

Your Chance to Improve Patient Outcome

Narrow Band Imaging (NBI) – The New Standard for Diagnostics and Treatment



Narrow Band Imaging (NBI)

The New Standard for Diagnostics and Treatment



Better Patient Outcome

- NBI detects more laryngeal cancer.¹
- Reduces recurrence due to early diagnosis.⁴
- Is clinically proven and recommended by ELS (European Laryngological Society).^{1,2,3}



Reduce Costs

- No additional installations, no extra cost per procedure, no drugs needed.
- NBI can reduce the procedure costs due to early diagnosis.⁵

More information about NBI

www.olympus.eu/entnbi



High Versatility

- Can be used in various ENT areas for almost every procedure.
- For early cancer detection in doctors' offices or outpatient clinics.
- In the OR for treatment procedures (e.g. better margin definition).



Easy Handling

- Is easily available at the push of a button.
- Comes with all Olympus Medical imaging systems and videoscopes.
- Can be combined with full HD and 4K.

When White Light Is Not Enough

NBI – The New Standard for Early Cancer Detection

NBI allows ENT specialists to diagnose and treat early laryngeal cancer even more precisely and reliably. NBI is also a very accurate technology for follow-up procedures.^{1,4}

It is clinically proven¹ that by using NBI, doctors are able to detect more suspicious lesions compared to traditional white light (WL), consequently leading to potentially reduced recurrence⁴. In addition, NBI is easy to handle due to filter activation at the push of a button. And it's cost-effective, too: All Olympus Medical imaging systems and videoscopes come with NBI as standard with no additional installations or drugs needed.

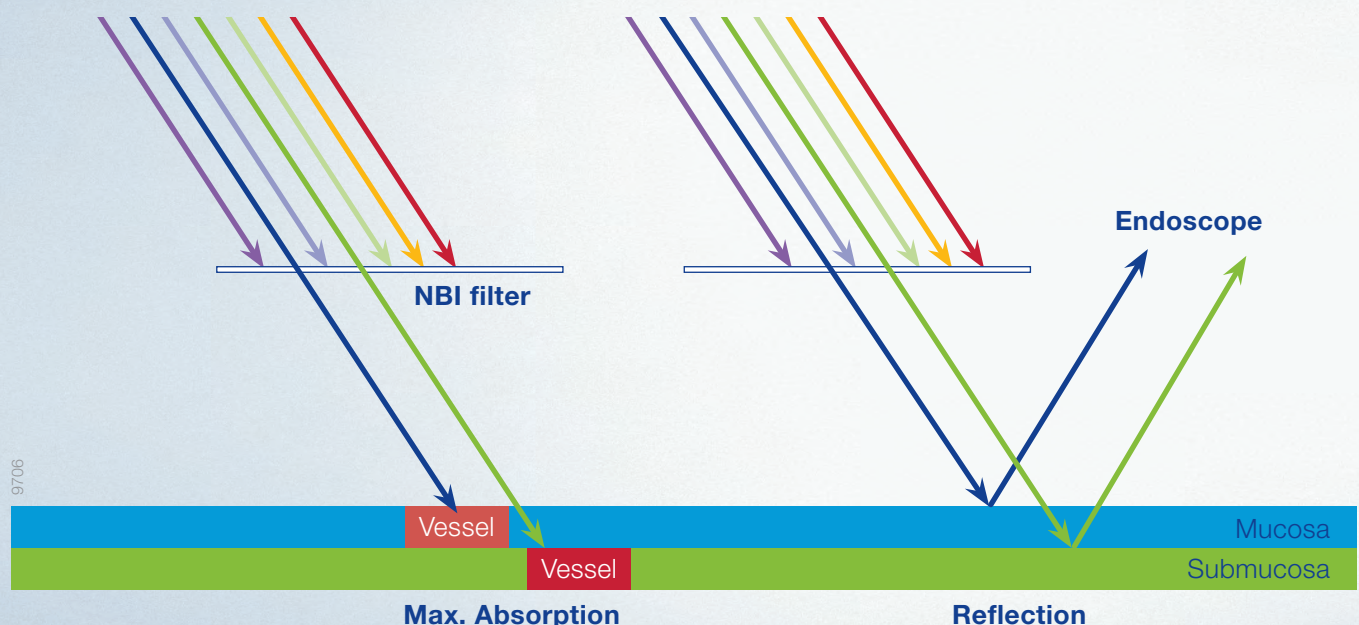
All this makes using NBI a safe and reliable way to improve clinical outcomes in patients with suspected cancer in the upper aerodigestive tract – and a unique tool for the patient pathway from diagnosis to follow-up in OR, outpatient clinics and doctors' offices. It is suitable for numerous endoscopy procedures in ENT such as laryngoscopy, larynx, oral cavity, and sinus surgery as well as for procedures in otology.

