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Letter to the Editor: Endoscopic transparent caps for non-variceal upper gastrointestinal bleeding - more than just a one trick pony

Tanaka I *et al*. Cap assisted hemostasis

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Abstract

Endoscopic transparent caps (ETC) are an essential component for endoscopic submucosal dissection and third space endoscopy; however, evidence for their role in non-variceal upper gastrointestinal bleeding (NVUGIB) remains limited. Herein, we describe the technical application of ETC and appraise the literature on their role for NVUGIB including the recent multi-centre retrospective evaluation by Küçükdemirci *et al* highlighting that ETC are a readily available and low-cost adjunct which may improve procedural efficacy and reduce transfusion requirements.

Key Words: Endoscopy; Hemostasis; Non-variceal upper gastrointestinal bleeding; Transparent cap; Ulcer bleeding; Transfusion

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Core Tip: Endoscopic transparent caps (ETC) may facilitate hemostasis in non-variceal upper gastrointestinal bleeding (NVUGIB) by improving visualization and scope tip stability. Recent evidence, including a multi-centre retrospective study, suggests ETC-assisted endoscopy may improve procedural efficiency and reduce transfusion requirements. Given their simplicity, low cost, and widespread availability, ETC represent a practical adjunct during endoscopic hemostasis for NVUGIB. However, further well-designed studies are needed to clarify their optimal use and clinical impact.

TO THE EDITOR

Endoscopic transparent caps (ETC) are a supportive endoscopic device attached to the tip of the endoscope. They improve visibility and endoscope stability by helping

to maintain an adequate distance between the endoscope and the visual field. The efficacy and utility of cap-fitted endoscopy was first reported by Inoue *et al*[1] in 1990. Since then, ETC have been used for a variety of purposes, such as improving polyp detection during colonoscopy[2], examining the ampulla of Vater[3], facilitating cecal intubation, and foreign body management, as summarized in a recent review on cap-assisted endoscopy[4].

Most notably, ETC are an essential device during endoscopic resection, especially endoscopic submucosal dissection (ESD). ESD was first developed in Japan around 1990[5] and has become a first-line treatment strategy for early gastrointestinal neoplasms globally. Since its introduction, ETC have become a core device for performing ESD. An appropriate working distance between the endoscope and the lesion is crucial, with the cap stabilizing the endoscope; therefore, enabling an effective, efficient and safe procedure. Similarly, ETC are an indispensable device in third-space endoscopy procedures such as per-oral endoscopic myotomy (POEM) and its variants (Zenkers POEM, gastric POEM, peroral endoscopic tumor resection/submucosal tunneling endoscopic resection). To date, a variety of ETC ranging from soft to hard, and from tapered to straight designs have been developed. The choice of ETC is typically determined by the endoscopist's preference and procedural context.

Analogous to ESD and POEM, where the need for intra-procedural hemostasis is commonplace, ETC have also been used to optimize endoscopic hemostasis for non-variceal upper gastrointestinal bleeding (NVUGIB). Through similar mechanisms as described above, ETC improve visualization, endoscopic stability and help to maintain an adequate distance from the bleeding target; thereby making hemostatic technologies like heater probes, argon plasma coagulation, coagulation forceps and through-the-scope mechanism clips easier to use. However, this is largely anecdotal as there is limited evidence supporting their role in NVUGIB; which may be driven by operator preference and/or unfamiliarity with ETC alongside the intrinsic challenges of conducting randomized controlled trials in NVUGIB.

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During ETC-assisted hemostasis for active bleeding, particularly in cases with poor visibility, precise identification of the bleeding point is critical. If the bleeding point is not clearly recognized, unnecessary clipping or coagulation may be applied to the surrounding mucosa, which can further obscure the field or worsen the situation. A practical technique is to gently appose the edge of the ETC to the suspected bleeding area and apply slight compression while gradually adjusting the scope position. This maneuver can help tamponade the bleeding and localize the culprit vessel. In addition, irrigation through the working channel or water-jet system while maintaining the cap in close contact with the bleeding area may further improve visualization. Once the bleeding point is identified, the hemostatic device should be advanced slowly while preserving a stable endoscopic view. Appropriate use of suction, careful control of insufflation, and subtle scope angulation are also important to maintain visualization and facilitate accurate deployment of clips, coagulation forceps, or other hemostatic devices.

