

The author replies

We appreciate the comments made by Drs. Maguire, Power, and McAnena and the opportunity to respond to them.

As noted by Drs. Maguire et al. these (and all) subjective conclusions are and should be open to "alternative interpretation." As presented in the original report, the number of complications was small, with no statistically significant difference between bipolar electrosurgery (BPCF) and ultrasonic coagulation (HCS). The complications (two splenic capsular tears [one BPCF and one HCS], one delayed gastric perforation (BPCF), and two gastric serosal injuries [BPCF]) were described clearly and undoubtedly would cause great concern if found in significant numbers. The delayed gastric perforation was assumed to be caused by the BPCF, but may have resulted from a serosal tear caused by excessive traction with a grasping forceps. The two instances of serosal blanching were managed easily by sutured imbrication and caused no sequelae. However, this small number of adverse events has no inherent statistical power or predictive ability. Further extrapolation from this point would be speculative and presumptive at best, and the projection of adverse outcome parameters from anecdotal data would be potentially misleading. The proposition that HCS would be superior to BPCF on the basis of complications noted in this study, with a primary focus on the theoretical difference in propensity for lateral thermal injury, is therefore unfounded.

Although a relative decrease in lateral thermal spread is demonstrated experimentally when monopolar electrosurgery, bipolar electrosurgery, and ultrasonic surgery are compared, its clinical relevance to surgeons trained in proper technique and use has not been demonstrated. More importantly, the clear advantage in time and cost with the use of HCS or BPCF compared with individual dissection, clipping, and division of vessels is achieved by the ability to rapidly divide structures such as the gastrosplenic ligament without individually dissecting the small or medium caliber vessels (the SGVs) coursing within. The serosa of the greater curve of the stomach may not be clearly seen, thus putting it at risk for the type of injuries described in this

study. Although no HCS-related gastric serosal injuries occurred in the current study, inadvertent application of ultrasonic energy to the gastric serosa along the greater curve as the surgeon divides the gastrosplenic attachments could occur, leading to a type of delayed perforation similar to that seen with electrosurgical lateral thermal transfer injuries.

Experience with this phenomenon in the current study has heightened our level of vigilance for gastric serosal injuries, convincing us that judicious use of lower-power settings and clear visualization of gastric serosa in dividing fundic attachments may nearly, if not completely, ameliorate this concern. Overall, serosal injury during division of the SGV, whether electrosurgically or ultrasonically induced, should be avoidable with a modicum of operator education and training. Should ongoing experience with either of these methods suggest a propensity for thermal complications, further prospective well-controlled clinical studies would be indicated to address the issue definitively.

Finally, cost data for these two methods, which demonstrated no statistically significant difference in any of the measured parameters, were presented as the approximate per case equipment cost in our institution, including capital expenditure for the individual device generators. Further extrapolation from this point would be speculative and potentially misleading. Admittedly, precise cost effectiveness is difficult to assess in comparing technologies that are fundamentally different. Therefore, true cost effectiveness should be calculated individually at each institution contemplating the acquisition of these competing technologies.

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