“ NBI is a keystone in our daily practice: It is a reliable tool in the study of upper aerodigestive tract malignancies. (September 2018) ”

Prof. Giorgio Peretti

Professor of Otorhinolaryngology, University of Genova's Medical and Postgraduate Schools,
Director of Otorhinolaryngology, Genova's San Martino University Hospital

NBI – The Underlying Principle



NBI light is absorbed by capillaries on the mucosal surface (blue) and veins in the submucosa (green).

How NBI Works

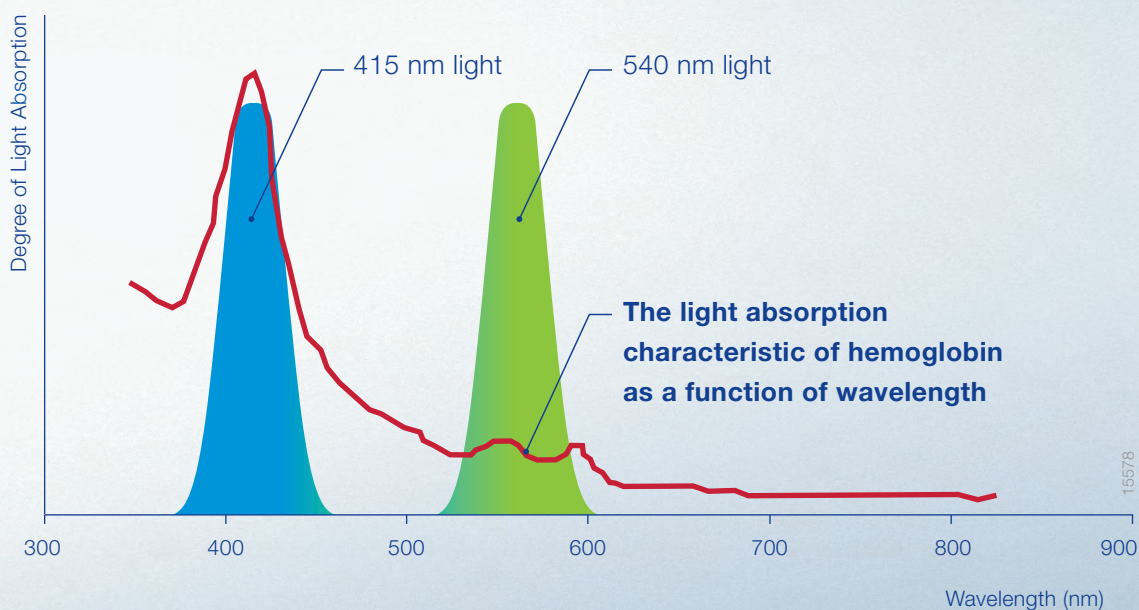
Normal white light (WL) contains all colors. When WL hits the surface of a tissue, all colors are absorbed. Thus the image remains with lack of contrast. With NBI this is different.

NBI uses only blue and green light. When blue and green light hit the surface of the tissue, it is highly absorbed by hemoglobin in the blood vessels. While the blue light is absorbed by the capillaries in the mucosa, the green light reaches deeper to the submucosal area, where it is reflected by the blood vessels.

