

Targeting neoplasia using volumetric laser endomicroscopy with laser marking

Volumetric laser endomicroscopy (VLE) is a recent advanced imaging technology that allows high resolution microstructure imaging of the esophagus and gastric cardia; it has been increasingly used in Europe and the USA [1–3]. The system has been recently upgraded to include a laser marking device that places cautery marks on the mucosa to provide targets for histology. We report a case of an incidental finding of focal high grade dysplasia targeted using this new technology. A 69-year-old man was referred for advanced imaging and removal of a gastroesophageal junction polyp. The polyp was visualized, using high definition resolution white-light endoscopy (HDR-WLE), on the cardia side of the gastroesophageal junction (► **Fig. 1**; ► **Video 1**). It was a mobile pedunculated polyp with its base at the gastric cardia (Paris classification 0–1 p).

It is our practice to use VLE for high resolution imaging of mucosal pathology in the esophagus and gastroesophageal junction. We used a 20-mm balloon containing the VLE probe (► **Fig. 2**). VLE showed that the polyp of interest did not contain any of the VLE characteristics that have been associated with neoplasia [4,5]. No atypical glands or abnormal signal intensity were seen. There was however an area at the gastroesophageal junction just proximal to the polyp that contained a cluster of atypical glands that were suspicious for neoplasia (► **Fig. 3**). This area appeared normal on HDR-WLE and narrow-band imaging (NBI) so laser marks were placed at the site to mark it for targeting (► **Fig. 4**). Endoscopic mucosal resection of the polyp and the VLE-targeted area was performed. Histology of the polyp showed an inflammatory polyp and the VLE-targeted area was consistent with focal high grade dysplasia (► **Fig. 5**; ► **Video 1**).



► **Fig. 1** Endoscopic view using high definition resolution white-light endoscopy showing the polyp at the gastroesophageal junction and adjacent normal-looking areas.



► **Fig. 2** The balloon containing the volumetric laser endomicroscopy (VLE) probe scanning the gastroesophageal junction and distal esophagus.

► **VIDEO 1**

► Video 1: Video showing volumetric laser endomicroscopy (VLE) with laser marking to target an area of dysplasia adjacent to a polyp at the gastroesophageal junction.

This case demonstrates the capability of VLE to obtain high resolution microstructure imaging of the esophagus and gastroesophageal junction that can aid in the diagnosis of neoplasia.

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Competing interests

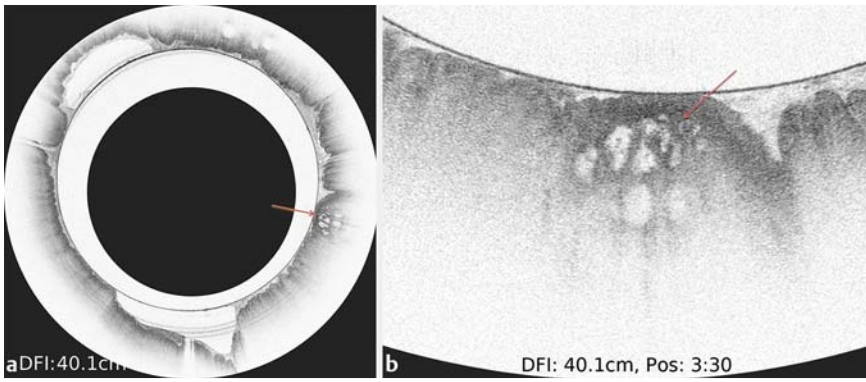
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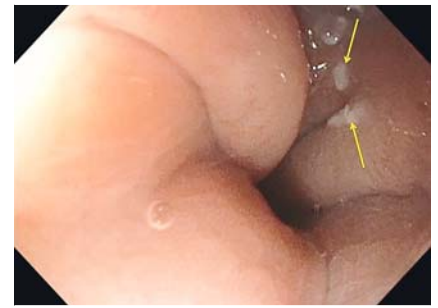
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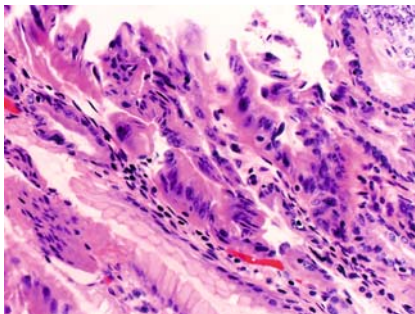
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► **Fig. 3** Volumetric laser endomicroscopy (VLE) of the area proximal to the polyp showing: **a** on 360-degree image, an area that was suspicious for neoplasia (arrow); **b** a magnified snapshot of the suspicious area with an atypical cluster of glands (arrow).



► **Fig. 4** Endoscopic view showing laser marks placed at the area of suspected neoplasia using the volumetric laser endomicroscopy (VLE) laser marking system to help target the area for resection (arrows).



► **Fig. 5** Histology of the endoscopic mucosal resection specimen of the volumetric laser endomicroscopy (VLE)-targeted area. Columnar epithelium with loss of surface maturation, architecture complexity and high-grade nuclear atypia (HE × 400 magnification).

References

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