



BOOK OF EXPERIENCE

BLI & LCI

FUJIFILM
Value from Innovation

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DEAR COLLEAGUE

Early endoscopic detection and treatment of GI cancer are the most promising modalities for prognostic improvement. Neoplastic lesions or their precursors can be difficult to detect and are easily missed depending on their location and appearance. Modern endoscopy aims at detection of lesions even of those with subtle changes followed by characterisation of the mucosal and vascular structure. This approach allows differentiation of benign and neoplastic lesions. It also facilitates local tumour staging to select lesions for an endoscopic or surgical approach. A precise delineation of tumour margins is important for accurate endoscopic resection with curative intention.

A variety of new imaging modalities have been introduced in recent years and they achieved significant improvement in endoscopic diagnosis and treatment.

Further progress is required for accurate and reproducible detection and characterisation. New technologies should be applicable not only by experts but they have to be used in routine procedures to facilitate identification of suspicious lesions. Specific findings can then be characterised in a close collaboration with referral centers that have access to appropriate treatment modalities. This book of experience illustrates very interesting case reports showing the clinical relevance of novel endoscopic imaging modalities promising a better care of patients with GI diseases.



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ADVANCED IMAGING WITH BLI CHANGED TREATMENT STRATEGY IN EARLY BARRETT'S CANCER

PATIENT INFORMATION / INDICATION

A **61-year-old male** patient was referred to our center with newly diagnosed **high-grade dysplasia in a long-segment Barrett's oesophagus**.

METHODS & RESULTS

Endoscopic examination revealed a 3x2cm large suspicious lesion. Gross macroscopic appearance was suspicious for submucosal invasion (Figure 1). However, by using BLI and optical magnification the mucosal pattern of the

lesion was regular and not suspicious. In the center of the lesion we found a 3mm area with pathologic vessels (Figure 2). The highly suspicious central part was resected en bloc by using a multiband ligation device (Figure 3). Afterwards the residual lesion was completely resected by ER (Figure 4). Histopathologic work up revealed a completely resected mucosal adenocarcinoma corresponding with the suspicious central lesion. The other resection specimens only showed low-grade dysplasia.

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CONCLUSION

The use of BLI and magnification endoscopy changed the initial diagnosis from a deeply submucosal invading Barrett's adenocarcinoma to a focal mucosal cancer enabling curative ER.

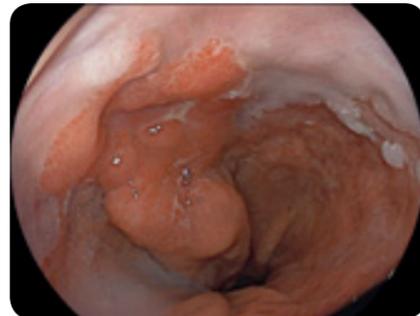


Figure 1: Early Barrett's neoplasia suspicious for deep submucosal invasion.

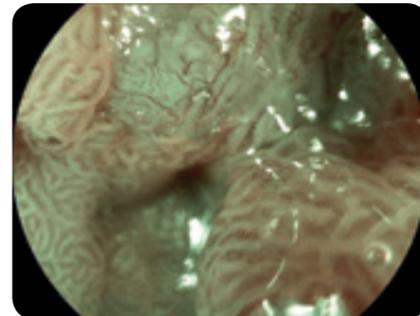


Figure 2: Small central area with pathologic vessels suspicious for mucosal adenocarcinoma.

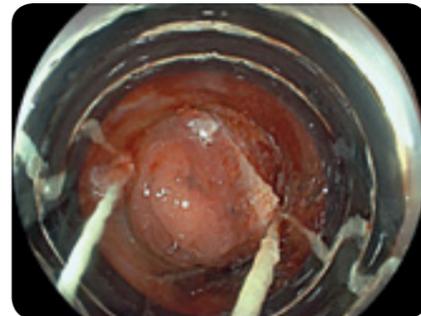


Figure 3: ER of the early Barrett's cancer with the multiband ligation device.



Figure 4: ER of the early Barrett's cancer with the multiband ligation device.

DELINEATION OF AN EARLY SQUAMOUS CELL CARCINOMA IN THE OESOPHAGUS

PATIENT INFORMATION / INDICATION

A **60-year-old male** patient was referred for a second opinion of a **short-segment, irregular, mucosal area in the mid part of the oesophagus**, which already was biopsied and histologically showed high grade dysplasia.

METHODS & RESULTS

Using high definition endoscopy with white light (Figure 1) it wasn't hardly possible to delineate a lesion within this

area but using Linked Color Imaging (LCI) (Figure 2) we were capable to demarcate two small lesions properly. Staining with acetic acid barely provided any further advantage (Figure 3). Targeted biopsies were taken and histology clearly showed an early oesophageal carcinoma (Figure 4).

CONCLUSION

After endosonography yielded a stadium T2 N1 the patient was treated with chemoradiation followed by surgery.

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Figure 1: White light image of the short-segment, irregular, mucosal area in the oesophagus.

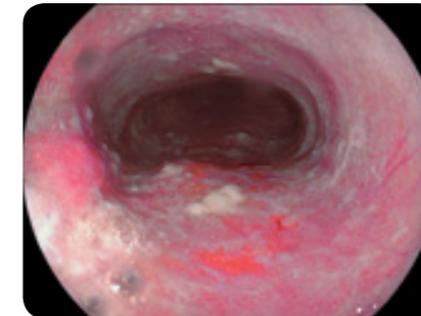


Figure 2: LCI image of two small lesions within this area.



Figure 3: LCI image of two small lesions within this area after staining with acetic acid.

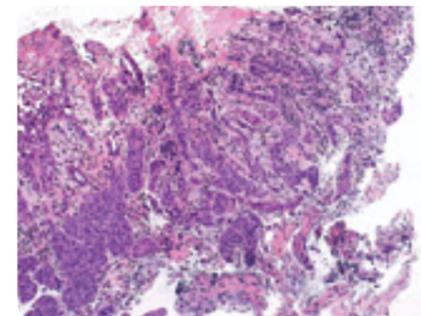


Figure 4: Histology

EARLY CANCER WITHIN BARRETT'S OESOPHAGUS

PATIENT INFORMATION / INDICATION

An **85-year-old female** was referred for endoscopic submucosal dissection (ESD) of an **8 cm dysplastic lesion** within C9M12 Barrett's oesophagus. The initial biopsies showed **high grade dysplasia**.

METHODS & RESULTS

By using the Fujifilm 700 series gastroscope (EG-760R) the lesion was clearly identified on white light (Figure 1)

and the borders were delineated using BLI (Figure 2). The LCI mode (Figure 3) provided enhancement of the overall large lesion with colour change noted in the dysplastic areas. The marking of the lesion prior to dissection was BLI assisted.

CONCLUSION

Nodular lesions in Barrett's carry a high risk of cancer. The suspicion of cancer was high in this large lesion. The BLI assessment allowed us to exclude



submucosal invasion and delineate the margins accurately to enable an R0 resection. The final resection (Figure 4) showed a high grade dysplasia.



Figure 1



Figure 2



Figure 3



Figure 4

CHARACTERISATION OF BE-ASSOCIATED NEOPLASIA PRIOR TO ENDOSCOPIC SUBMUCOSAL DISSECTION (ESD)

PATIENT INFORMATION / INDICATION

A **67-year-old male** was referred for endoscopic resection of a **BE-associated adenocarcinoma**. The **10 mm Paris 0-IIa lesion** was visible in high-definition white-light endoscopy and LCI (Figure 1).

