ADVANCES IN ENDOSCOPY

Current Developments in Diagnostic and Therapeutic Endoscopy

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Hemostatic Techniques in the Management of Gastrointestinal Bleeding

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G&H Which endoscopic hemostatic techniques are currently considered first line for most cases of upper gastrointestinal bleeding?

SG For upper gastrointestinal (GI) bleeding, first-line therapy, or standard therapy, is dual therapy. Dual therapy is the combination of epinephrine injection to vasoconstrict the blood vessel, and then the endoscopist will either use bipolar coagulation or a heater probe, ie, thermal therapy. Alternatively, a hemostatic clip may be used to clip the blood vessel.

G&H What has recent research revealed about the effectiveness of the Doppler endoscopic probe in nonvariceal GI bleeding?

SG The Doppler probe has been around for several years, but only recently have endoscopists at some centers started using it. For clinical perspective, the purpose of the Doppler probe is, first, to assess whether the vessel is present and whether there is an actively bleeding blood vessel because sometimes the endoscopist may not be able to tell. Second, endoscopists want to know what the trajectory of the blood flow is because they want to guide treatment to the area vs thinking they treated the area in the ulcer bed, but they missed it. Third, the Doppler probe has been useful for indicating that the endoscopist completed the hemostasis and stopped the bleeding, also that everything looks good and endoscopically one can say, "I think we are done." The Doppler probe can be placed on the site of the treatment, looking for blood flow. No blood flow would be a sign of complete hemostasis.

In a randomized controlled trial by Jensen and colleagues, the rebleed rate with standard therapy without the Doppler probe was 26% vs 11% with the Doppler probe. The reason for this is because the Doppler probe can help guide therapy or determine whether additional therapy is needed. A recent meta-analysis by Bhurwal and colleagues showed that use of the Doppler probe had an impact on a few areas; it decreased the rebleed rate and need for surgical intervention and had a positive effect of decreasing the bleeding-related mortality.

G&H What is your preferred cautery technique for the treatment of nonvariceal upper GI bleeding?

SG I think that most physicians perform standard therapy (ie, epinephrine plus or minus thermal therapy or clipping). When performing endoscopic therapy, it is important to be mindful of one's location in the upper digestive tract, where oftentimes the stomach is an easier place to work. The endoscopist could either apply epinephrine plus thermal therapy or perform a hemostatic clip placement a bit easier in the stomach vs when working in the duodenum, especially when going from the bulb of the duodenum to the second portion, called a sweep. Ulcers tend to lodge in that area, which is a more challenging spot. The endoscopist may not be able to use hemostatic clips as well and may have to rely on

thermal therapy. In situations where standard therapy is not effective (eg, persistent bleeding, even at the initial endoscopy), newer therapies like hemostatic powder are starting to be used.

G&H Is there a role for over-the-scope clips as a primary or an adjunct therapy for nonvariceal GI bleeding?

SG Originally, when over-the-scope clips (OTSCs) came onto the market and became available for endoscopy, the main reason to use them was for closing defects. For example, for a large defect after a polypectomy with a perforation, an OTSC could be used as rescue therapy and prevent the patient from needing surgery. Sometimes patients for other reasons develop fistulas, and using this clip was a good way to close them. Recently, studies have been looking at whether OTSCs could have a role in GI bleeding, and if so, in what instances they could be utilized. When dealing with very large, cratered ulcers, sometimes it is difficult to use traditional therapy, which is the standard hemostatic clips or thermal therapy. This is where an OTSC may be useful.

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A few studies have evaluated OTSCs, most notably the STING study. In this study, rebleed rates were obtained in a group of patients for whom standard therapy had failed, which happens sometimes. The rebleed rate was 15.2% in the OTSC group compared with 57.6% in the standard therapy group, which received epinephrine plus thermal therapy or hemostatic clip, or in combination. The OTSC being much larger than a traditional hemostatic clip is the reason why it has been effective.

