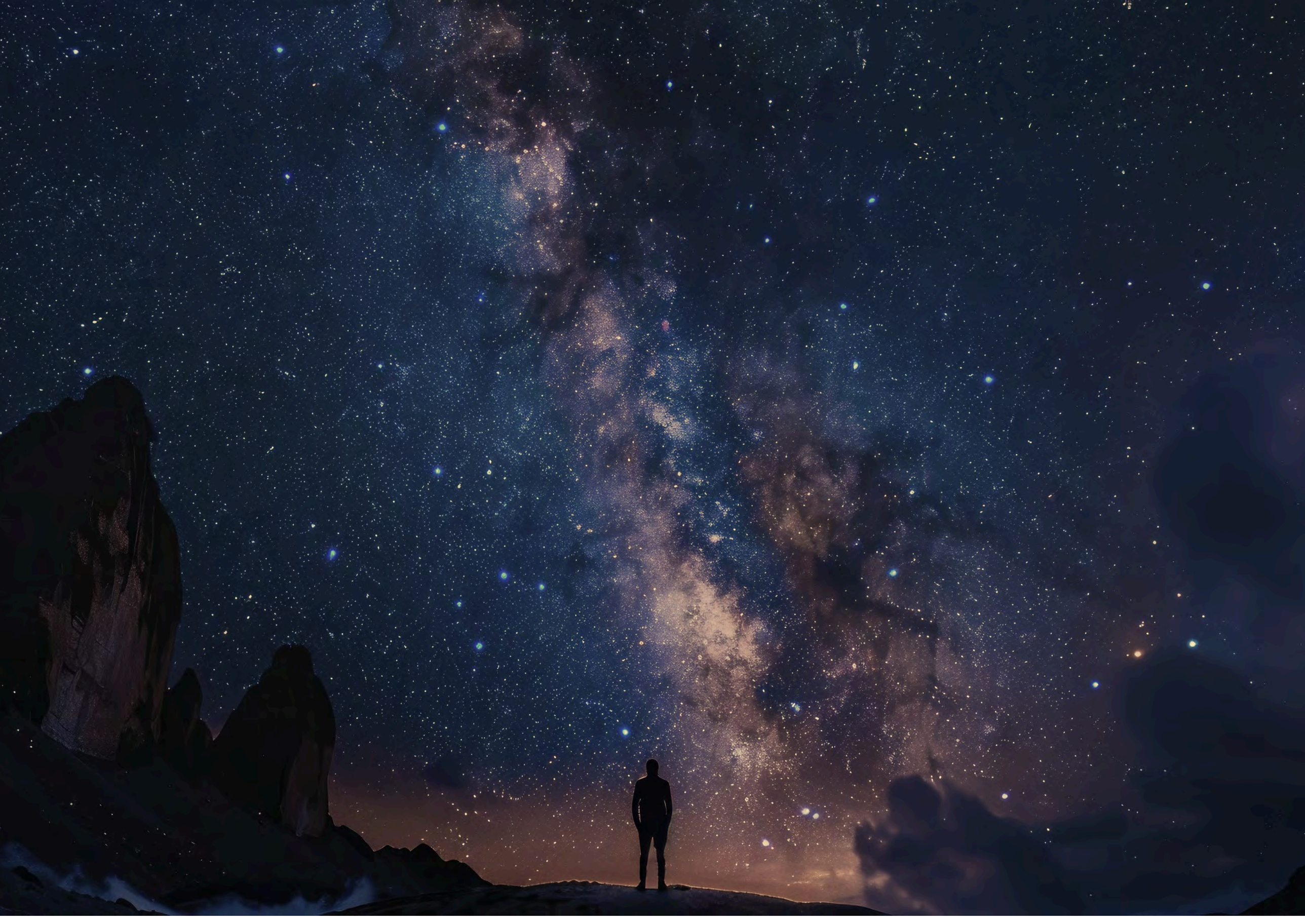


BOOK OF EXPERIENCE

DISCOVER AMBER-RED COLOUR IMAGING

ACI | FUJIFILM
Value from Innovation

DISCOVER AMBER-RED COLOUR IMAGING

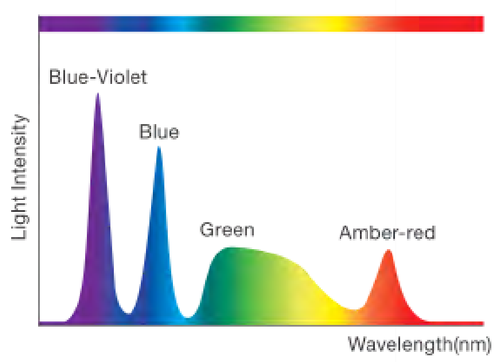
FUJIFILM has introduced two IEE modes to support lesion detection and characterisation by high-contrasting LCI and BLI images. ACI specifically aims to visualise subtle nuances in red coloration while maintaining a colour tone similar to WLI, potentially making it a tool for identifying bleeding sources during ESD and other third space endoscopy (TSE) treatments. Moreover, it can be employed when incising mucosa and dissecting submucosa, as shown in the following workflow.