This is why NBI creates a significantly higher contrast between blood vessels and the surrounding tissue than WL. The NBI images therefore have more contrast than WL images.

Since small tumors are often surrounded by many blood vessels, NBI helps to detect these tumors at an early stage and to analyze these areas accordingly. Thus, NBI supports the early and precise optical diagnosis of laryngeal cancer lesions, which as a result allows better treatment and more accurate follow-ups.

Numerous studies highlight the clinical value of NBI, especially with regard to the characterization of suspicious mucosal areas and the detection of cancerous lesions.



The amount of light hemoglobin absorbs depends on its wavelength.

For Your Patients' Safety

The Clinical Value of NBI for ENT



NBI Is Clinically Proven to Diagnose More Laryngeal Cancer

Particularly when combined with a high resolution (e.g. HDTV), NBI can provide a more-detailed and higher-contrasted visualization of blood vessels than other endoscopic procedures.¹

An example from daily clinical practice illustrates this: Before a patient's vocal sound or vocal capabilities deteriorate, NBI can be routinely used to determine early changes in the vocal folds' vessels, which can also be quantitatively and qualitatively classified.

Numerous studies, including a growing number of randomized controlled trials (RCT) and meta-analyses, highlight the clinical value of NBI, especially with regard to the detection of cancer and through examination of suspicious mucosal areas. With high image quality and contrast in full HD or ultra high definition (4K), NBI can better display the edge of surgical margin and thus may reduce the number of biopsies.



18%

Detects 18% more true-positive laryngeal cancer lesions¹



23%

Increases sensitivity by 23% in the identification of laryngeal cancer² while maintaining high specificity (96%)



85%

Reduces 85% of superficial positive margins³

Figures compared to white-light endoscopy

“NBI improves my diagnostic workup and optimizes endoscopy. (September 2018)”

Prof. Dr. med. Christoph Arens

Director, University Hospital Magdeburg, Department of Otolaryngology

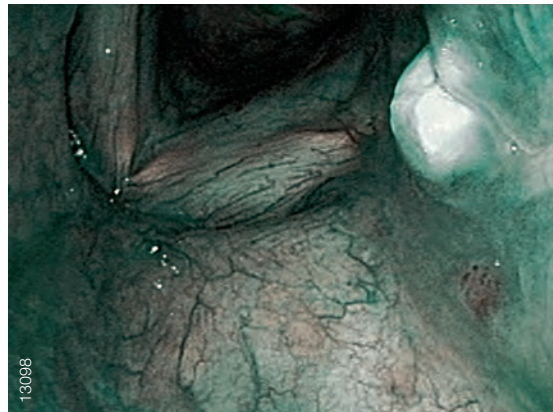
How NBI Can Help in ENT Diagnosis – An Example

State-of-the-art imaging techniques in ENT deliver true-to-life image quality in crystal clear detail. The brilliant full HD resolution is the basis for the high accuracy in ENT diagnostic and therapeutic procedures, larynx surgery, laparoscopy and otoscopy. The innovative NBI technology allows for the enhanced visibility of vessel structures leading to the improved detection of carcinoma in situ in the larynx, as well as saving healthy mucosa due to more precisely defined borders.

Case 1

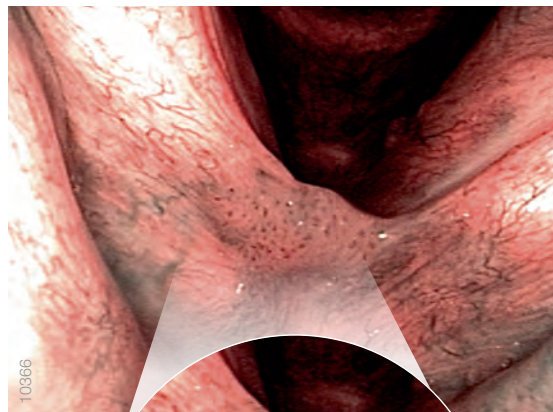
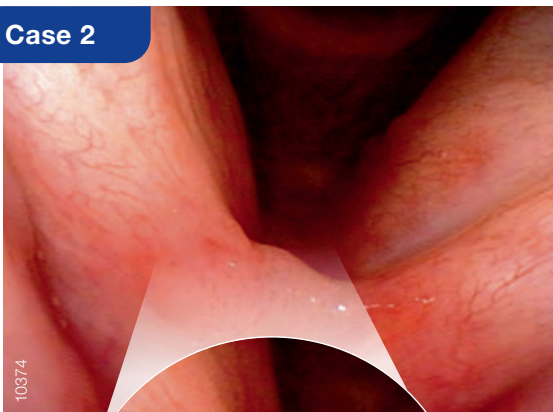