METHODS & RESULTS

Characterisation of the lesion using BLI and BLI+zoom allowed delineating between dysplastic (Figure 2a,b) and non-dysplastic (Figure 2b) areas, and guide the dissection (Figure 2c). En-bloc resection of a

30x20 mm BE segment containing the neoplastic area was performed using the flushknife (Figure 2d).

CONCLUSION

Histological assessment of the specimen confirmed that the endoscopic resection was complete and curative with neither submucosal invasion nor poor-prognosis parameters (pT1a, m3, LOVO, moderately-differentiated adenocarcinoma, Figure 3).

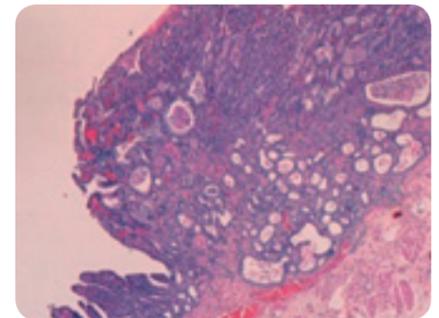
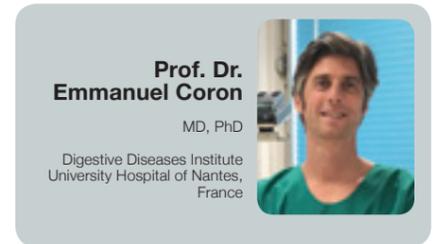


Figure 3

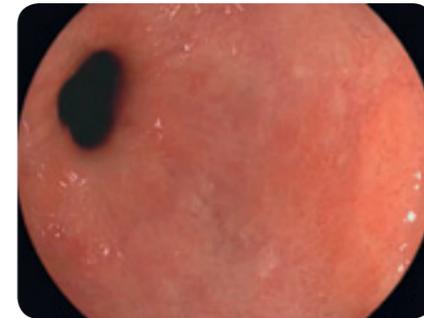


Figure 1a

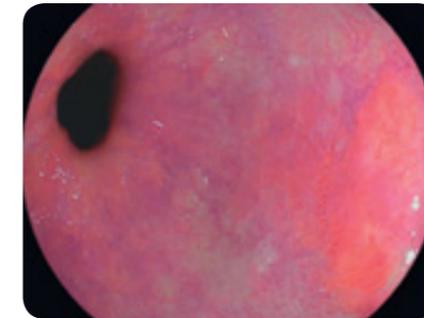


Figure 1b

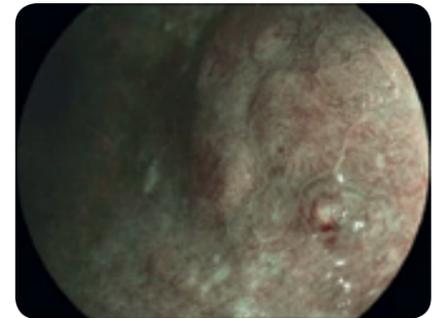


Figure 2a

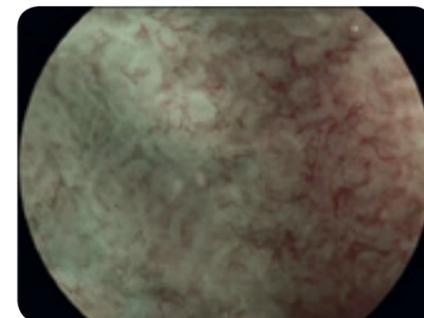


Figure 2b

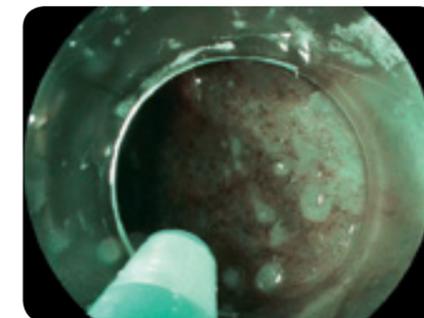


Figure 2c



Figure 2d

TYPE 0-IIA + IIC OESOPHAGEAL CARCINOMA

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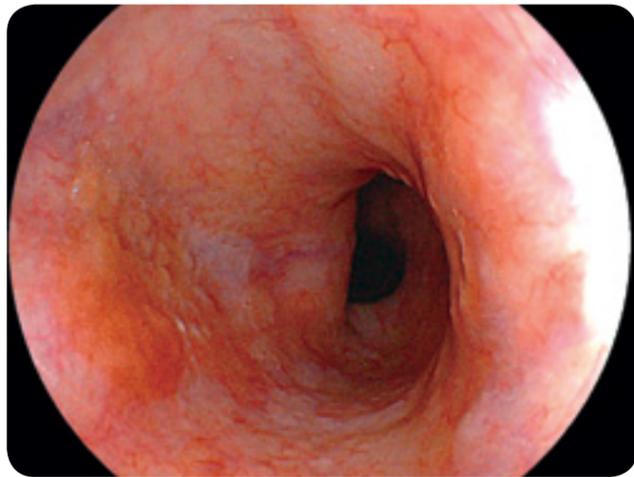



Figure 1: Diagnosed as type 0-IIa + IIC oesophageal carcinoma on the posterior wall of the upper thoracic oesophagus. The elevated area in reddish and yellowish is identified.

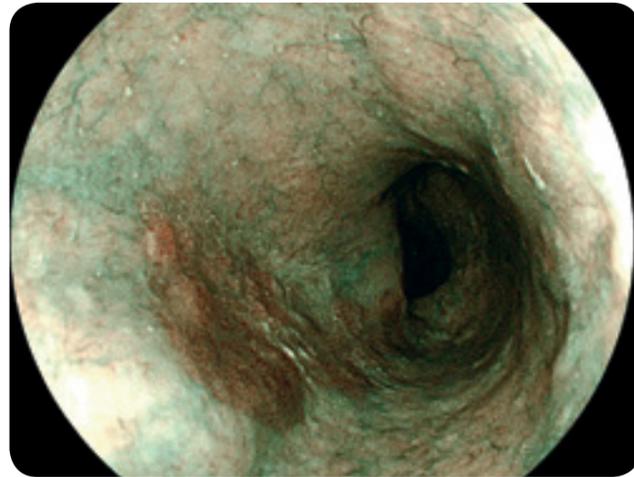


Figure 2: In combination with BLI, the brownish area is depicted.

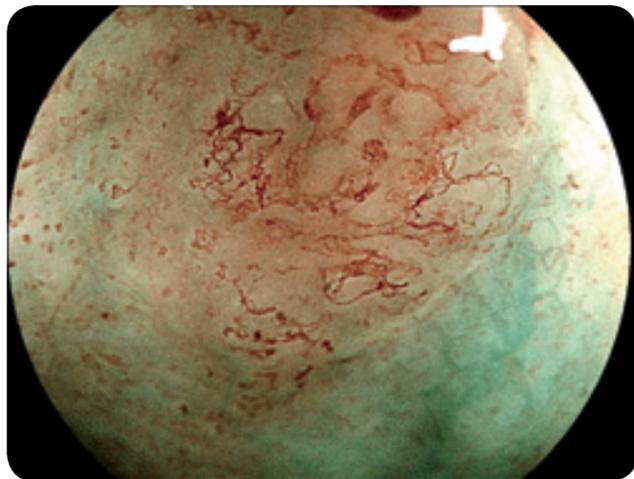


Figure 3: Type B1 dot blood vessels and AVA-small surrounded by type B2 multilayered vessels are observed.



Figure 4: A 1.5 mm in diameter AVA-midele, composed of type B2 vessels with broken loop structure, is also observed.

