Effect of APC on the Duration of Mucosal Elevation after Submucosal Injection

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Background: Argon plasma coagulation (APC) is widely used for hemostasis, devitalization of adenoma remnants, ablation of Barrett’s esophagus, management of radiation proctitis and vascular malformations, etc. APC is used mainly for superficial lesions but has previously been reported that penetration depth can reach muscularis propria using pulsed mode at 30 W for 30 seconds. If the mucosa around the target lesion can be cauterized to obliterate the submucosa, it would block or lessen the blood flow from the surrounding and prolong the duration of elevation. Therefore, we conducted this study to compare the effect of APC on the duration of mucosal elevation after submucosal injection.

Material and Methods: A fresh stomach obtained from a pig was used. The tissue was cut in a size of 4×4 cm and placed on a cork board. To compare the efficacy of APC on the duration of mucosal elevation after submucosal injection, cauterization was done in a circle with a diameter of 2 cm and 1 ml of solution was injected. The same procedure was performed on the piece of stomach that had not been cauterized with APC. The change in the height of the lesion with time was measured and compared.

Results: The height of the mucosal elevation that had been cauterized by APC was reduced by a mean of 26.9%, 29.5%, 35.6%, and 40.8% at 5, 10, 20, and 30 minutes respectively after injection. The height of the control was reduced by a mean of 5.9%, 6.9%, 11.1%, and 15.2% at 5, 10, 20, and 30 minutes respectively after injection. The height of the control lesion decreased rapidly within 5 minutes and showed decelerated decrease thereafter, but for that of the lesion cauterized by APC, it was rather slow and steady.

Conclusions: APC significantly lengthened the duration of mucosal elevation compared with the lesion without APC. Performing APC around the target lesion could aid in facilitating the ESD procedure.