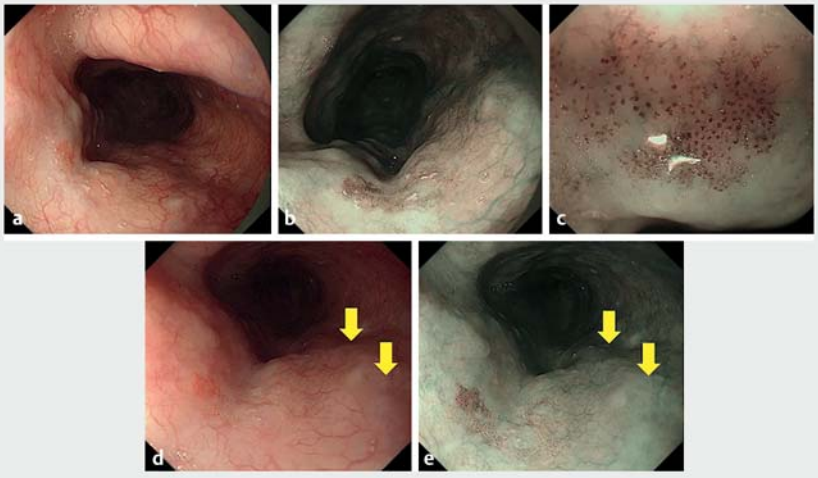
Article published online: 2022-10-14

Endoscopic submucosal dissection with red dichromatic imaging for esophageal squamous cell carcinoma after endoscopic variceal sclerotherapy

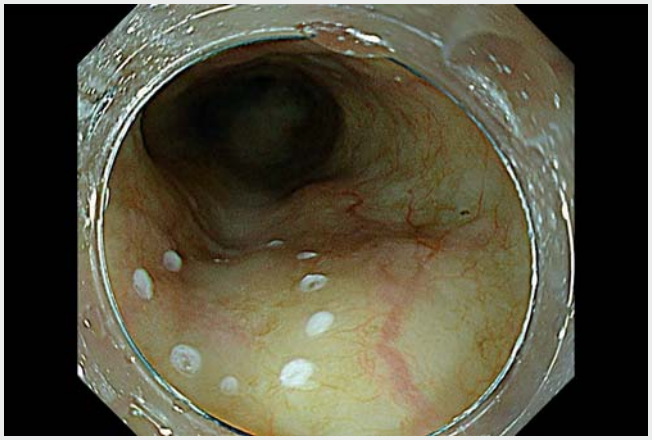
OPEN ACCESS

Endoscopic submucosal dissection (ESD) for superficial esophageal squamous cell carcinoma with esophageal varices (EVs) remains a challenging procedure with a high risk of bleeding. Recently, red dichromatic imaging (RDI) was developed as a new image-enhancing endoscopic technique. Under RDI, blood vessels in the deep submucosa can be easily and readily recognized [1]. RDI has been reported to improve the visibility of EVs [2] and to be effective for preventing bleeding in esophageal ESD, especially during submucosal injection [3, 4].

The patient was a 72-year-old man with alcoholic liver cirrhosis who had undergone previous endoscopic variceal ligation for EVs and balloon-occluded retrograde transvenous obliteration for gastric varices. Esophagogastroduodenoscopy (EGD) revealed a 5-mm 0-IIc lesion in the middle esophagus (▶ **Fig. 1 a, b**), which was diagnosed as remaining in the epithelium or in the lamina propria mucosa at depth by magnified endoscopy with narrow-band imaging (▶ **Fig. 1 c**). Since the lesion was located on esophageal varices, we first planned endoscopic injection sclerotherapy (EIS) for the varices followed by ESD. EGD performed 2 months after EIS revealed residual varices near the lesion (▶ **Fig. 1 d, e**). At the time of ESD, we observed the residual varices by means of RDI (▶ **Video 1**, ▶ **Fig. 2 a**). Subsequently, iodine staining was used to identify the lesion. After we made surrounding markings, the iodine was washed off with sodium thiosulfate (▶ **Fig. 2 b**). We performed an injection and mucosal incision using RDI to avoid injuries in the blood vessels and EVs (▶ **Fig. 2 c**). RDI also improved visibility of bleeding points during submucosal dissection. Finally, en bloc resection was achieved without any adverse events (▶ **Fig. 2 d**). Histopathology revealed squamous cell carcinoma restricted to the epithelium with negative margins and lymphovascular invasion.