SQUAMOUS CELL CARCINOMA: DECISION OF STAGING EMR RATHER THAN ENDOSCOPIC SUBMUCOSAL DISSECTION BASED ON OPTICAL DIAGNOSIS

PATIENT INFORMATION / INDICATION

A 55-year-old female with cirrhosis and portal hypertension was referred for endoscopic resection of a squamous cell carcinoma (SCC), which was detected by white-light endoscopy (WLE) only in another center. The pre-therapeutic EUS classified the lesion T1N0, and further endoscopic assessment was performed in our center. The lesion was visible with WLE (Figure 1a), BLI (Figure 1b), and LCI (Figure 1c) and was classified as Paris 0-IIa.

METHODS & RESULTS

Characterisation of the lesion using WLE+zoom (Figure 2a) and BLI+zoom (Figure 2b) showed severely distorted microvascular pattern and loss of mucosal architecture suggesting submucosal involvement. Based on these findings, we decided to perform only a staging EMR rather as an endoscopic submucosal dissection. In addition, lugol staining had unmasked a 10cm-long circumferential lugol negative area around the lesion (Figure 3a).

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CONCLUSION

The staging EMR confirmed our suspicion that the lesion was a pT1b moderately-differentiated SCC. Subsequently, the patient was referred for radiochemotherapy since she was a poor candidate for surgery.



Figure 1a

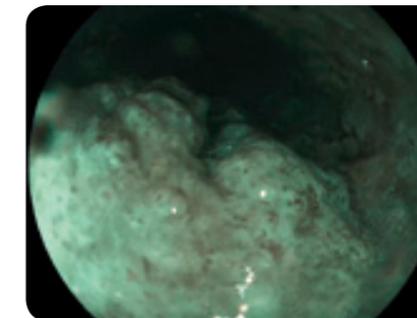


Figure 1b



Figure 1c



Figure 2a

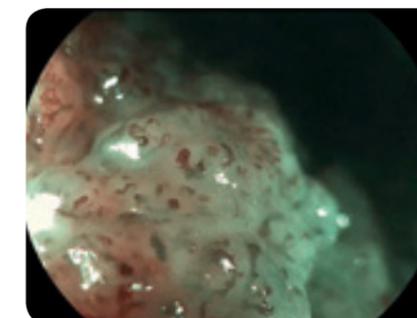


Figure 2b

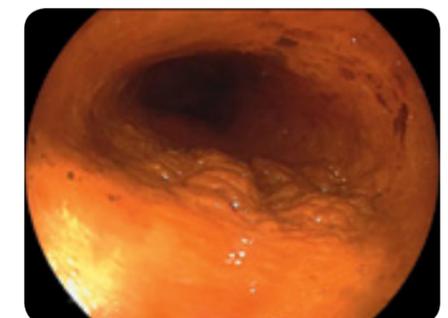


Figure 3a

H. PYLORI INFECTION

H. PYLORI UNINFECTED

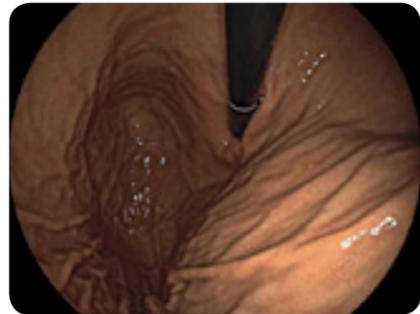


Figure 1: White Light

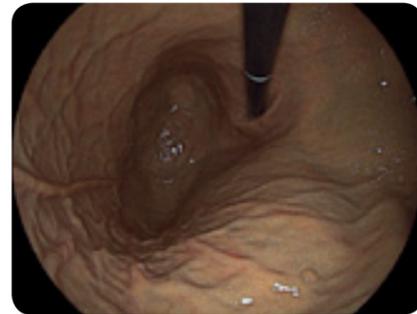


Figure 2: LCI



A polyp in normal mucosa accompanied with RAC is recognised on the anterior wall of the upper body. LCI highlights the fundic gland polyp by enhancing the apricot coloured mucosa accompanied with mild erythema. (Figure 1 +2).

H. PYLORI INFECTED

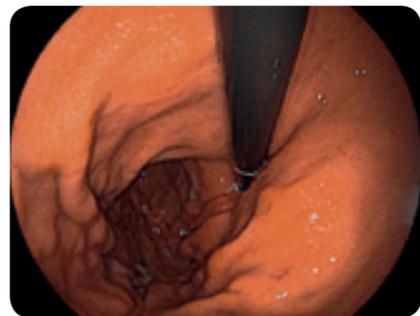


Figure 3: White Light

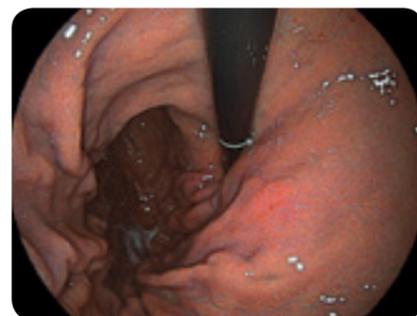


Figure 4: LCI

A mild redness mucosa on edema is recognised on the gastric upper body anterior wall. By LCI, crimson coloured mucosa is recognised on the whole gastric body, erythema is emphasised on the anterior wall of the upper body (Figure 3+4).

ELIMINATION SUCCESS



Figure 5: White Light

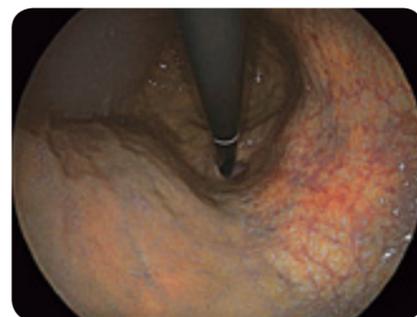


Figure 6: LCI

A fundus gland and normal mucosa without redness are recognised on an atrophic mucosa of a lesser curvature and a range from anterior wall to greater curvature. By using LCI, the boundary between an atrophic mucosa of a lesser curvature and smoky apricot coloured fundus gland mucosa is clear (Figure 5+6).

WELL-DIFFERENTIATED ADENOCARCINOMA

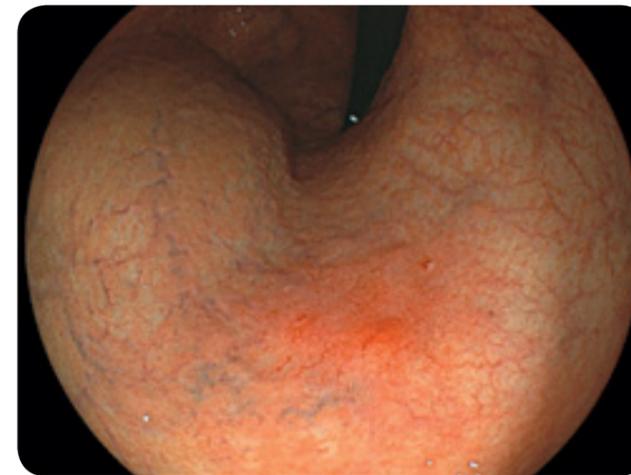


Figure 1: White Light

LCI enhances irregular reddish depressed lesion (Type 0-IIc) in apricot coloured background mucosa.



Figure 2: LCI

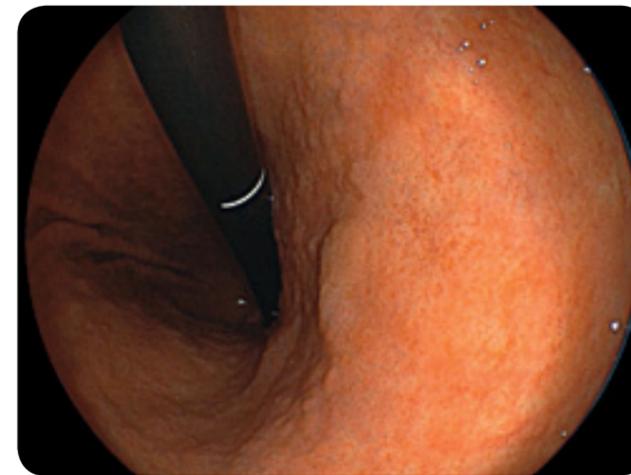


Figure 3: White Light

LCI enhances irregular discolored flat-elevated lesion (Type 0-IIa) in lesser curvature of gastric body.