ESD WORKFLOW

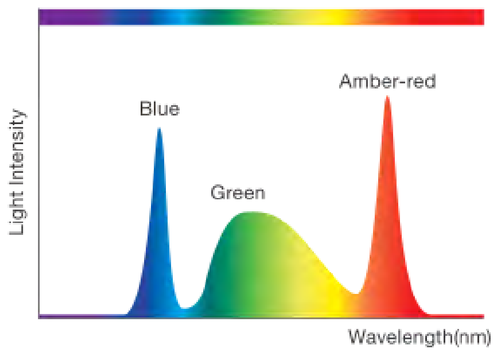
and usage of each IEE

1. Multi-Light Technology

To emphasise the difference of mucosal colour, LCI is utilising short wave-length Blue-Violet light, whereas ACI is utilising long wave-length Amber-red light to emphasise the information of the deeper mucosa.



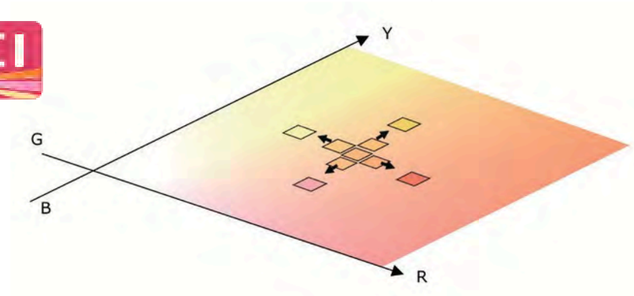
To enhance the information on the surface, LCI employs short wavelength.



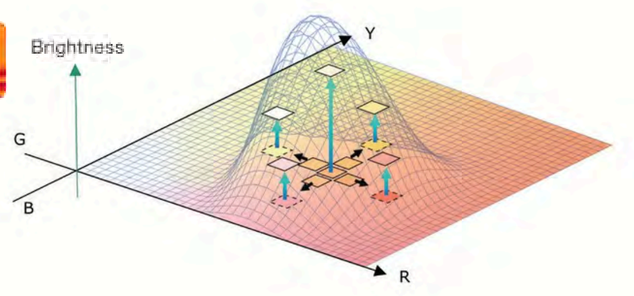
To enhance the information on the deep layer, ACI employs long wavelength.

2. Colour Enhancement Technology and Brightness Enhancement Technology

LCI employs a red colour tone as a reference that is close to the mucous membrane, whereas ACI references red colour tones similar to blood. In both light modes the contrast of red colour tones is increased in a post-processing step.



Colour enhancement



Brightness enhancement

ACI emphasises the difference in colour shade by adjusting the brightness. This further enhances the contrast of the red colour tones close to blood.

EXPERIENCE

Meet Dr. Roos Pouw

Dr. Roos Pouw

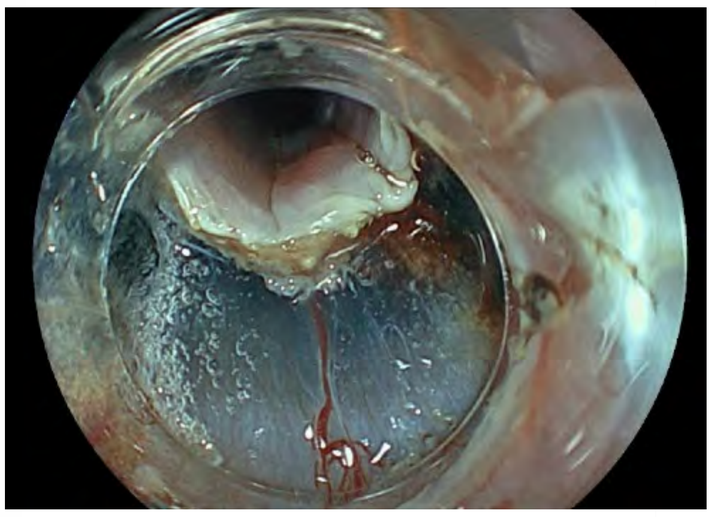
Amsterdam University Medical Centers, Netherlands

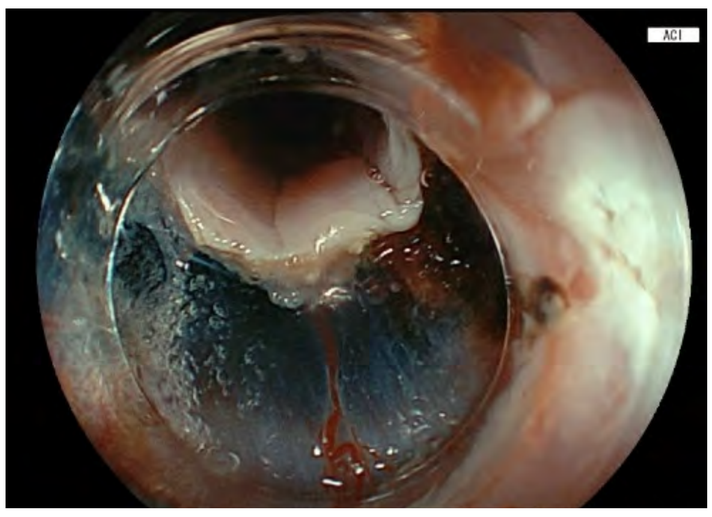
Dr. Roos Pouw is a gastroenterologist at the University Medical Center Utrecht in the Netherlands. In 2011 Roos obtained her PhD-degree Cum Laude with her thesis entitled “Endoscopic Eradication of Barrett’s Esophagus with early neoplasia.” Next to her clinical work, Roos supervises a number of research lines on endoscopic management of early Barrett’s neoplasia, and for this work, she received the UEG Rising Star award in 2021.