The selection of ETC type is also important during ETC-assisted hemostasis for NVUGIB. In general, a straight cap is preferred because it provides a wider and more direct endoscopic view, facilitating identification of the bleeding point and deployment of hemostatic devices. Tapered caps are less commonly used in this setting because they may narrow the visual field and limit maneuverability during urgent hemostasis. In terms of cap firmness, a softer cap may be useful in fragile or narrow areas, such as the duodenum, where excessive pressure from a rigid cap could theoretically increase the risk of mucosal injury. However, these recommendations are largely based on expert experience, and further comparative studies are needed to clarify the optimal cap design for NVUGIB.

Direct clinical evidence specifically evaluating ETC-assisted hemostasis remains limited. Kim *et al*[6] evaluated endoscopic hemoclipping using a transparent cap in 74 patients with peptic ulcer bleeding or stigmata of recent hemorrhage. In that study, no significant differences were observed between the cap-assisted and conventional groups in initial hemostasis (94.4% *vs* 91.1%; $P = 0.684$) or rebleeding (11.7% *vs* 11.8%; $P = 0.985$). However, transparent cap assistance enabled hemoclipping in lesions that were too tangential to be clipped without it, supporting

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its potential role as a rescue or adjunctive technique in selected technically challenging cases.

Building on these limited data, the Küçükdemirci *et al*'s study[7], entitled "Endoscopic transparent cap assisted hemostasis: A multicenter retrospective cohort study", conducted a multicenter retrospective study comparing the clinical outcomes between ETC *vs* no-ETC assisted hemostasis. A total of 206 patients who underwent emergency endoscopic hemostasis between 2021 and 2025 at six tertiary centers in Turkey were divided into ETC (n = 67) and no-ETC (n = 139) assisted hemostasis. Baseline demographic and clinical variables were comparable between groups. Of note, ETC was more often used in hemodynamically unstable patients. Moreover, Forrest Ia/Ib lesions were more common within the ETC group; with the ETC group requiring a higher number of hemostatic techniques (ETC 2.55 ± 1.00 *vs* no-ETC 2.14 ± 0.87; P < 0.001). A lower frequency of post-admission transfusion (ETC 14.8% *vs* no-ETC 33.8%; P = 0.006) and transfusion volume (ETC 0.44 ± 1.13 units *vs* no-ETC 0.91 ± 1.31 units; P = 0.012) were identified in the ETC group. No difference in rebleeding, mortality and hospital length of stay was identified (all P > 0.606). Multivariable analysis showed that ETC use was associated with lower transfusion volume (β = -0.473, P = 0.010).

The authors highlight the vulnerability of their study to selection bias with ETC use at the discretion of the endoscopist; with selection inherently favoring more severe or technically complex cases as highlighted by higher frequencies of clinical instability and high-risk lesions in the ETC group. Therefore, although no difference in rebleeding, mortality or length of stay were identified these findings needs to be interpreted with context; with the ETC group representing a higher risk population and therefore differences in transfusion requirements potentially reflecting the promise of ETC use in NVUGIB. The limitations of this study, including non-standardized indications for ETC use, potential operator experience bias, unclear assessment of the impact of ETC type, lack of systematic reporting of ETC-related adverse events, and absence of prespecified subgroup analyses, should be addressed in future studies.