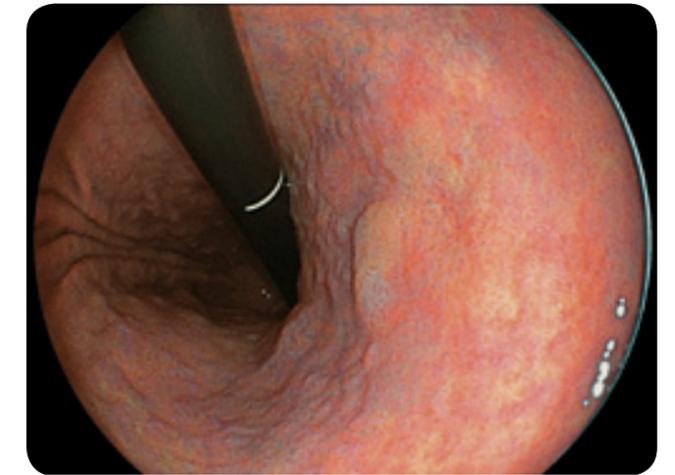


Figure 4: LCI



O-IIC EARLY GASTRIC CARCINOMA

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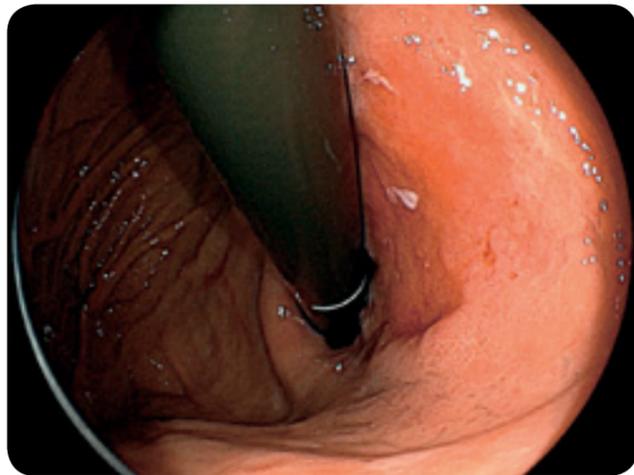



Figure 1: A depressed reddening area is identified in the lesser curvature of the cardiac region.

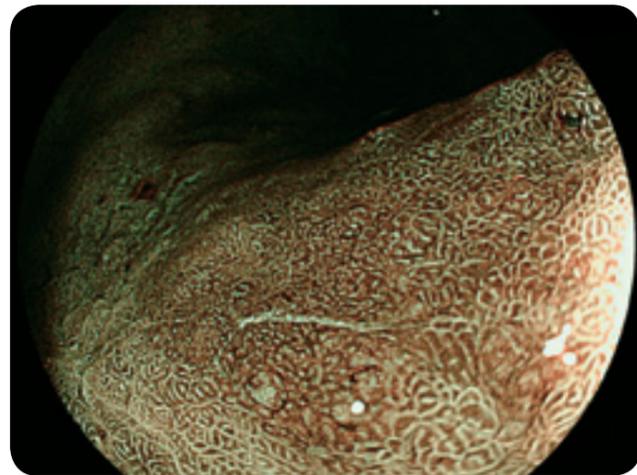


Figure 2: Under BLI-bright, the depressed reddening area is brownish.

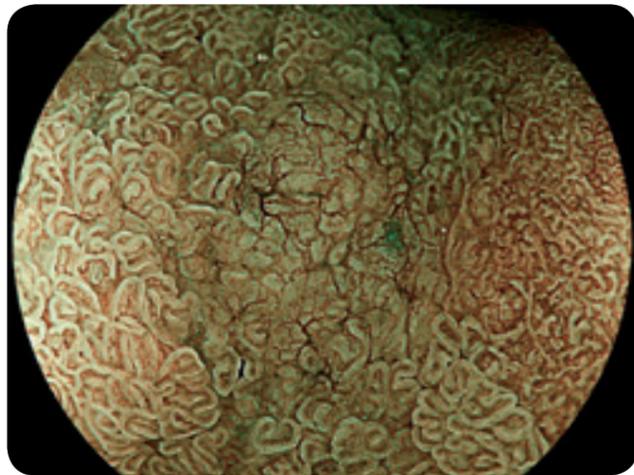


Figure 3: By using BLI-bright with middle magnification, the margin of the lesion is well demarcated and irregular vessels are observed in the depressed reddening area.

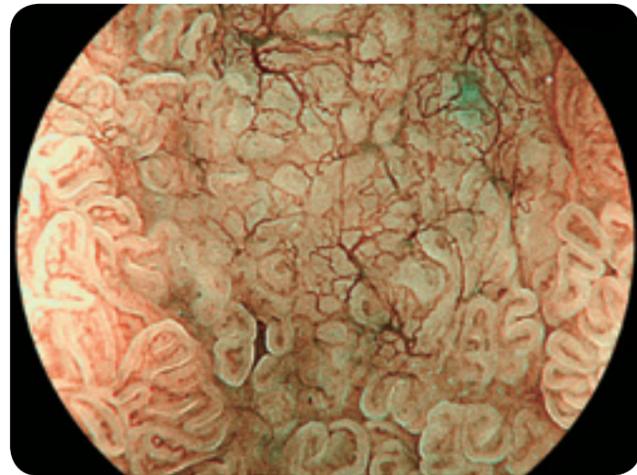


Figure 4: In the image of maximum magnification, irregular microvessels are observed in the depressed reddening area. We diagnosed this lesion as a gastric cancer differentiated type.

EARLY GASTRIC CANCER

PATIENT INFORMATION / INDICATION

A **64-year-old female** presents with a 6-month history of **vague pain in the upper abdomen (dyspepsia)**. Her past medical history is positive for a **malignant disease of the left breast** (surgical therapy w/o adjuvant therapy 1 year ago). In the year 2007, the woman had a screening colonoscopy where **three small tubular adenomas with low-grade dysplasia were removed**. Since 2010, she is on medications for high blood pressure and dyslipoproteinemia. Family history for malignant disease is negative. According to the prescribed therapy with

PPIs she stated subjective improvement, satisfactory appetite and constant weight. Until now, she had not had a gastroscopy.