In her words

“Using an appropriate amount of blue coloration in the lifting fluid provides a clear view of the submucosa, muscle layer, and mucosal side of the incision, ensuring a safe cutting and dissection plane. It also makes blood vessels easier to recognise for prophylactic treatment to prevent bleeding.”

ESD 1 & 2





WLI

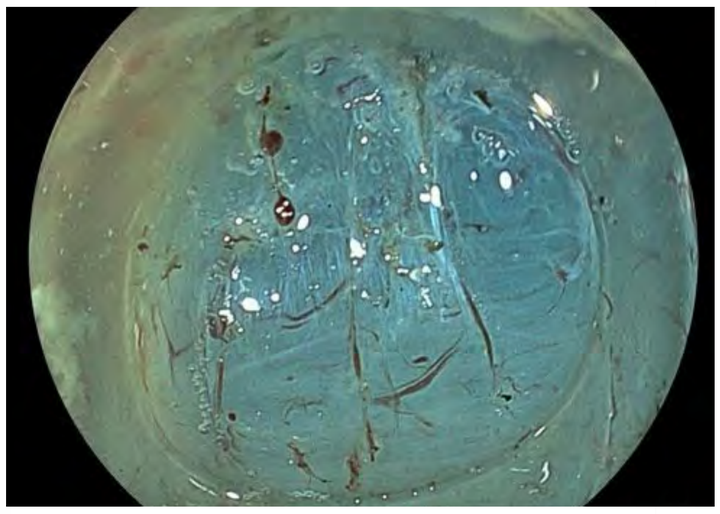
ACI

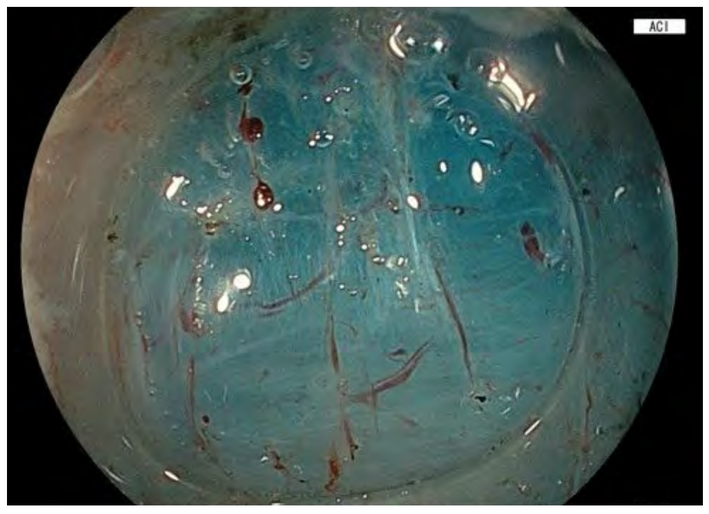
"When performing ESD or other third-space endoscopy procedures, switching on the amber-red colour imaging (ACI) mode offers a different and improved way of viewing the tissue.

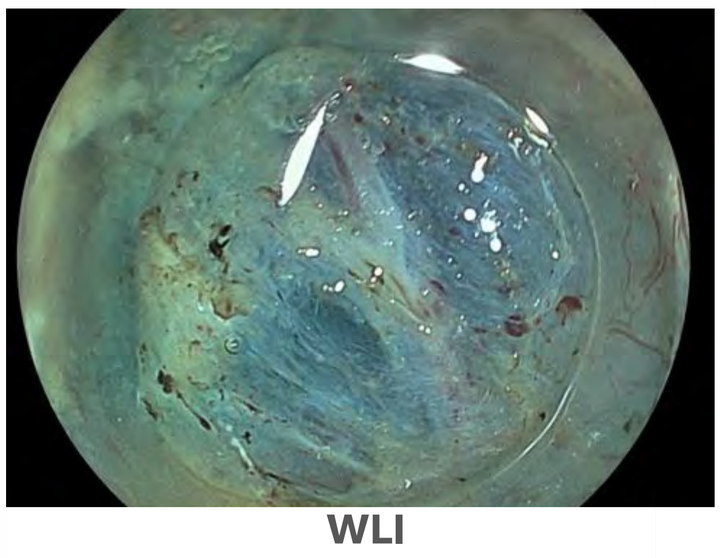
By using an appropriate amount of blue coloration in the lifting fluid, ACI mode delivers a clear view of the submucosa, muscle layer, and mucosal side of the incision. This clarity helps establish a safe plane for cutting and dissection."