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Although ETC may provide several technical advantages during endoscopic hemostasis, potential drawbacks should also be considered. Attaching an ETC increases the outer diameter of the endoscope and may theoretically increase the risk of mucosal injury, particularly in narrow or angulated segments of the gastrointestinal tract. The cap may also partially obstruct the endoscopic field, especially if it is attached too far beyond the endoscope tip. Therefore, ETC should be used selectively, with careful attention to the target location, luminal diameter, cap length, and procedural context.

Amongst luminal interventional endoscopists the value of ETC is clear with improved visualization and endoscope stability facilitating intra-procedural hemostasis during ESD or POEM; and therefore, its extrapolation to NVUGIB is logical as an inexpensive and widely available technology. However, ETC-assisted hemostasis in NVUGIB is supported by technical rationale and expert experience, and the current evidence base remains limited. To date, only limited clinical studies, including one small comparative study and one retrospective multicenter cohort study, have evaluated its clinical utility, and randomized controlled trial evidence is lacking. Therefore, the potential benefits of ETC should be interpreted cautiously and should not be overgeneralized. Further well-designed studies are warranted to clarify several important aspects of ETC use in NVUGIB. Prospective randomized controlled trials comparing ETC-assisted and conventional endoscopic hemostasis should assess clinically relevant outcomes, including procedure time, time to identification of the bleeding point, technical success, need for additional hemostatic devices, patient discomfort, ETC-related adverse events, rebleeding, transfusion requirements, and hospital length of stay. Prespecified subgroup analyses according to Forrest classification, bleeding location, severity of active bleeding, and hemodynamic instability would also be informative, as patients with severe bleeding or technically challenging bleeding sites may be most likely to benefit from ETC-assisted hemostasis. In addition, cost-effectiveness and the optimal cap design for NVUGIB, including soft *vs* hard and straight *vs* tapered caps, should be evaluated objectively.

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REFERENCES

1 **Inoue H**, Endo M, Takeshita K, Yoshino K, Muraoka Y, Yoneshima H. A new simplified technique of endoscopic esophageal mucosal resection using a cap-fitted panendoscope (EMRC). *Surg Endosc* 1992; **6**: 264-265 [PMID: 1465738 DOI: 10.1007/BF02498820]

2 **Dafnis GM**. Technical considerations and patient comfort in total colonoscopy with and without a transparent cap: initial experiences from a pilot study. *Endoscopy* 2000; **32**: 381-384 [PMID: 10817176 DOI: 10.1055/s-2000-637]

3 **Choi YR**, Han JH, Cho YS, Han HS, Chae HB, Park SM, Youn SJ. Efficacy of cap-assisted endoscopy for routine examining the ampulla of Vater. *World J Gastroenterol* 2013; **19**: 2037-2043 [PMID: 23599622 DOI: 10.3748/wjg.v19.i13.2037]

4 **Kim S**, Lee BI. The role of cap-assisted endoscopy and its future implications. *Clin Endosc* 2024; **57**: 293-301 [PMID: 38807361 DOI: 10.5946/ce.2023.051]

5 **Ono H**, Kondo H, Gotoda T, Shirao K, Yamaguchi H, Saito D, Hosokawa K, Shimoda T, Yoshida S. Endoscopic mucosal resection for treatment of early gastric cancer. *Gut* 2001; **48**: 225-229 [PMID: 11156645 DOI: 10.1136/gut.48.2.225]

6 **Kim JI**, Kim SS, Park S, Han J, Kim JK, Han SW, Choi KY, Chung IS, Chung KW, Sun HS. Endoscopic hemoclipping using a transparent cap in technically difficult cases. *Endoscopy* 2003; **35**: 659-662 [PMID: 12929060 DOI: 10.1055/s-2003-41512]

7 **Küçükdemirci Ö**, Ayyildiz T, Bas B, Eruzun H, Efe N, Bektas A. Endoscopic transparent cap assisted hemostasis: A multicenter retrospective cohort study. *World J Gastroenterol* 2026; **32**: 116083 [DOI: 10.3748/wjg.v32.i15.116083]

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Footnotes

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