METHODS & RESULTS

We found the suspicious change on angular fold (Figure 1+2). It is important to estimate the size and lateral margins of the lesion. The evaluation was made with BLI and zoom (Figure 3). In this case, we found a depressed lesion, more than 2 cm in diameter with irregular mucosal surface. Distortion and also disappearance of vessels was found. Biopsy and histological examination revealed diffuse type

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carcinoma not suitable for endoscopic submucosal dissection

CONCLUSION

Endoscopic findings: 2x2 cm lesions on angular fold (O-IIC)

Histological findings: biopsy of lesion: gastric adenocarcinoma: diffuse type (Figure 4+5)

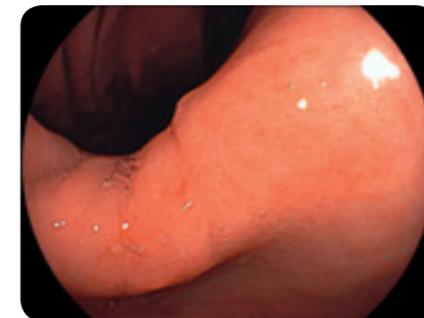


Figure 1: White Light



Figure 2: LCI

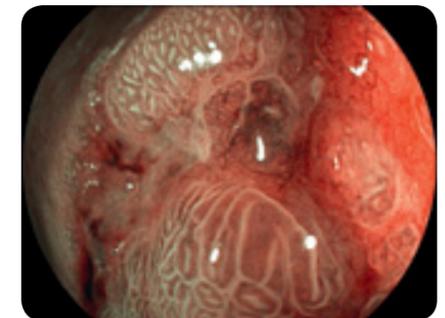


Figure 3: BLI withZoom



Figure 4: Histology

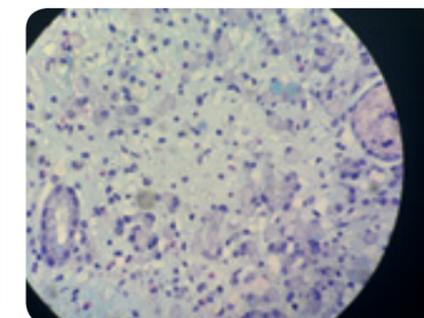


Figure 5: Histology



BLUE LIGHT IMAGING FOR IN VIVO DIAGNOSIS OF DIMINUTIVE COLORECTAL POLYPS

PATIENT INFORMATION / INDICATION

A 69-year-old male was referred to our endoscopy unit for exclusion of gastrointestinal bleeding. Laboratory investigations revealed a haemoglobin level of 7.8 g/dL (reference value 14-17 g/dL). Family history for colorectal cancer was negative and the patient was free of symptoms.

Fujifilm (Düsseldorf, Germany). No signs of bleeding were noted. High-definition white-light imaging revealed a pale 5 mm polyp in the transverse colon (Figure 1). After switching to the BLI mode, the polyp and the borders of the lesion became clearly visible (Figure 2). BLI in combination with optical magnification revealed a typical Kudo Type 3S pit pattern suggestive of a tubular adenoma (Figure 3).

METHODS & RESULTS

Colonoscopy was performed by using the newly introduced 700 series from

CONCLUSION

This case illustrates the clinical benefit of the newly introduced 700 series endoscope



with BLI and optical magnification for in vivo diagnosis of colorectal polyps. Although most diminutive colorectal polyps are hyperplastic lesions, the current case highlights the importance of an adequate in vivo characterisation of all polyps for an optimal management of our patients.



Figure 1



Figure 2



Figure 3

The American Society for Gastrointestinal Endoscopy (ASGE) has proposed the PIVI statements in order to leave diminutive colorectal polyps in place without resection or to resect the lesions without subsequent histopathological diagnosis¹. The basis of the PIVI statement is an adequate optical in vivo diagnosis of colorectal polyps^{2,3}.

References:

1. Rex DK, Kahi C, O'Brien M al. ASGE Technology Committee systematic review and meta-analysis assessing the ASGE PIVI thresholds for adopting real-time endoscopic assessment of the histology of diminutive colorectal polyps. *Gastrointest Endosc.* 2011;73:419-22.
2. ASGE Technology Committee, Abu Dayyeh BK, Thosani N, et al. The American Society for Gastrointestinal Endoscopy PIVI (Preservation and Incorporation of Valuable Endoscopic Innovations) on real-time endoscopic assessment of the histology of diminutive colorectal polyps. *Gastrointest Endosc.* 2015;81:502.1-502.
3. Neumann H, Mönkemüller K. Staining and magnifying the mucosa: are biopsies no longer required? *Endoscopy.* 2014;46:833-5.

PATIENT WITH A HISTORY OF MIXED SERRATED AND ADENOMATOUS POLYPS; FINDINGS AT SURVEILLANCE COLONOSCOPY

PATIENT INFORMATION / INDICATION

Concerns a 61-year-old patient referred for a clearing colonoscopy of a mixed adenomatous and serrated colonic polyposis.

METHODS & RESULTS

The Fujifilm 760 zoomscope was used to advance to the coecum. During withdrawal, several colonic polyps were detected and removed after extensively investigating the lesions using both BLI and LCI in both normal and zoom view.

CONCLUSION

Using normal white light no clear blood vessels are seen (Figure 1). When switching to the BLI mode it becomes more visible that there is no presence of blood vessels but dark open crypts surrounded by white pits which are clearly observed (Figure 2) and even better visible in combination with zoom (Figure 3). With BLI, colour differences of the background mucosa and the surface pattern are good visible which is helpful for differentiating the lesion. When switching to the BLI mode the small blood vessel of the



tubular adenoma becomes more visible (White light: Figure 4, BLI: Figure 5). In combination with the zoom function small blood cells are becoming visible. Using LCI there is as well a clear vision of the blood vessels (Figure 6).



Figure 1



Figure 2



Figure 3



Figure 4

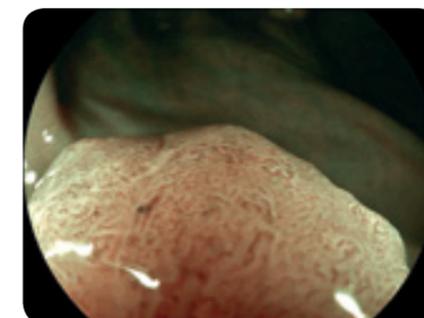


Figure 5

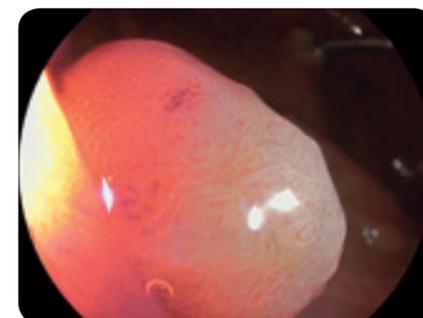


Figure 6



ENDOSCOPIC DIAGNOSIS OF HIGH GRADE DYSPLASIA IN A SMALL ADENOMA

PATIENT INFORMATION / INDICATION

This **small polyp** (Figure 1) was detected during screening colonoscopy in a **56-year-old male** patient.

METHODS & RESULTS

BLI and LCI imaging in combination with multi zoom was used to examine the polyp in detail. High resolution BLI (Figure 3) and LCI (Figure 2) examination revealed a small adenoma with features of a tubular adenoma. At the periphery parts of the

polyp pit pattern according NICE II was present but a disturbed pit pattern without tubular structures and irregularities in microvascular structures was present in the central part (NICE III), thus suspecting a high grade of dysplasia (Figure 4). Note the small darker spots in BLI mode which appear purple in LCI that reflect irregular dilatations of distorted capillary structures.

CONCLUSION

As the adenoma lifted well after submucoal injection it was resected using a diathermic



snare. Histology revealed a tubular adenoma with HIEN in the central part demonstrating the exact correspondence of endoscopy and histology, even within the same lesion.



Figure 1



Figure 2

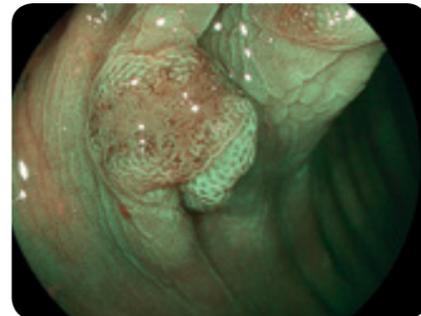


Figure 3

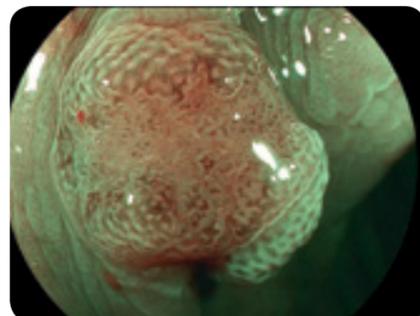


Figure 4

A MALIGNANT POLYP IN THE ASCENDING COLON

PATIENT INFORMATION / INDICATION

A **64-year-old female** patient was submitted for further therapy of a **sessile, 2cm measuring polyp located in the ascending colon**. A previous biopsy taken from the lesion revealed a **T1 cancer** (early invasion of the submucosa).