White Light Image: WLI (Left)
Amber-red Colour Image: ACI (Right)

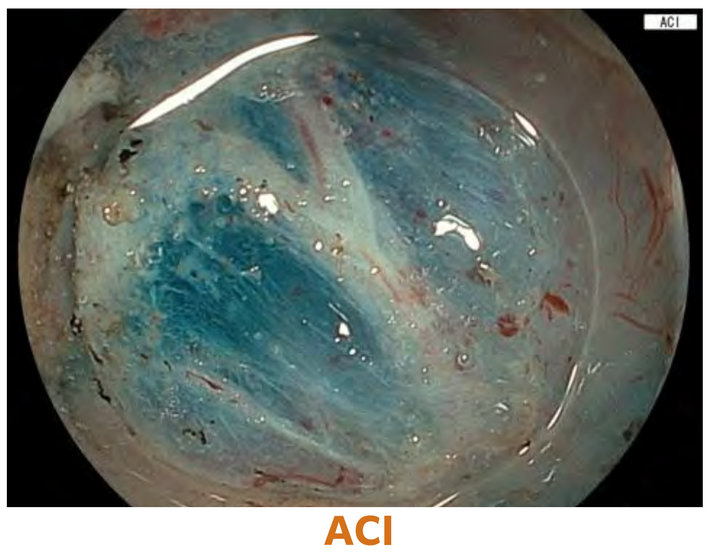
ESD 3







WLI



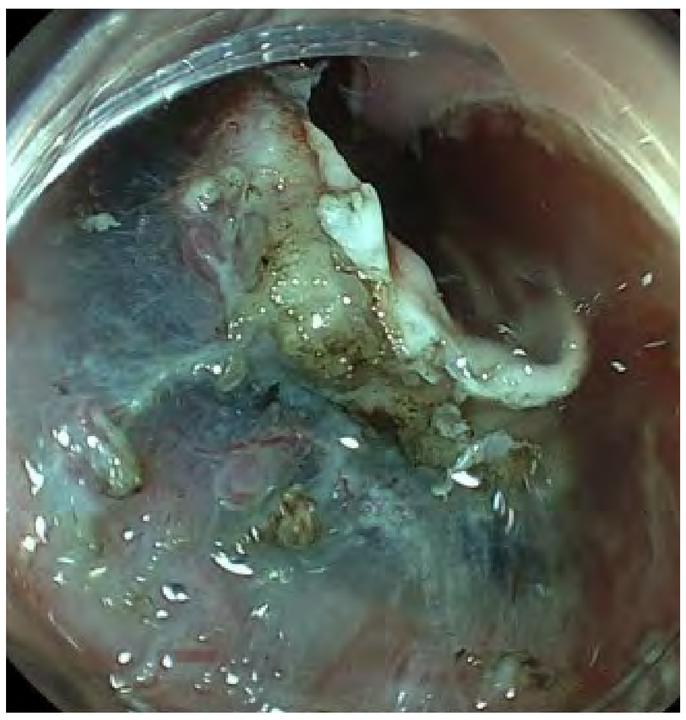
ACI

"During the submucosal dissection, the use of the ACI mode makes it easier to differentiate the mucosa, submucosa and underlying proper muscle layer compared to white light imaging.

Blood vessels in the submucosa could be better identified and prophylactically treated."

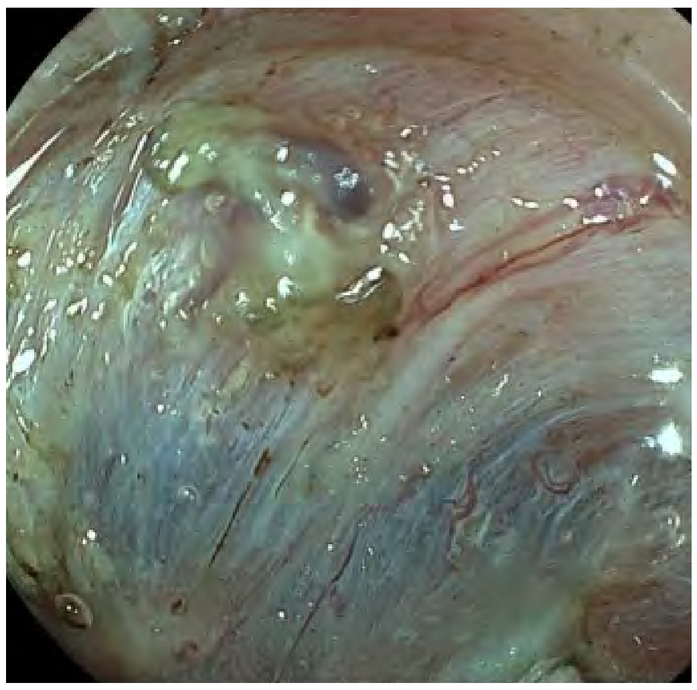
White Light Image: WLI (Left)
Amber-red Colour Image: ACI (Right)

