MEDICAL INSIGHTS ePaper

EMR combined with hybrid argon plasma coagulation to prevent recurrence of large nonpedunculated colorectal polyps (with videos)

Motchum L, Levenick JM, Djinbachian R, Moyer MT, Bouchard S, Taghiakbari M, Repici A, Deslandres E, von Renteln D. EMR combined with hybrid argon plasma coagulation to prevent recurrence of large nonpedunculated colorectal polyps (with videos). Gastrointest Endosc. 2022:96:5:840-848.e2. ISSN 0016-5107. https://doi.org/10.1016/j.gie.2022.06.018

Clinical trial registration number: NCT04015765

Background and goals

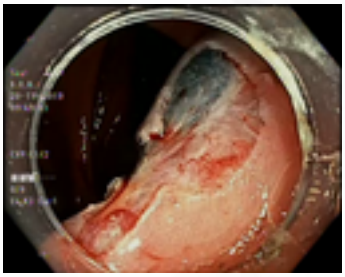
Removal of large colorectal polyps by EMR is a well-established endoscopic procedure. Although the burden of surgery can be reduced for patients, local recurrence rates (LRR) as high as 15 – 20 %, caused by endoscopically invisible remnant adenomas of the EMR site, are a major drawback [1, 2-4]. Thermal ablation of remnants at the EMR resection margin using snare tip soft coagulation (STSC) has been associated with a decrease of LRR to 6 % [5, 6].

The hypothesis of the authors of this study was that after EMR with HybridAPC the LRR could be reduced efficiently in a safe manner.

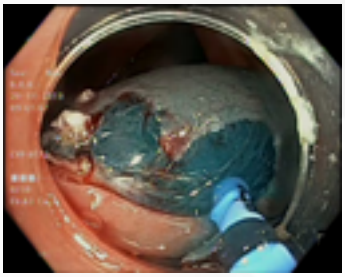
HybridAPC is a two-step procedure, which combines in one probe the function of injection of a fluid cushion into the submucosa for protection of deeper tissue layers from thermal damage with the function of superficial thermal ablation of mucosa by argon plasma coagulation (APC). The technique was first applied for ablation of residual Barrett's mucosa in the endoscopic eradication of Barrett's esophagus [7].

In comparison to STSC, the HybridAPC technique has two additional benefits for treatment of microscopic remnant disease in the removal of large polyps in the colon [8]. First, the fluid injection into the submucosa allows for expansion of the EMR lesion thereby enhancing the accessibility for the APC current at margins and surface of the EMR lesion even in difficult locations (e.g., lesion hidden behind folds of the colon). Second, in addition to targeting the EMR margin it is also possible for the ablation of remnants located at the resection surface.

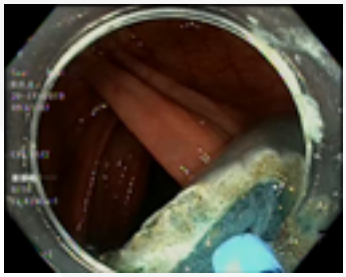
The primary goal of this prospective multi-center pilot study was to assess the effectiveness of post-EMR ablation of margin and resection surfaces in selected cases using HybridAPC on LRR.



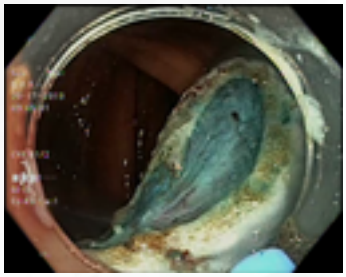
Location of the lesion following EMR



Submucosal injection using HybridAPC probe



Ablation of the base and margin



Final view

Methods and outcomes

Patients: 84 patients (39 female, 45 male) with a median age of 66.3 (range: 18–89) at Montreal University Medical Center and Penn State Hershey Medical Center

Procedure: All patients underwent hot snare EMR for the treatment of nonpedunculated colorectal polyps greater than or equal to 20 mm. Defect margins (approximately 3–5 mm) and, in selected patients the resection surface, were ablated with HybridAPC.

Primary outcome: Recurrence rate during first follow-up colonoscopy

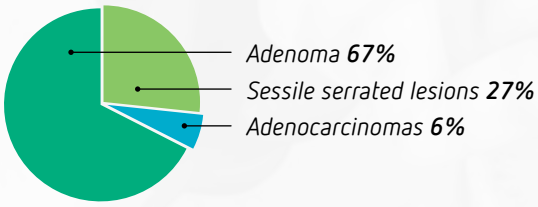
Secondary outcomes: 1) technical success, and 2) complication rates

Results and key findings

EMR with HybridAPC was performed on a total of 101 polyps (median size 30 mm, range: 20–60), with a median EMR time of 15 minutes and HybridAPC ablation time of 4 minutes, along with an en bloc resection rate of 6 %. There were 4 adverse events (2 delayed bleeding, 1 abdominal pain, 1 micro-perforation) in three patients, all of which were resolved with endoscopic or antibiotic treatment.

Ablation: 19 (20%) complete surface ablation, 53 (58%) partial surface ablation, 18 (21%) no surface ablation

Lesion type: Adenomas (68, 67.3 %), sessile serrated lesions (27, 27 %), adenocarcinomas (6, 6 %)



Primary finding: The recurrence rate at the first follow-up colonoscopy was found to be 2.2 % (2/91). Median follow-up time was 6 months.

Secondary finding: EMR with HybridAPC had a 100 % technical success rate. The complication rate was 2.4 %.

Additional key finding: All 6 patients with a cancerous lesion were found to have complete eradication of the primary tumor after EMR with HybridAPC and none were found to have lymph node or distant metastasis.

Discussion and conclusion

This study reported that HybridAPC is a safe technique with intra- and post-procedural bleeding rates that are comparable to STSC and with complication rates comparable to traditional polypectomy technique.

The authors found a low recurrence rate (2.2 %), which is considerably lower than both conventional EMR without ablation (which have shown LRRs of 15–20 %) and EMR with STSC (showing LLRs of 6 %). STSC is currently regarded as the gold standard form of EMR and thermal margin ablation.

In conclusion, EMR with HybridAPC of nonpedunculated polyps ≥20 mm showed very low post-EMR recurrence rates, a high technical success rate, and low complication rates with particularly low delayed bleeding rates. In a future paper, the results will be confirmed in a study with higher patient numbers. A randomized-controlled trial would be needed to compare the efficacy and safety of HybridAPC with STSC.

Units and instruments

VIO® 300 D/APC2
Modes: EndoCUT® (settings 2-1-4) for (hot) snare EMR, HybridAPC (0.8 Flow, pulsedAPC 40 W, effect 2 for thermal ablation)

ERBEJET® 2
For submucosal injection: Effect: 30-50

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