METHODS & RESULTS

During colonoscopy we found a roughly 2cm large lesion, Paris IIa with some mucin on the top of the lesion (Figure 1). By switching to the BLI and LCI mode (Figure 2 and 3), a NICE II pattern was found at the margin of the lesion and polypoid parts.

However, NICE III pattern was visible in the central parts of the polyp, therefore suggesting submucosal invasion. Based on the mucosal surface pattern and the previous biopsy, it was therefore decided to perform an endoscopic full thickness resection using the FTRD-system (Ovesco, Tübingen, Germany). The lesion could be completely removed including the deeper layers (submucosa, muscularis propria and serosa). The further course was uneventful. Histology revealed a tubulo-villous adenoma with focal areas of a mucosal cancer and microinvasion of the submucosal layer. R0-resection was confirmed.



CONCLUSION

This case nicely demonstrates the usefulness of advanced imaging techniques in guiding therapy. Furthermore, it also highlights the benefits of new resection techniques such full thickness resection in cases with suspected early infiltration of the submucosal layer.



Figure 1

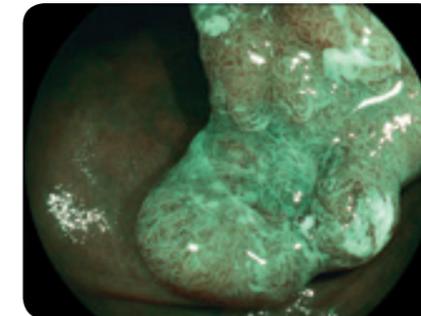


Figure 2

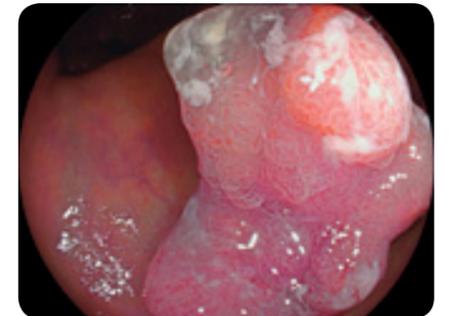


Figure 3



ENDOSCOPIC ASPECT OF WHIPPLE'S DISEASE

PATIENT INFORMATION / INDICATION

A **52-year-old female** was admitted due to **diarrhea, weight loss and weakness in the extremities**. Physical examination findings pointed out **diffuse hyperpigmentation, pleural effusion and leg edema. Anemia, inflammatory syndrome and malabsorption signs** were discovered through laboratory tests.

METHODS & RESULTS

Using high definition endoscopy in combination with BLI and LCI enabled to characterise typical digestive lesion (Figures 3, 4, 5, 6). The pale yellow shaggy mucosa was macroscopically suggestive of Whipple's disease. The diagnosis was confirmed by intestinal biopsy.

CONCLUSION

The patient was treated with antibiotic and symptomatic therapy. After 9 months, the patient had no symptoms, and clinical and laboratory findings were regular.

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Figure 1



Figure 2

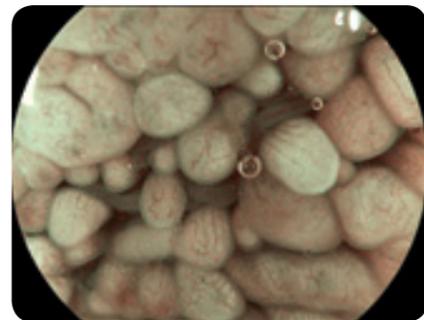


Figure 3

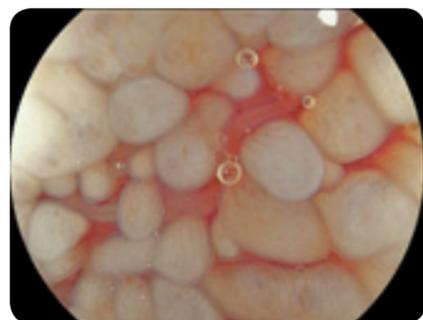


Figure 4

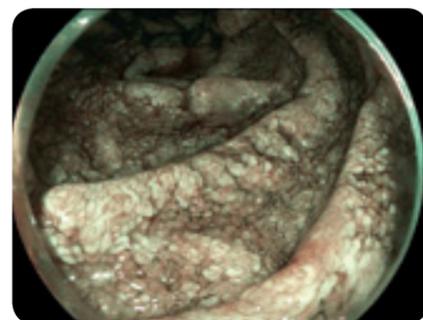


Figure 5

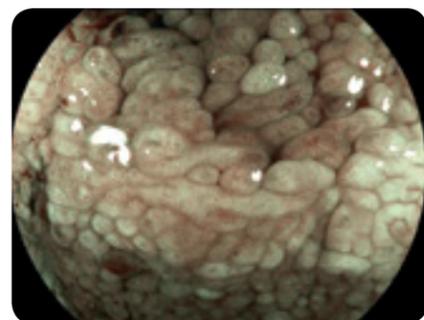


Figure 6

RECOGNISING A SESSILE SERRATED LESION USING THE WASP-CRITERIA IN A PATIENT WITH SERRATED POLYPOSIS SYNDROME

PATIENT INFORMATION / INDICATION

71-year-old female with **serrated polyposis syndrome**.

METHODS & RESULTS

During this colonoscopy 12 polyps were removed. Except for 1 tubular adenoma, all of these were serrated polyps. The pictured polyp is a sessile serrated lesion (Figure 1). Using BLI (Figure 2) and BLI zoom (Figure 3), these polyps can be differentiated using the

WASP-criteria (Joep et al., GUT 2016): dark spots inside crypts and irregular shape. In this case, however, the borders are remarkably well defined. BLI also shows a clear 'red cap sign' (Saito et al., World J Gastrointest Endosc. 2015), owing to the mucus that frequently cover or surround sessile serrated lesions

CONCLUSION

Using LCI zoom (Figure 4+5), the characteristic cloudy surface is clearly visualised.

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Figure 1

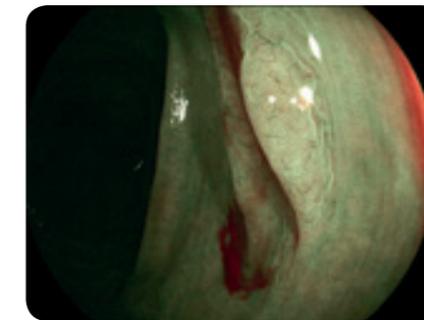


Figure 2

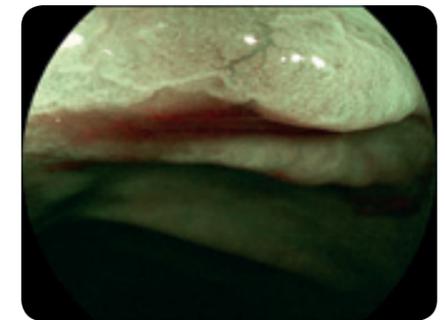


Figure 3

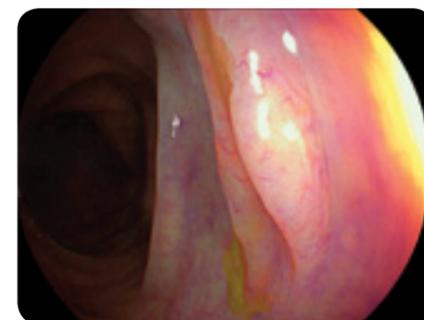


Figure 4



Figure 5



A SUBMUCOSAL MASS

PATIENT INFORMATION / INDICATION

Concerns a **51-year-old** patient who underwent colonoscopy for the inspection of a scar after piecemeal removal of a lateral spreading lesion in the ascendens 6 months. Histology results showed a **tubulovillous adenoma with low grade dysplasia**. No rest was detected. During withdrawal a lipoma was detected.

