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Amber-red color imaging in third-space endoscopy and ESD: preliminary Western experience

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Pedro Mesquita: Conceptualization (Equal); Investigation (lead); Writing – original draft (lead); Writing – review & editing (equal); Catarina Costa: Investigation (supporting); Writing – review & editing (equal); Pedro Teixeira: Investigation (supporting); Writing – review & editing (equal); Rita Ferreira: Investigation (supporting); Writing – review & editing (equal); Ana Ponte: Supervision (Equal); Writing – review & editing (equal); Teresa Freitas: Supervision (Equal); Writing – review & editing (equal); Rolando Pinho: Conceptualization (Equal), Supervision (Equal); Writing – review & editing (equal).

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All authors declare no conflict of interest.

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Keywords: Chromoendoscopy. Endoscopic Submucosal Dissection. Endoscopy. Gastrointestinal. Image Enhancement. Optical Imaging.

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Dear Editor,

Amber-Red Color Imaging (ACI™, ELUXEO 8000, Fujifilm) is a novel long-wavelength–weighted image-enhancement mode that preserves a natural white-light tone while amplifying blood and deeper-layer visibility. This technology parallels Olympus® Red Dichromatic Imaging (RDI™), which has shown to facilitate hemostasis by enhancing the color contrast between bleeding points and surrounding pooled blood[1]. Recent reports from Japan[2–4] suggest that ACI's potential may extend beyond hemostasis by enhancing the submucosal plane, with advantages for third-space endoscopy. Experience with ACI remains scarce in the West. We report a small, qualitative, single-operator experience using ACI as the primary observation mode across five consecutive advanced procedures—esophageal, gastric, and rectal ESD, plus POEM and POES—with paired White Light HD (WL-HD, left) and ACI (right) snapshots captured at comparable view.

Panel A (POEM/POES): ACI consistently rendered the submucosa as a light-blue plane, clearly set off from pale-pink mucosa and white muscularis propria, aiding plane recognition and spatial orientation at entry, tunnel expansion, and myotomy. ACI also displayed both subtle and deeper vascular structures in red with greater definition, improving dissection accuracy when navigating close to critical structures.

Panel B (esophageal ESD): Submucosal vessels appeared distinctly red against a stable blue background, enabling earlier identification and anticipatory coagulation and helping to maintain a cleaner operative field.

Panels C–D (gastric and rectal ESD): The dissection plane was subjectively more apparent with ACI, particularly where the submucosal space was narrow, fibrotic, or distorted, reducing the risk of inadvertent injury to the muscle layer and the submucosal flap.

All five procedures were completed without adverse events. We did not collect quantitative endpoints (e.g., dissection speed, procedure time, number of coagulated vessels, or bleeding scores), and no formal visibility metrics were applied. Accordingly, these observations are descriptive and hypothesis-generating, not hypothesis-testing. Limitations include the very small sample, single-operator setting, qualitative impressions with potential observer bias, and limited generalizability.

In summary, the visual behavior observed with ACI suggests potential value as an adjunct for spatial orientation, vessel anticipation, and plane maintenance during third-space endoscopy

and ESD. Prospective, multi-operator studies are warranted, with predefined outcomes such as dissection speed/time, intraprocedural bleeding burden and hemostasis attempts, R0/curative resection rates, and adverse events (perforation, unintended muscle injury, flap compromise). Objective color/contrast or visibility measures should be incorporated to reduce subjectivity, with stratification by organ and fibrosis grade.

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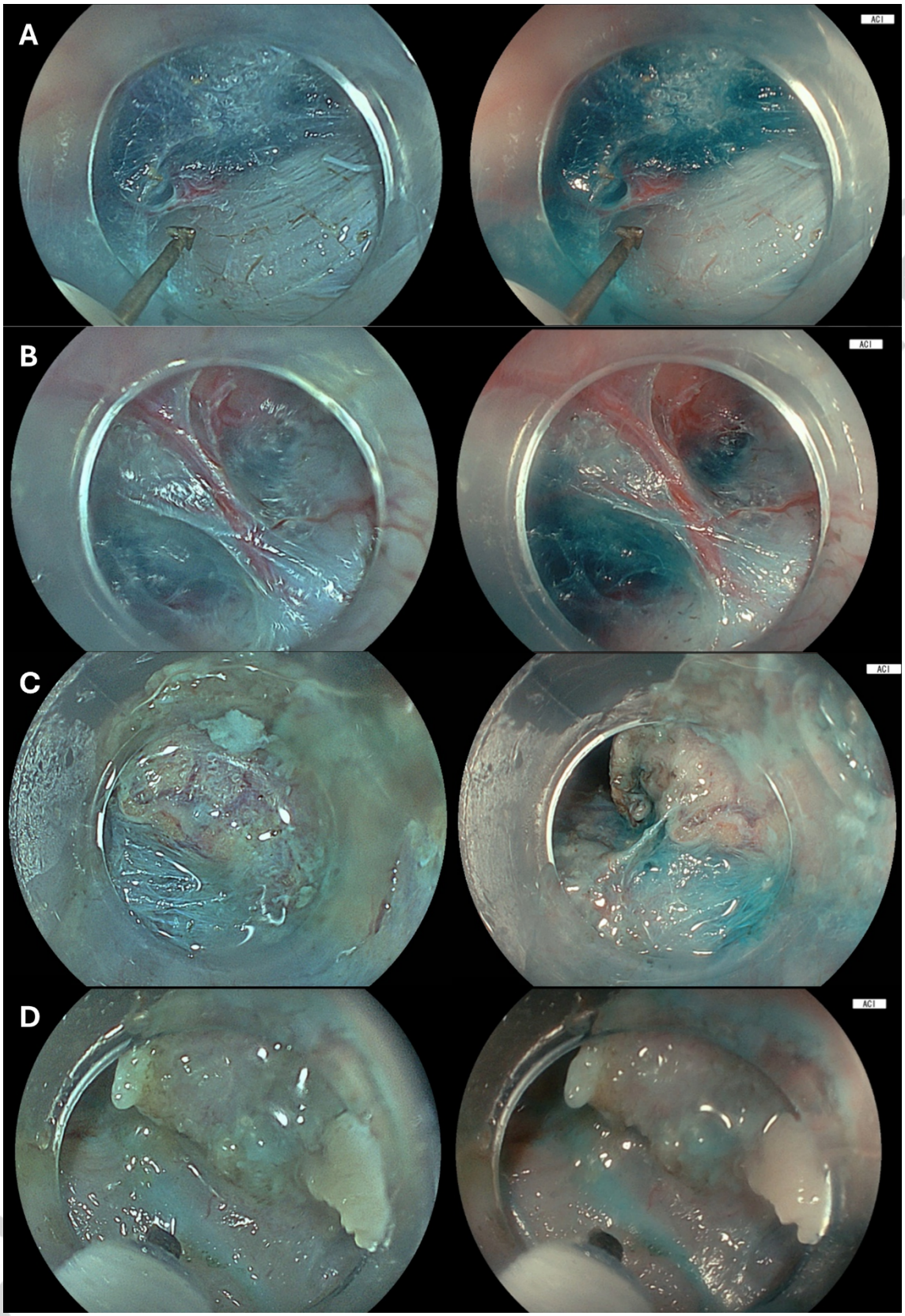

Fig. 1.