White light image

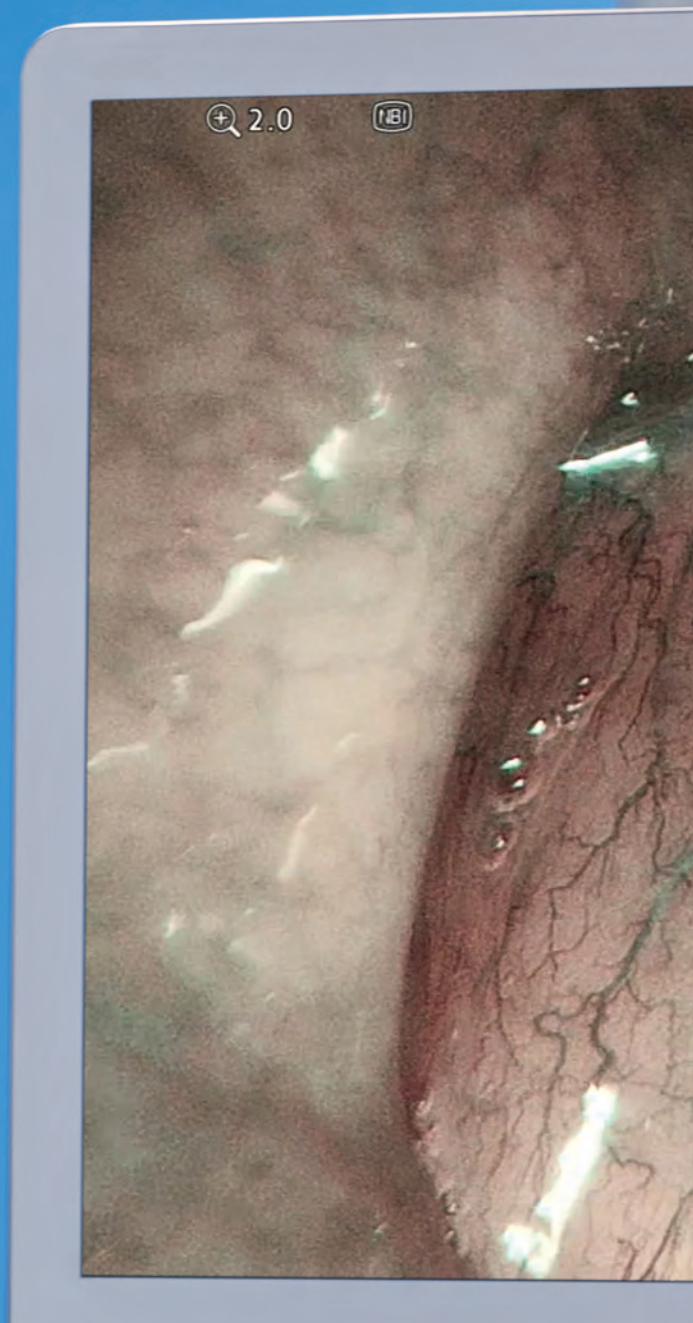


NBI image

Case 2



Recurrent papilloma with intraepithelial papillary vascular loops in the anterior commissure with mild synechia. (left: white light image, right: NBI image)