METHODS & RESULTS

A submucosal mass was detected which showed a surface pattern that looks similar to the surrounding mucosa (Figure 1+2). Using the BLI observation mode the surface pattern becomes more visible and it clearly shows a similar surface pattern (Figure 3). The crypts are normal with smaller and bigger blood vessels going through the lesion (Figure 4).



CONCLUSION

With BLI it shows that there are no interruptions of the surface pattern and when using the zoom function this becomes even clearer.



Figure 1

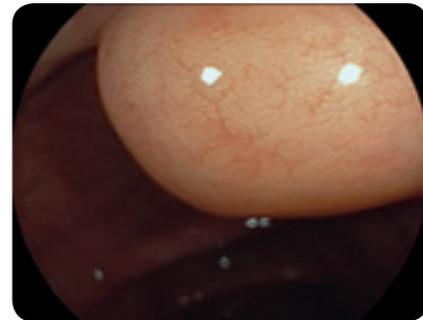


Figure 2



Figure 3

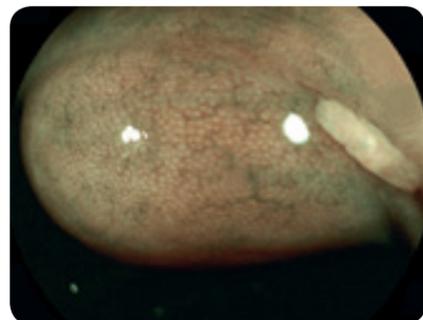


Figure 4

EXTENSIVE RECTAL ADENOMA

PATIENT INFORMATION / INDICATION

An **80-year-old male** was referred for endoscopic mucosal resection of a **10cm rectal adenoma**. His main symptom was debilitating mucous discharge and diarrhoea. He had multiple cardiac comorbidities that prevented curative surgical resection. The endoscopic assessment was performed to exclude foci of cancer.

METHODS & RESULTS

By using the Fujifilm 700 series gastroscop (EG-760R) the extensive adenoma was visualised encompassing 100% of the luminal circumference. Figure 1 is the white light image. BLI did not reveal any evidence of invasive vascular pattern (Figure 2). LCI highlighted the villous nature of the polyp (Figure 3, 4).



CONCLUSION

Giant polyps have a high risk of cancer and are usually not suitable for endoscopic resection. BLI assessment allowed us to confidently exclude malignancy in this case and consider endoscopic resection.



Figure 1



Figure 2



Figure 3



Figure 4



AP CAECUM

PATIENT INFORMATION/ INDICATION

A **73-year-old female** underwent a screening colonoscopy 3 months ago. Detected and removed was a **3cm large polyp LST-G in cecum** with electrocautery snare piecemeal technique. Histology showed a **tubular adenoma with low grade dysplasia**.

METHODS & RESULTS

At colonoscopy control we found a small residuum in scar at the place of prior electro resection (Figure 1) and surprisingly one

additional lesion in the caecum which was overlooked at the previous colonoscopy 2.5cm x 3cm (Figure4+5). we removed it with piecemeal technique.

With BLI it is easier to assess the scar after prior piecemeal mucosal resection and separated residual growth from the healthy surrounding tissue. Shown is the small residuum with clear tubular pits: Kudo type III L (Figure 2). With the new technology we can more accurately assess the mucosa and discover, like in this case, a not so small nearby overlooked lesion



CONCLUSION

Histology of residuum (Figure 3): tubular adenoma of low grade dysplasia

Histology of synchronous overlooked lesion (Figure 6): tubular adenoma with low grade dysplasia.

TRANSVERSE COLON 0-IIA SSA/P WITH CYTOLOGICAL DYSPLASIA

Under white light observation, the lesion is polypoid and the colour of it is similar to the surrounding mucosa (Figure1). The surface of it is smooth.

With LCI observation, the lesion becomes whitish and the margin of it shows clearer than with white light mode (Figure 2). With BLI magnification, the surface pattern

of it shows wide crypts. At the center and right side, irregular surface patterns are observed (Figure 3). The lesion is diagnosed to be suspicious of SSA/P with cytological dysplasia.

Histological examination showed SSA/P with cytological dysplasia.

