear, bright images for observation, all in a slim design.

- **PCF-H190TL/I**

The EVIS EXERA III PCF-H190L/I colonovideoscope provides the same 170° field of view as the larger CF scope. This wide view, combined with HDTV and NBI, enables closer, more detailed examination during colonoscopy, all in a slim design.

- **PCF-H190DL/I**

The EVIS EXERA III PCF-H190DL/I colonovideoscope provides the same 170° field of view as the larger CF scope and offers ScopeGuide capability. This wide view, combined with HDTV and NBI, enables closer, more detailed examination and observation during colonoscopy, all in a slim design.

- **PCF-PH190L/I**

The EVIS EXERA III PCF-PH190L/I colonovideoscope delivers HDTV image quality and Narrow Band Imaging (NBI) for enhanced visualization in an ultra-slim scope. An outer diameter of only 9.7 mm along with Responsive Insertion Technology (RIT) helps ease insertion.



Olympus Endoscopes

NBI Compatible GI Endoscopes Currently Offered

Gastrosopes

- **GIF-HQ190**

The EVIS EXERA III GIF-HQ190 gastroscope includes an array of advanced features to support both upper and intra-operative endoscopy. NBI delivers significantly increased brightness, providing twice the viewable distance. Dual Focus functionality delivers the optimal depth of field at the touch of a button.

- **GIF-H190**

The EVIS EXERA III GIF-H190 gastroscope provides great image quality and maneuverability in a slim design. HDTV clarity along with NBI deliver enhanced visualization and a water jet channel helps enable clearer observation during procedures.

- **GIF-XP190N**

The EVIS EXERA III GIF-XP190N gastroscope delivers excellent image quality and illumination, enhanced NBI capabilities, and a wide 140° field of view. Its 5.4 mm outer diameter makes the GIF-XP190N a powerful tool for diagnostic endoscopy whenever an ultra-slim scope is needed.

- **GIF-1TH190**

The EVIS EXERA III GIF-1TH190 gastroscope is designed for image guided therapy. The scope's HDTV image quality is a first for a single-channel therapeutic gastroscope, while the NBI capability may aid in the interpretation of mucosal morphology, vascular patterns, and blood vessel appearance in patients with Barrett's esophagus. The slimmer 10.0 mm distal end is smaller than the predecessor.



Olympus Endoscopes

NBI Compatible GI Endoscopes Currently Offered

Duodenoscope

- **TJF-Q190V**

The TJF-Q190V utilizes a square image shape and 15° backward viewing for expanded field of view and improving cannulation efficiency. NBI is significantly brighter and provides contrast, which may aid in the interpretation of mucosal and vascular patterns of the papilla. Reliable locking guidewire facilitates and secure short guidewire locking with dual system at distal end. High Force Transmission enables a 1:1 transfer of pushing and rotating forces to the distal end of the duodenoscope, improving ergonomics and scope responsiveness.

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