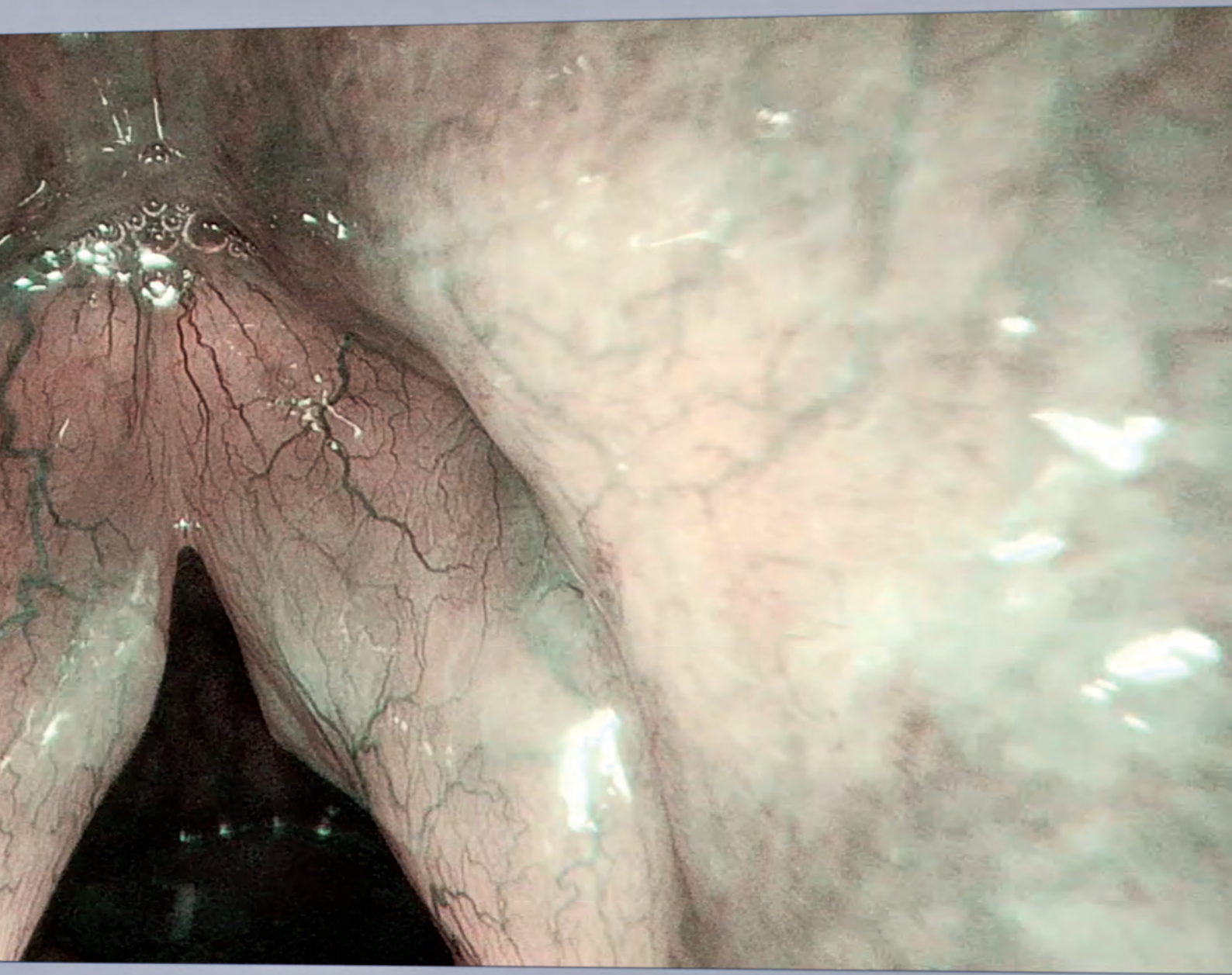
Clinical Advantages of NBI in a Nutshell

- Enables superior detection of tumors in comparison to conventional WL.²
- Improves visualization of capillary networks and thus allows for analysis of tumor progression.
- Improves identification and detection of small tumors at an earlier stage.¹