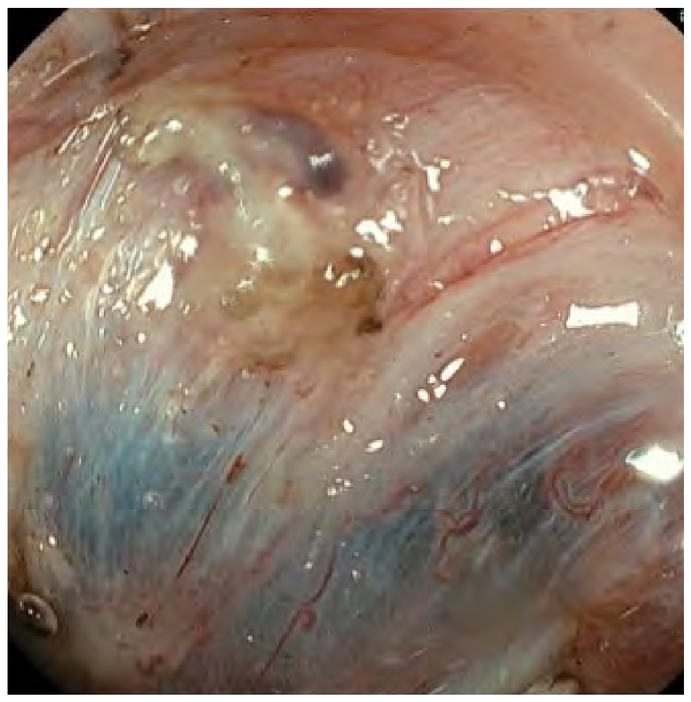
ESD 4



“Due to the prior radiotherapy, a lot of fibrosis was present in the submucosal layer.
It is extremely helpful in cases of fibrosis where identifying the muscle layer is challenging, preventing muscle damage. It aids in visualising cutting areas and proactively treating blood vessels.

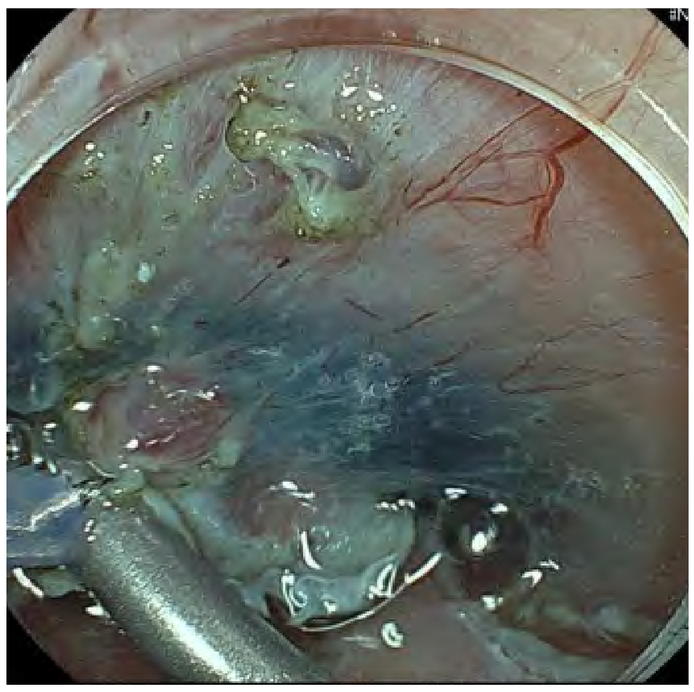
Amber-red colour imaging (ACI) mode made it easier to differentiate the mucosal layer, submucosal layer and proper muscle layer.”

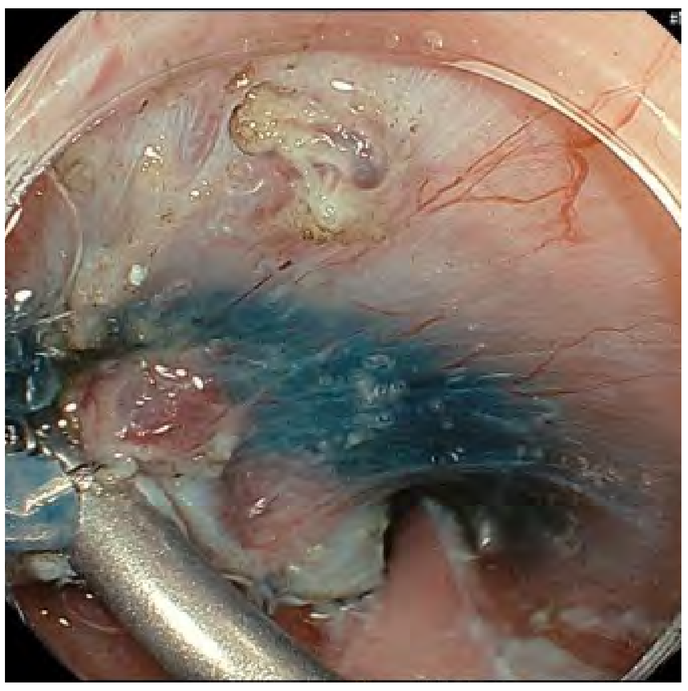




WLI ACI

White Light Image: WLI (Left)
Amber-red Colour Image: ACI (Right)



