

between the NS with placebo and the LR with IND groups; our study was powered for this comparison only. It was not our intent to make conclusions based on the other comparative groups but rather to use those as exploratory investigations. This is a limitation of the project. On the basis of this study design, we concluded that the combination of LR with IND was more effective than NS with placebo for preventing PEP and readmission; we agree with the comments of Drs Ustundag and Saritas regarding synergy.

Since 2013, the definition of pancreatitis severity has shifted. Mild disease is represented as the absence of organ failure (defined by the modified Marshall scoring system) or local adverse events (eg, pseudocyst, walled-off necrosis). Moderate disease includes organ failure resolving within 48 hours or local adverse events. Severe disease is indicated by persistent organ failure lasting >48 hours.<sup>3</sup> Given this categorization, there was 1 case of severe pancreatitis in the NS with IND group and 1 case of moderate pancreatitis (local adverse event = pseudocyst) in the LR with IND group. Because there were only 2 cases of moderate and severe pancreatitis, inferential statistics were not applicable.

We evaluated systemic inflammatory response syndrome (SIRS) and found that the only patients with SIRS were those in whom pancreatitis developed. It is not common practice at our institution to measure C-reactive protein. This marker takes 72 hours to accurately measure the severity of acute pancreatitis and has never been evaluated in the setting of PEP.<sup>4</sup> We appreciate the interest of Drs Ustundag and Saritas in our work and acknowledge that our investigation represents a group of patients who are higher risk for post-ERCP pancreatitis. We agree that this is a complex issue and that further study is needed. We hope that those authors and readers around the world will use the combination strategy of LR plus IND as a means of delivering safe and affordable care.

## DISCLOSURE

*Dr Elfant is a consultant for Boston Scientific. All other authors disclosed no financial relationships relevant to this publication.*

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## Avulsion for the treatment of visible residual neoplasia during EMR of colorectal polyps: Is “heat” required?



To the Editor:

We read with great interest the article by Holmes et al<sup>1</sup> on the superiority of avulsion to argon plasma coagulation (APC) in treating residual neoplasia. However, we question whether the additional diathermy and shearing effect using “hot” avulsion (HA) with the use of EndoCut is required. The cold avulsion (CA) technique has been used in our institution for several years for residual polyps, by use of the hot biopsy forceps because of the favorable cusps (Radial Jaw 4, Boston Scientific, Natick, Mass). We have shown in our retrospectively analyzed prospective database no benefit of HA over CA in reducing the rates of residual/recurrence at follow-up examination.

Soon after the publication of the case series by Veerappan et al,<sup>2</sup> we changed our practice over a 6-month period to using HA for all residual neoplasia during EMR. Outcome measures were compared with the previous 6 months' data by the use of CA for all polyps referred. Table 1 shows the demographic and outcome data for the 2 study groups.

Of a total of 196 polyps >2 cm referred during the study period, a total of 31 patients required avulsion during the CA period and 33 during the HA period; no significant differences in patient demographics or polyp characteristics were observed. Of the polyps that required adjunctive avulsions, 87% had a history of prior endoscopic manipulation ( $P < .01$ ), a risk factor well documented as being a risk for the need for adjunctive therapy and for recurrence.<sup>3,4</sup> The 3-month residual/

TABLE 1. Patient demographic and outcomes

	Cold avulsion, % (n)	Hot avulsion, % (n)	P value
No. of patients	31	33	.71
Age, y (mean $\pm$ SD)	67.3 ( $\pm$ 9.5)	68.4 ( $\pm$ 10.1)	.66
Anticoagulant/antiplatelet use	29% (9)	30% (10)	.12
Lesion size, mm (mean $\pm$ SD)	35.1 $\pm$ 11.3	36.2 $\pm$ 10.9	.38
% left hemicolon	77% (24)	73% (24)	.21
Prior endoscopic manipulation	90% (28)	85% (28)	.09
Paris classification			.37
O-IIa	55% (17)	55% (18)	
O-Is	16% (5)	15% (5)	
O-IIa-Is	19% (6)	18% (6)	
other	10% (3)	12% (4)	
Histology			.47
Tubular adenoma	23% (7)	18% (6)	
Tubular villous adenoma	68% (21)	70% (23)	
Villous adenoma	3% (1)	6% (2)	
Sessile serrated	6% (2)	3% (1)	
T1 cancer	0%	3% (1)	
Intraprocedural bleeding	16% (5)	6% (2)	.02
Postprocedural bleeding	3% (1)	6% (2)	.07
Residual/recurrence at 3 months	16% (5)	15% (5)	.62

SD, standard deviation.

recurrence rate was similar in both groups: 16% versus 15% ( $P = .44$ ), compared with 6% for those polyps not requiring adjunctive therapy. However, there was a significantly higher number of cases of intraprocedural bleeding that necessitated endoscopic intervention in the CA group than in the HA group: 16% versus 6%, respectively ( $P = .02$ ).

Avulsion clearly is a useful adjunctive technique, but we propose that further randomized control trials comparing the technique with or without diathermy, rather than the comparator group of APC, is required before firm conclusions can be drawn. This being said, intraprocedural bleeding is known to increase procedure times and is associated with an increased likelihood of residual/recurrent neoplasia.<sup>5</sup> Hence, the benefit of the additional diathermy providing some prophylactic hemostasis during removal of the residual area, which often have adjoining areas of vasculature, does make this technique an attractive proposition.

## DISCLOSURE

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## Response:



We would like to thank Drs Rahman and Patel for their interesting letter.<sup>1</sup> During endoscopic resection of colon polyps, complete removal of all visible neoplastic tissue is highly desirable both for prevention of recurrence and for histologic analysis. As we demonstrated in our study, avulsion is a useful technique for achieving complete removal of all visible neoplasia after as much of the polyp as possible has been removed with a snare: recurrence rates are much lower when avulsion is used instead of ablation of visible residual neoplasia.<sup>2</sup> The use of microprocessor-controlled cautery, such as the EndoCut mode used in publications of the avulsion technique,<sup>3</sup> has several potential benefits. Cautery use appears anecdotally to facilitate shearing off relatively large pieces of mucosa during avulsion, although this has not to our knowledge been formally evaluated. Cautery should reduce bleeding, which is important because even mild bleeding with forceps removal of tissue can obscure visualization of the resection site and make it difficult to ensure that the entire adenoma has been removed. In theory, cautery use might also reduce recurrence rates by destroying small invisible areas of adenoma at the edges of the avulsed tissue. This should be balanced against the risks of cautery, which include perforation, delayed bleeding, and postpolypectomy syndrome. Although we did not observe any episodes of perforation from avulsion in our report, inadvertent grasping of the muscularis propria