Watch procedure videos comparing NBI to white-light endoscopy

➤ www.olympus.eu/entnbi

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Early Diagnosis – Lower Recurrence Costs

The Economical Value of NBI for ENT



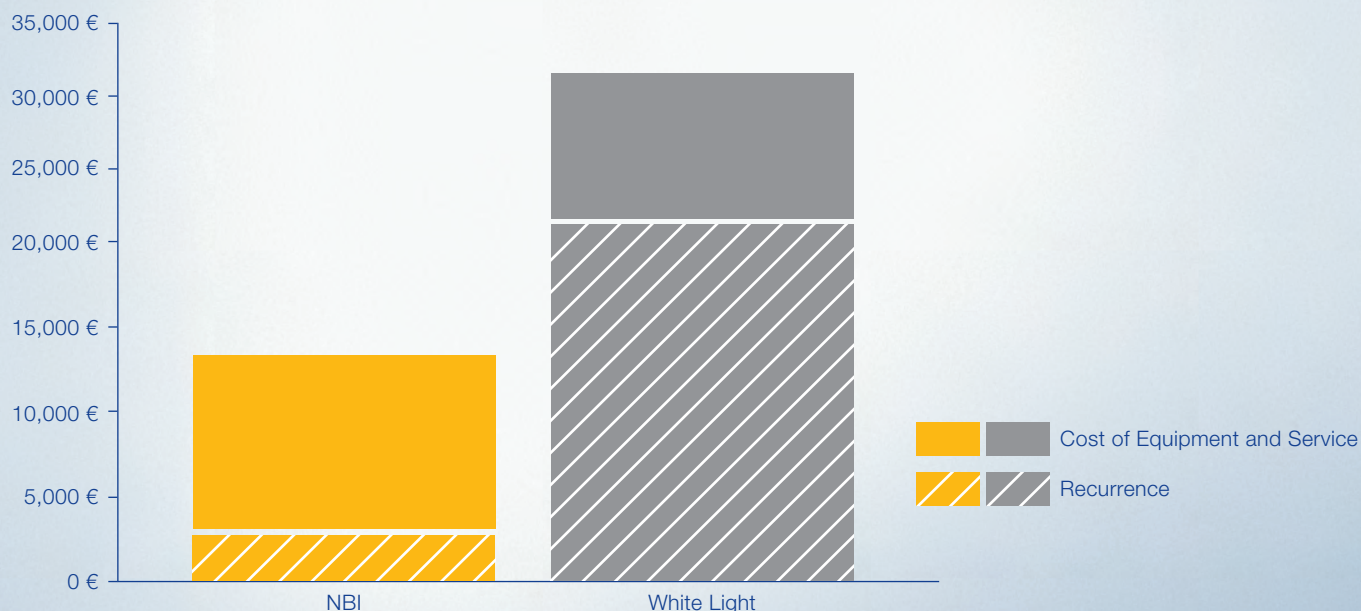
How NBI Reduces Overall Costs

NBI offers clear advantages in the early diagnosis of laryngeal cancer in pre-, intra- and postoperative stages compared to WL endoscopy.² As tumors can be detected at an early stage using NBI, potential complications and the time a patient needs to spend in hospital for treatment, follow-up and treatment due to tumor recurrence is potentially less.⁴

NBI comes with Olympus Medical equipment at no additional cost for extra equipment, disposables or drugs. It is a key function of the Olympus endoscopy system and has been shown to provide clinical quality, efficiency gain and cost savings in other indications.⁵

In the following calculation, the Olympus video endoscopy system with NBI (“NBI”) will be compared to a conventional white-light endoscopy system without NBI (“White Light”).

Total Costs per Year | Example: 50 patients*



Disclaimer: Costs and savings figures used in the model are for illustrative purposes only and the user's attention is drawn to the fact that outputs from the model are subject to a) the assumptions described within the model and b) the data that the user selects or decides to input into the model.