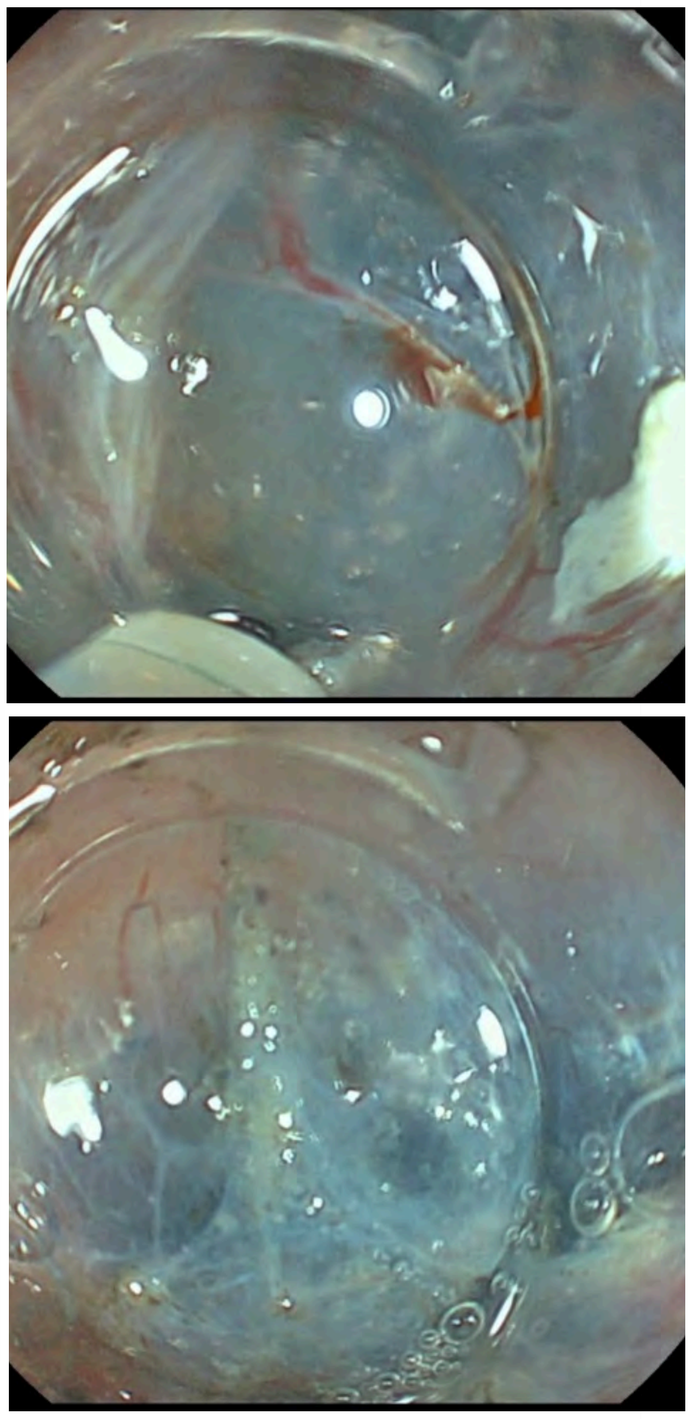


“Using traction with a clip and snare, the submucosal dissection was performed. Combining ACI mode and zoom facilitated submucosal dissection because it optimised visualisation of the submucosal space and blood vessels.”

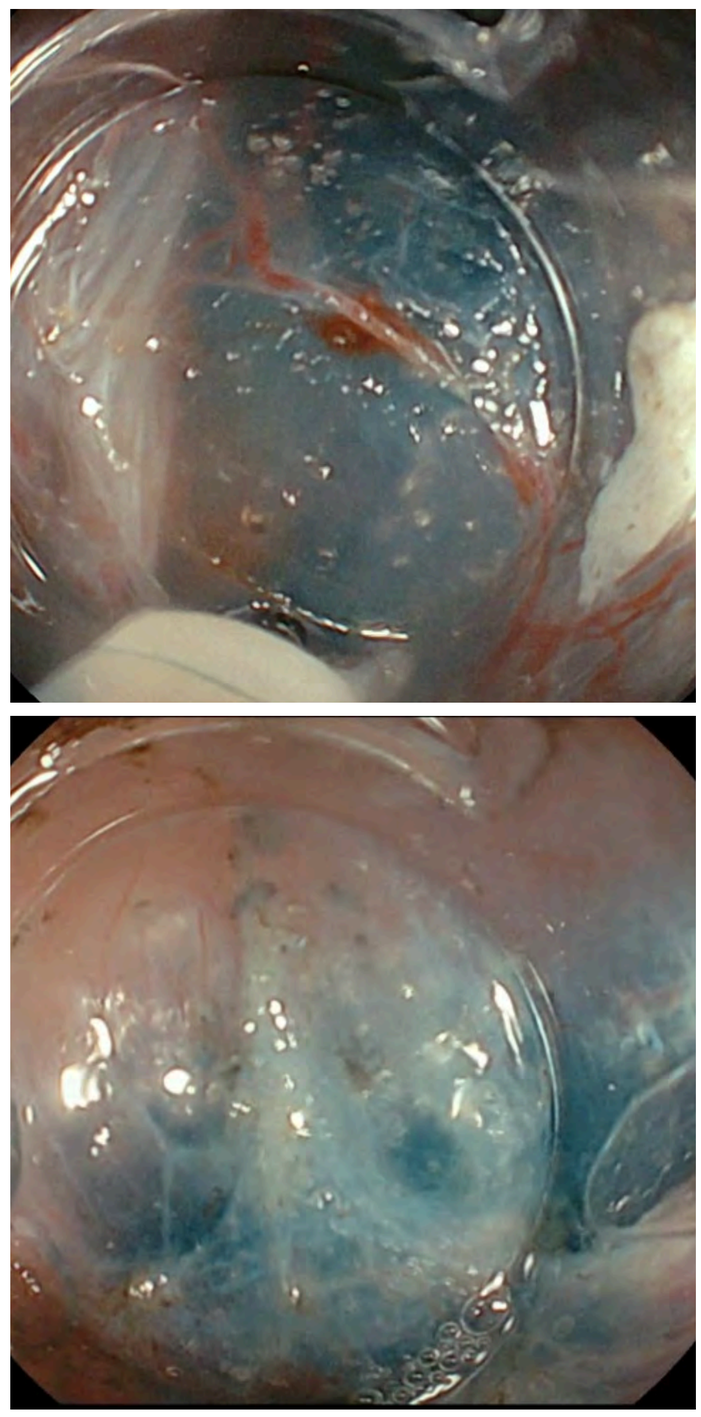
White Light Image: WLI (Left)
Amber-red Colour Image: ACI (Right)