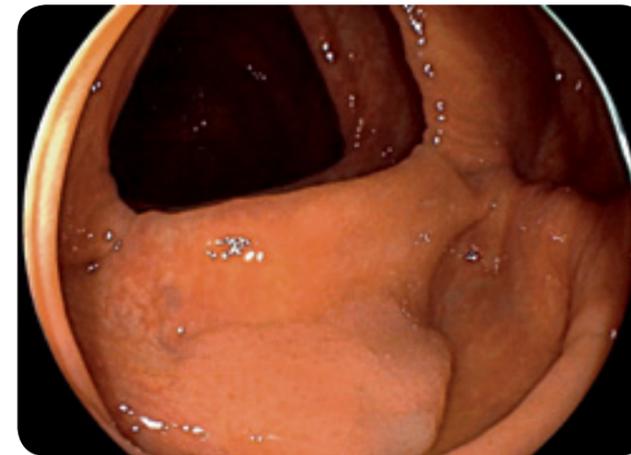


Figure 1



Figure 2

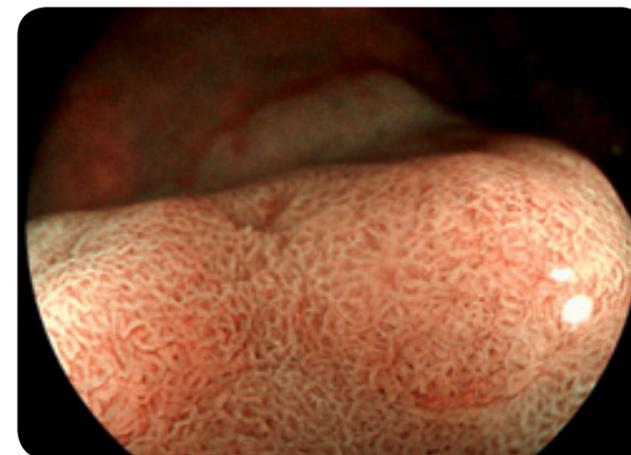


Figure 3

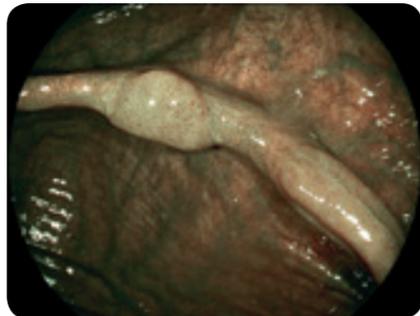


Figure 1: BLI

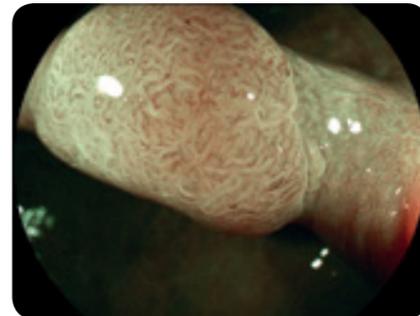


Figure 2: BLI with Zoom

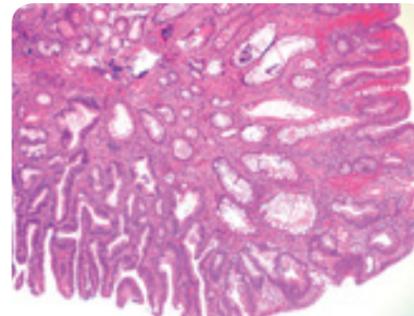


Figure 3: Histology



Figure 4: White Light

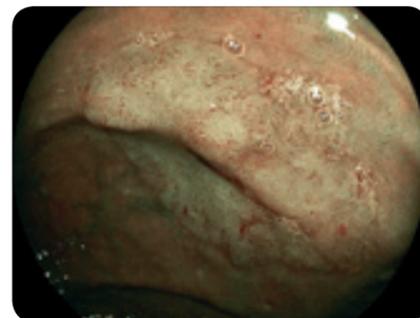


Figure 5: BLI

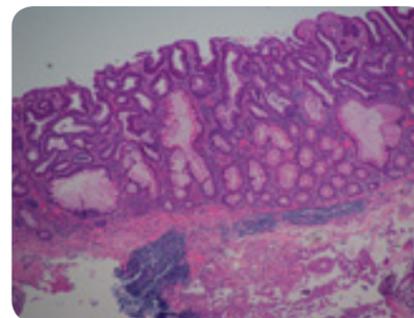


Figure 6: Histology



SIGMOID COLON 0-IIA (LST-NG) ADENOCARCINOMA

Under white light observation, the non-polypoid type reddish lesion has the shallow depressed area in the center (Figure 1). Using LCI observation, the lesion gets to be more reddish and the mucosa of the background gets to be whitish (Figure 2). The image is well visualised compared to the white light observation.

Under BLI magnification, the surface patterns are irregular like VI irregular pit pattern (Figure 3). Vessel patterns show diffuse brownish change partially, but most of them are depicted lightly. It is diagnosed as intramucosal carcinoma or T1a cancer. Histological examination showed T1a (SM invasion length: 200µm).

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Figure 1

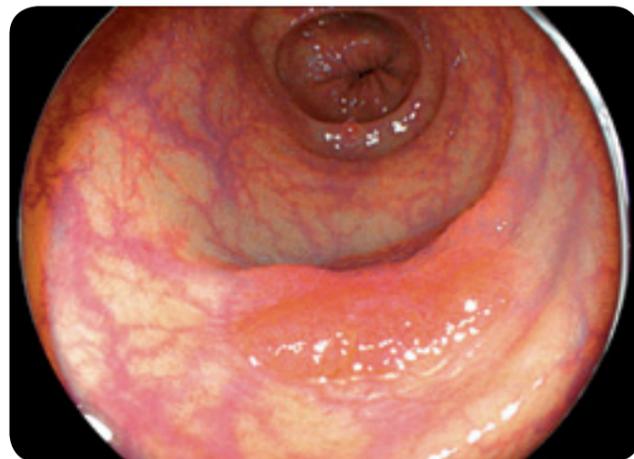


Figure 2

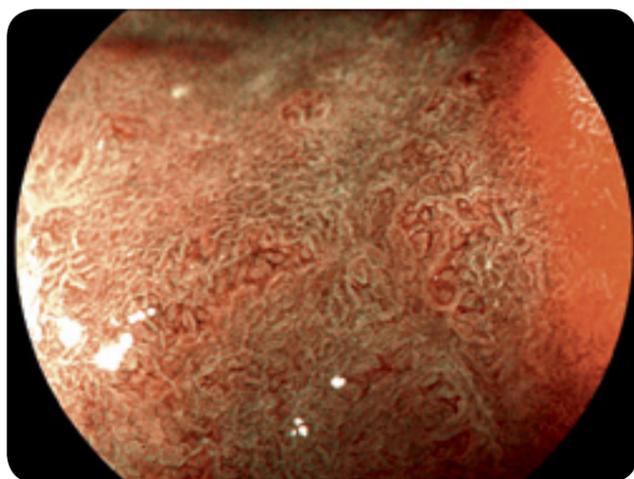


Figure 3

BLUE LIGHT IMAGING FOR ENHANCED DIAGNOSIS OF INFLAMMATORY BOWEL DISEASE

PATIENT INFORMATION / INDICATION

A **42-year-old male** was referred to our endoscopy unit for diagnosis of **indeterminate colitis** which was diagnosed more than 25 years ago. Physical examination was unremarkable and laboratory investigations show a mild anemia with a hemocult of 12.4 g/dL (reference value 14-17 g/dL). Family history was negative and the patient was suffering from lossy stool.

METHODS & RESULTS

Colonoscopy was performed by using the newly introduced 700 series from Fujifilm

(Düsseldorf, Germany). On high-definition white-light imaging a distinct erythema of the rectum mucosa was noted (Figure 1+2). Of note, after switching to the BLI mode a more severe inflammation and mucosal edema was revealed also extending into the sigmoid colon (Figure 3). The remaining colon mucosa was unremarkable. Biopsies were obtained from the terminal ileum and the all parts of the colon and placed in different jars. Careful attention was paid to take targeted biopsies from the inflamed areas highlighted by the BLI mode. Final histopathological diagnosis revealed epithelioid granulomas in the biopsies taken from the sigmoid area and diagnosis of Crohn's disease was made.

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CONCLUSION

This case illustrates the clinical benefit of the newly introduced 700 series endoscope with BLI for the proper evaluation of subtle mucosal inflammation in IBD. In this case, BLI guided biopsies allowed for adequate tissue sampling so that the correct diagnosis of Crohn's disease could be made.

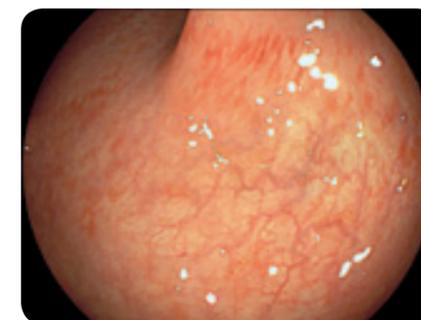


Figure 1



Figure 2

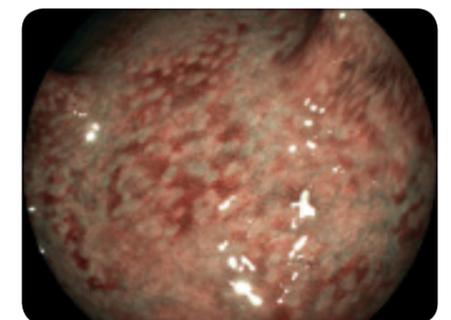


Figure 3

Distinction between Crohn's disease and ulcerative colitis is of paramount importance for optimal therapy of patients¹. However, in about 10% of cases a proper diagnosis cannot be reached². One reason might be the inadequate biopsy acquisition in patients presenting with quiescence disease activity as it has been shown that standard-white light imaging is likely an insensitive test for diagnosis of subtle mucosal inflammation³.

References:

1. Abraham C, Cho JH. Inflammatory bowel disease. *N Engl J Med.* 2009;361:2066-78.
2. Tontini GE, Bisschops R, Neumann H. Endoscopic scoring systems for inflammatory bowel disease: pros and cons. *Expert Rev Gastroenterol Hepatol.* 2014;8:543-54.
3. Neumann H, Vieth M, Günther C, et al. Virtual chromoendoscopy for prediction of severity and disease extent in patients with inflammatory bowel disease: a randomized controlled study. *Inflamm Bowel Dis.* 2013;19:1935-42.

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