* Plaat et al.: Narrow-band imaging in transoral laser surgery for early glottic cancer in relation to clinical outcome. *Head Neck*. 2017 Jul; 39(7): 1343-1348. doi: 10.1002/hed.24773. Epub 2017 Mar 29.



Ask your sales representative for your individual cost saving with NBI.

Please fill out the online form on the website and we will contact you

[▶ www.olympus.eu/entnbi](https://www.olympus.eu/entnbi)

OLYMPUS

**VISERA
ELITE II
OTV-S300**

CAUTION Do not touch the video connector
ATTENTION Ne touchez pas le connecteur vidéo



Innovation by
Sony & Olympus

Main

Main

Observe

Color

Info

Option

ON

Lamp

Load patient

01: OLY

INT
RDY

NBI reduces the risk of recurrence.⁴

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NBI

Load user preset



Home

YMPUS

Completed

Brightness [Auto]

0

White balance

Auto

ON



NBI

INTERNAL MEMORY
RDY/BUSY

PORTABLE
RDY/BUSY

NBI – Practical Advantages

High Versatility and Easy Handling



NBI – For Diagnosis, Treatment and Follow-Up

NBI provides better definition of tumor diagnosing and staging and surgical margins in pre- and intraoperative settings. NBI is also valuable in postoperative settings due to its capacity for early detection of persistence and recurrence of early laryngeal cancer as well as metachronous tumors.

NBI can be used in doctors' offices, outpatient clinics and ORs. By combining NBI technology with flexible scopes as well as with rigid scopes, doctors can benefit from this technology during the complete patient pathway, from diagnosis to treatment and follow-up. Also, using the same technology in all procedures makes it easier to compare relevant clinical data.

Early Diagnosis



Surgery/Treatment



Follow-Up



“ In the contemporary management of head and neck cancer, NBI definitively represents the highest step so far reached in the continuous search for the holy grail of optical biopsies. (September 2018) ”

Cesare Piazza, MD

Associate Professor, University of Milan,

Chief of the Department of Otorhinolaryngology, National Cancer Institute of Milan



NBI – The Simple Solution

Using NBI requires no time-consuming preparation or installation prior to performing procedures in the upper aerodigestive tract.

NBI is available for the latest Olympus imaging systems, and it can easily be switched on at the push of a button.



Key Outcomes of Using NBI

NBI allows the more precise and reliable diagnosis and treatment of early laryngeal cancer. It is clinically proven that by using NBI, doctors are able to detect more suspicious lesions compared with traditional WL endoscopy. NBI is also easy to handle and cost-effective: All Olympus Medical imaging systems and videoscopes come with NBI as standard with no additional installations or drugs needed. All this makes using NBI a safe and reliable way to improve clinical outcomes in patients with suspected cancer in the upper aerodigestive tract.^{1,2,3,4,5}

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References

¹ Simo et al., European Laryngological Society: ELS recommendations for the follow-up of patients treated for laryngeal cancer. *Eur Arch Otorhinolaryngol.* 2014 Sep; 271(9): 2469-79.

² Kraft et al., Value of narrow band imaging in the early diagnosis of laryngeal cancer. 2015 Wiley Periodicals, Inc. *Head Neck* 38: 15-20, 2016.

³ Garofolo et al., Intraoperative Narrow Band Imaging Better Delineates Superficial Resection Margins During Transoral Laser Microsurgery for Early Glottic Cancer. *Ann Otol Rhinol Laryngol.* 2015 Apr; 124(4): 294-8.

⁴ Laat et al.: Narrow-band imaging in transoral laser surgery for early glottic cancer in relation to clinical outcome. *Head Neck.* 2017 Jul; 39(7): 1343-1348. doi: 10.1002/hed.24773. Epub 2017 Mar 29.

⁵ Kang W et al.: Narrow band imaging-assisted transurethral resection reduces the recurrence risk of non-muscle invasive bladder cancer: A systematic review and meta-analysis. *Oncotarget.* 2017 Apr 4; 8(14): 23880-23890. doi: 10.18632/oncotarget.13054.

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