WLI ACI

ESD 5



WLI



ACI

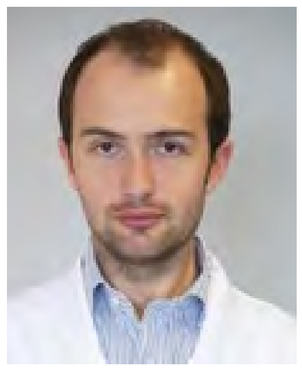
“Due to the prior gastric bypass, fundoplication and cruroplasty, there was not much space in the distal oesophagus, and there was significant submucosal fibrosis.

In this kind of case, you are operating very close to the endoscope, making a clear and sharp image essential. A distal attachment hood is very helpful in this situation, as the distance from the endscope to the end of the hood is typically the exact length needed to maintain a clear image.”

White Light Image: WLI (Left)
Amber-red Colour Image: ACI (Right)

EXPERIENCE

Meet Dr. David Tate



Dr. David Tate

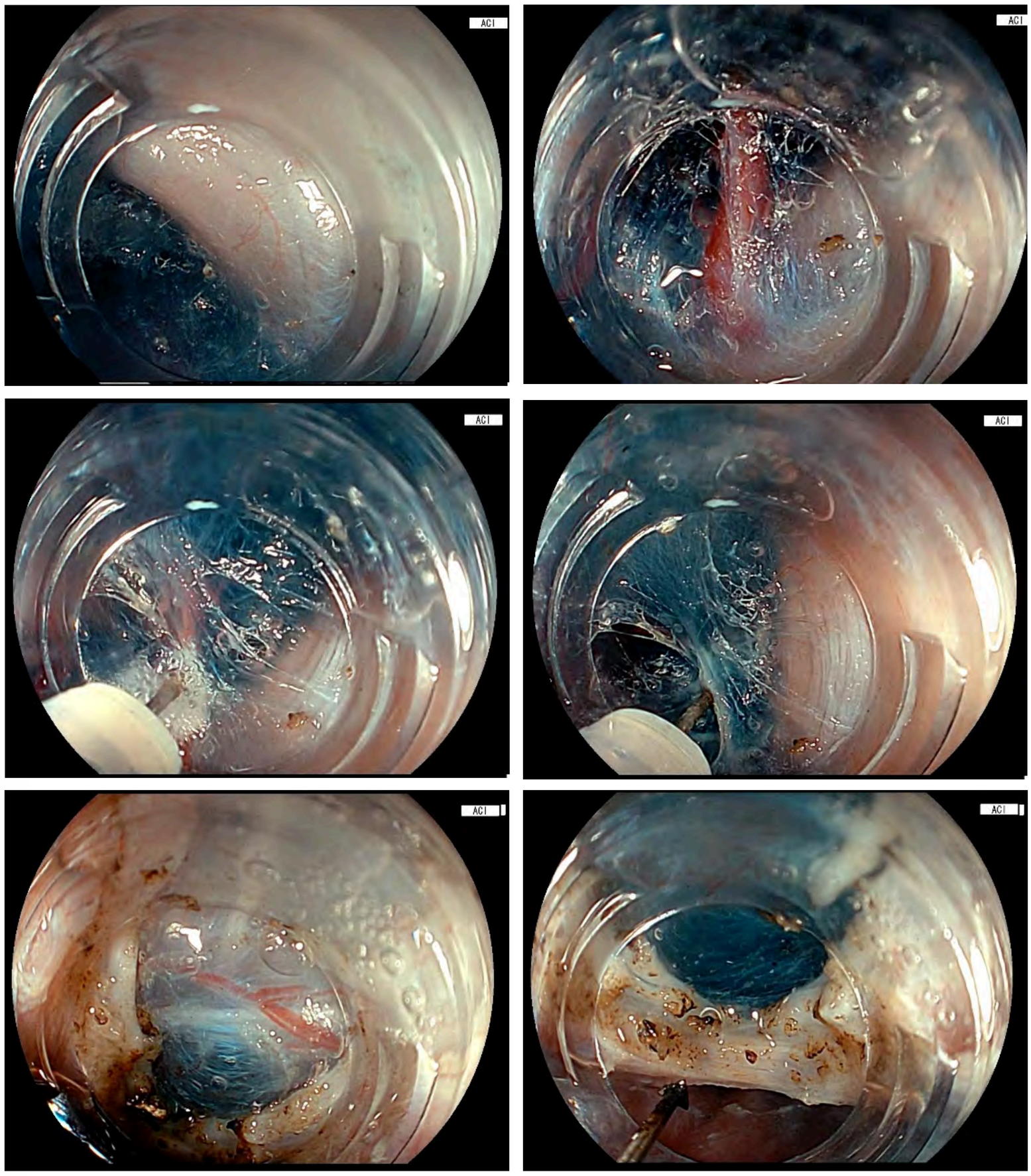
Interventional Endoscopist and Gastroenterologist, UZ Ghent, Belgium

Dr. David Tate is a leading Interventional Endoscopist and Gastroenterologist at UZ Ghent, Belgium. His clinical and academic focus lies in high-quality endoscopy, advanced tissue resection techniques, and innovative approaches to training the next generation of endoscopists. With a commitment to procedural excellence and patient safety, Dr. Tate contributes actively to advancing standards in therapeutic endoscopy.

