The tissue effect of argon-plasma coagulation with prior submucosal injection (Hybrid-APC) versus standard APC: a randomized ex-vivo study

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Background: Thermal ablation for Barrett's esophagus has widely been established in gastrointestinal endoscopy during the last decade.1-3 The mainly used methods of radiofrequency ablation (RFA)2 and argon-plasma coagulation (APC)3 carry a relevant risk of stricture formation of up to 5-15%. Newer ablation techniques that are able to overcome this disadvantage would therefore be desirable. The aim of the present study was to compare the depth of tissue injury of the new method of Hybrid-APC versus standard APC within a randomized study in a porcine esophagus model.

Methods: Using a total of 8 explanted pig esophagi, 48 esophageal areas were ablated either by standard or Hybrid-APC (APC with prior submucosal fluid injection) using power settings of 50 and 70W. The depth of tissue injury to the esophageal wall was analysed macroscopically and histopathologically.

Results: Using 50 W, mean coagulation depth was 937±469µm during standard APC, and 477±271µm during Hybrid-APC (p=0.064). Using 70 W, coagulation depth was 1096±320µm... 2/6 (50 W) and 1/6 cases (70 W). The proper muscle layer was only damaged during conventional APC (50W: 1/6; 70W: 3/6). The results of the present study have recently been accepted for publication in the UEG journal.

Conclusions: Hybrid-APC reduces coagulation depth by half in comparison with standard APC, with no thermal injury to the proper muscle layer. It may therefore lead to a lower rate of stricture formation during clinical application, e.g. during ablation of Barrett’s esophagus.

References
2 Manner H, Hacobianstein T, Poch O. Ablation of remaining Barrett's epithelium after endoscopic resection: a randomized long term follow-up study on argon plasma coagulation versus surveillance (APC study). Endoscopy 2014

Disclosures: A. Neugebauer and M.D. Enderle are employees of Erbe Elektromedizin, Tuebingen, Germany

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