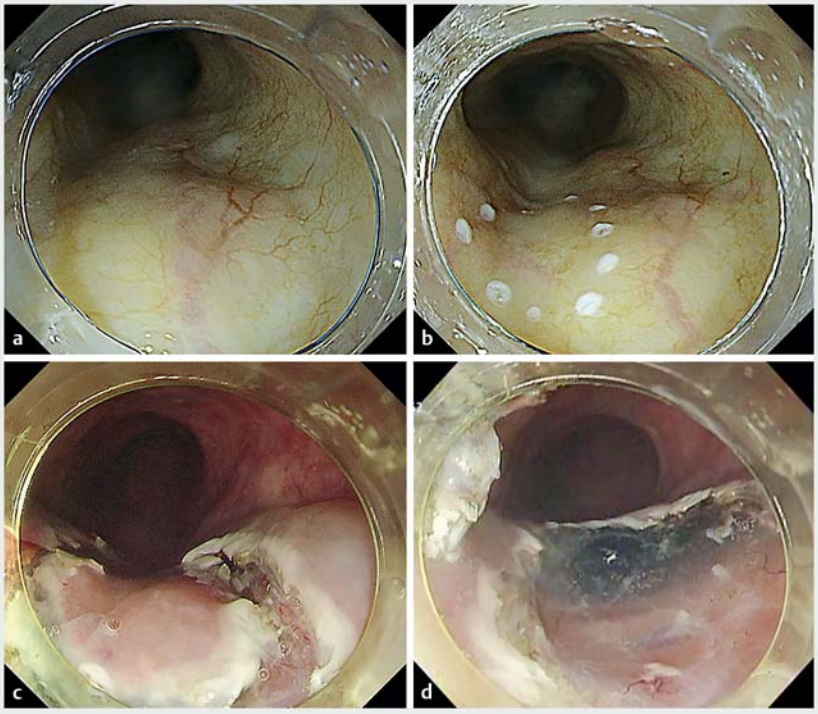


▶ **Fig. 1** **a, b** Esophagogastroduodenoscopy (EGD) revealed a 5-mm 0-IIc lesion that was located directly above the esophageal varices in the middle esophagus. **c** Magnifying endoscopy with narrow-band imaging showed type B1 vessels according to the classification of microvascular patterns. **d, e** EGD 2 months after endoscopic injection sclerotherapy showed residual varices near the lesion (yellow arrows).



Video 1 Endoscopic submucosal dissection with red dichromatic imaging (RDI) may be a safe and useful treatment for superficial esophageal squamous cell carcinoma with esophageal varices. RDI improves visibility of the vasculature even after washing off iodine staining.

From our experience, it was evident that RDI improves visibility of the vasculature even after washing off iodine staining. ESD with RDI may be a safe and useful treatment for superficial esophageal squamous cell carcinoma with EVs.



▶ **Fig. 2** **a, b** Endoscopic observation under red dichromatic imaging clearly showed residual varices before (**a**) and after (**b**) iodine staining. **c** Mucosal incision was made without bleeding. **d** En bloc resection was achieved without any adverse events.

Endoscopy_UCTN_Code_CCL_1AB_2AC_3AB

Competing Interest

The authors declare that they have no conflict of interest.

The authors

Ako Kikuchi, Yosuke Toya[1], Yasuhisa Fujino, Shunichi Yanai, Takayuki Matsumoto[1]

1 Division of Gastroenterology and Hepatology, Department of Internal Medicine, School of Medicine, Iwate Medical University, Yahaba, Iwate, Japan
2 Division of Critical Care Medicine, Department of Critical Care and Disaster Medicine, Iwate Medical University, Yahaba, Iwate, Japan

Corresponding author

Yosuke Toya, MD
Iwate Medical University School of Medicine, Division of Gastroenterology and Hepatology, Department of Internal Medicine, Idaidori 1-1-1, Yahaba 028-3694, Japan
Fax: +81-19-907-7166
ytoya@iwate-med.ac.jp

References

[1] Yahagi N, Fujimoto A, Horii J et al. Dual red imaging: a novel endoscopic imaging technology visualizing thick blood vessels in the gastrointestinal wall. Endosc Int Open 2019; 7: E1632–1635
[2] Furuichi Y, Gotoda T, Moriyasu F et al. Dual red imaging (novel advanced endoscopy) can increase visibility and can predict the depth in diagnosing esophageal varices. J Gastroenterol 2017; 52: 568–576
[3] Miyazaki K, Kato M, Matsuura N et al. Esophageal endoscopic submucosal dissection on post endoscopic variceal ligation scars with injection under red dichromatic imaging. VideoGIE 2021; 6: 536–539
[4] Miyazaki K, Kato M, Ssasaki M et al. Red dichromatic imaging reduces bleeding and hematoma during submucosal injection in esophageal endoscopic submucosal dissection. Surg Endosc 2022. doi:10.1007/s00464-022-09244-4

Bibliography

Endoscopy 2023; 55: E120–E121
DOI 10.1055/a-1948-2182
ISSN 0013-726X
published online 14.10.2022

Georg Thieme Verlag KG, Rüdigerstraße 14, 70469 Stuttgart, Germany