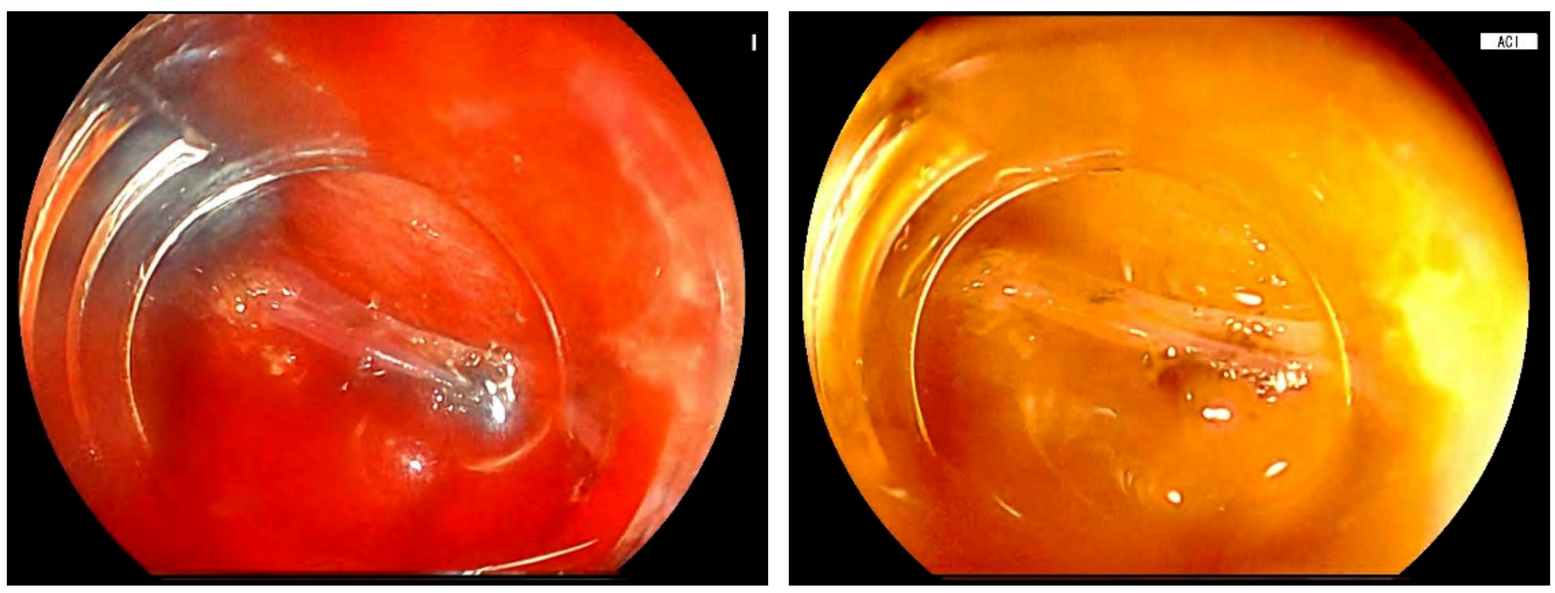
In his words

“ACI enables uninterrupted visualisation throughout the procedure, significantly reducing the need to switch imaging modes. This not only improves procedural efficiency but also enhances overall safety.”

POEM



ACI



WLI

ACI

“The improved optics and the addition of the amber-red colour imaging (ACI) mode represents significant advancements for therapeutic endoscopic procedures. Even experienced practitioners performing tissue resection, such as ESD and POEM, can operate more efficiently without compromising safety, thanks to enhanced visualisation of the dissection plane and improved management of prophylactic bleeding.

I have been fortunate to test ACI, and it has proven extremely valuable in my therapeutic endoscopy and luminal interventional tissue resection practice. When working within the submucosal layer, switching from standard high-definition white light to ACI offers considerable benefits—particularly in vessel detection. ACI significantly improves vessel visibility, enabling faster dissection and timely, proactive coagulation. This reduces the risk of major bleeding, which is a common challenge in these procedures.

Furthermore, ACI enhances the delineation of the muscle layer, especially when used in combination with indigo carmine. This visual clarity reduces cognitive load, as the muscle plane becomes more distinct compared to standard white light, making it easier to avoid critical errors such as inadvertent muscular injury.

In my experience, once ACI is activated, I rarely find the need to switch back. One of its major advantages is the preservation of a natural frame rate, which ensures real-time visualisation. This eliminates the need to alternate between different imaging modes, thereby reducing cognitive burden and streamlining the dissection phase.

Overall, ACI facilitates continuous use throughout the entire procedure, minimising the need for mode-switching and thereby enhancing both procedural efficiency and patient safety.”

Thank you for your attention.

FUJIFILM Healthcare Europe