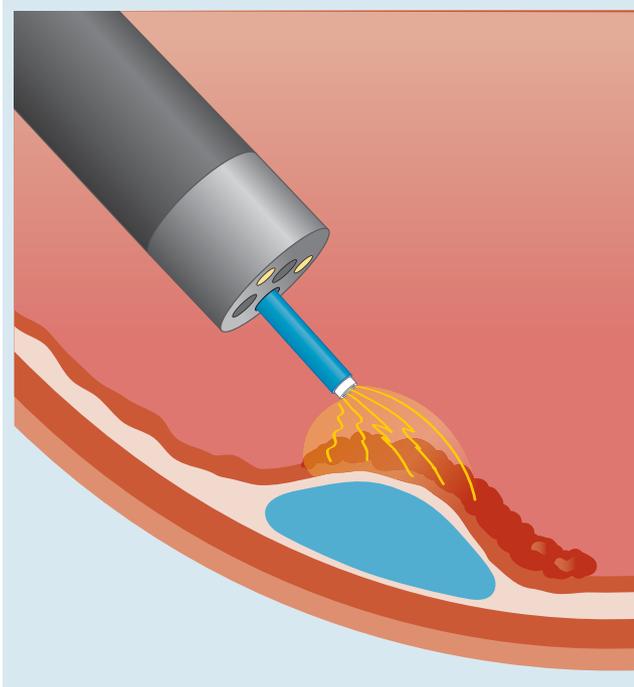
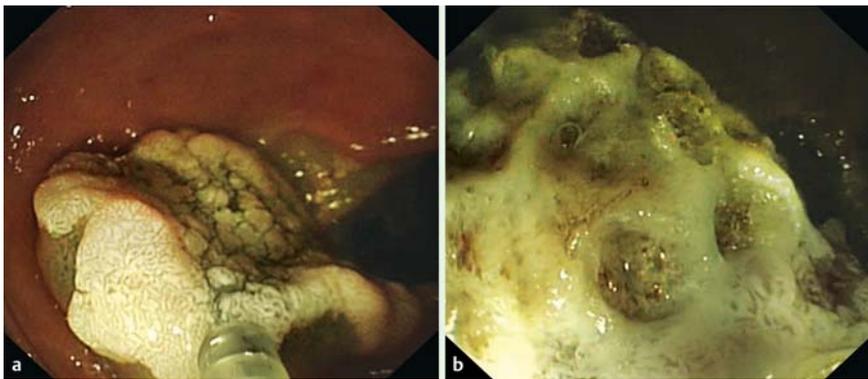


## Endoscopic mucosal ablation: a novel technique for a giant nonampullary duodenal adenoma



**Fig. 1** Endoscopic mucosal ablation (EMA) technique: submucosal fluid injection is followed by high power argon plasma coagulation (APC) tissue ablation.



**Fig. 2** Endoscopic appearances during endoscopic mucosal ablation (EMA) showing: **a** the submucosal lift injection; **b** the honeycomb appearance following ablation.



**Fig. 3** Endoscopic images of: **a** the nonampullary duodenal polyp before the endoscopic mucosal ablation (EMA); **b** the final post-EMA defect.

Piecemeal endoscopic mucosal resection (p-EMR) for large sessile or flat duodenal polyps results in a high incidence of bleeding [1]. A novel injection and ablation technique, endoscopic mucosal ablation (EMA), was used to eradicate a benign sporadic nonampullary duodenal adenomatous polyp. EMA comprises two conventional modalities: submucosal fluid injection followed by high power argon plasma coagulation (APC) tissue ablation (Fig. 1). The fluid-filled submucosal cushion absorbs thermal energy and protects the underlying thin duodenal muscle layer; providing a heat-sink effect [2,3]. The entire mucosal layer progressively “melts” with lateral propagation of the thermal energy within the duodenal submucosal layer giving a macroscopic appearance of a honeycomb (Fig. 2) [4]. A hemicircumferential, 45-mm, nongranular lateral spreading tumor was identified in the postampullary segment of the duodenum in a 76-year-old woman. A pediatric endoscope (LUCERA PCF240DL; Olympus KeyMed, Southend-on-Sea, UK) was used to achieve stable access for the endoscopic therapy. The polyp was scrutinized with narrow band imaging (NBI) and was seen to have a benign vascular and crypt pattern (type IV). The lesion was lifted entirely with submucosal injection of 25 ml diluted adrenaline (1/200 000) mixed with methylene blue. Representative polyp pieces were removed by p-EMR using a 10-mm snare (SnareMaster kit, Olympus KeyMed). EMA was finally applied to the remaining 90% of the polyp using high power APC of 45W, on forced coagulation and a flow rate of 2L/minute (ICC 200 and APC 300; ERBE, Tübingen, Germany), until no visible viable polyp was observed (Fig. 3; Video 1). The time required to complete the destruction of the polyp was 13 minutes. Histological analysis showed a tubulovillous adenoma with low grade dysplasia. The patient was discharged the following day on a 2-week course of proton pump inhibitors. No intraoperative or delayed complications occurred. At the 6 month check, both NBI and indigo carmine (0.1%) dye assessment revealed a completely healed

### Video 1

Endoscopic mucosal ablation (EMA)-assisted polypectomy in a giant nonsporadic duodenal adenoma and the outcome at the 6-month follow-up examination.

scar with a tiny 4-mm area of residual polyp that was treated with EMA.

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**Competing interests:** None

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### References

- 1 *Fanning SB, Bourke MJ, Williams SJ et al.* Giant laterally spreading tumors of the duodenum: endoscopic resection outcomes, limitations, and caveats. *Gastrointest Endosc* 2012; 75: 805–812
- 2 *Norton ID, Wang L, Levine SA et al.* Efficacy of colonic submucosal saline injection for the reduction of iatrogenic thermal injury. *Gastrointest Endosc* 2002; 56: 95–99
- 3 *Fujishiro M, Yahagi N, Nakamura M et al.* Submucosal injection of normal saline may prevent tissue damage from argon plasma coagulation: an experimental study using resected porcine esophagus, stomach and colon. *Surg Laparosc Endosc Percutan Tech* 2006; 16: 307–331
- 4 *Manner H, May A, Faerber M et al.* Safety and efficacy of a new high power argon plasma coagulation system (hp-APC) in lesions of the upper gastrointestinal tract. *Dig Liver Dis* 2006; 38: 471–478

### Bibliography

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