Colleagues who perform many treatments for GI bleeding, especially for peptic ulcer disease and upper GI bleeding, have said they are considering sometimes even using OTSCs at the index endoscopy. This highlights why it is important to know what is in the armamentarium beyond standard therapy to help patients.

G&H Do you have any tips and tricks for how to minimize complications when applying hemostatic therapies to bleeding sites with significant risk of perforation?

SG Most endoscopists probably use what they are comfortable with. Whether it is epinephrine and thermal therapy or epinephrine plus hemostatic clip or one of the newer modalities, they are already going in with that mindset. What physicians should be very thoughtful of, depending on where they are in the upper GI tract, is being able to pivot and change to another approach when necessary. It is true that the ulcer beds are relatively thin. The tissue is weak, and sometimes the endoscopist can end up with perforation, or the ulcer has already perforated, which the endoscopist needs to look for. In terms of tips and tricks, I think it is important to have a thoughtful plan, know what is possible, and recognize when endoscopic therapy may not work. This is why where I am, we have a multidisciplinary approach, and we work closely with our interventional radiology and surgical colleagues, even though the need for those services is low. Overall, our patients do quite well with what we have available endoscopically.

G&H What has recent research revealed about the use of topical hemostatic powder to control GI bleeding, and what should endoscopists be mindful of when using this technique?

SG Hemostatic powder has recently become available in the United States. Using it is somewhat like spray-painting a large area. It can provide coverage without the same precision that can be achieved with standard therapy (thermal therapy, hemostatic clip, or injecting epinephrine). Endoscopists are quite precise but sometimes have difficulty controlling a patient's bleeding. The patient may have rebled, and it is the second endoscopy, or controlling bleeding is challenging on the first endoscopy because the patient is unstable, and the visual field is not great. The key for using hemostatic powder is that it needs to be applied when there is active bleeding. Once an area of an ulcer is treated and hemostasis is achieved with the standard, traditional-approach therapy, applying hemostatic powder on top of that does not add much value.

A study by Lau and colleagues found that use of hemostatic powder as a monotherapy was noninferior to standard of care when considering rebleed rates. (The theme here is rebleeding rate, which is a good measure to see whether a therapy is effective in the setting of GI bleeding.) The rebleed rates were similar in the hemostat-

ic powder–only group, 12.5%, vs the standard-therapy group, 15.4%.

I would say most physicians in practice today are using hemostatic powder as more of a rescue therapy in the setting of peptic ulcer disease. Another setting where it may be effective would be a patient with a GI tumor such as a stomach or esophageal cancer. These tumors have very rich vascular supply and tend to chronically ooze, and the standard-therapy techniques often used for an ulcer are not effective. Argon-plasma coagulation is occasionally used, but that also sometimes is not effective. At my institution, endoscopists are starting to use hemostatic powder as a first-line agent in this group of patients with the hope of giving them better quality of life because usually they have advanced disease. This approach could lead to a reduction in both the number of blood transfusions and subsequent hospitalizations.

G&H Is it ever useful to combine standard hemostatic techniques with hemostatic sprays/gels in the same treatment setting, or should they always be used as a rescue therapy?

SG Endoscopists have guidelines for GI bleeding in the upper GI tract that always start with dual therapy, either epinephrine plus thermal therapy or hemostatic clip. At the same time, the endoscopist's skill level is variable, and the level of patient acuity is variable. In 2024, it is reasonable to be mindful of all the therapies that can be used to achieve hemostasis. There are instances even in an initial index endoscopy where standard therapy is not successful, and the endoscopist will use hemostatic powder and in other instances may deploy an OTSC. I think that combined therapy is useful, especially if the standard therapy is not successful even at the index endoscopy, and that physicians are being strategic about when to use combined therapy to achieve hemostasis.

G&H How do endoscopic hemostatic techniques compare on cost-effectiveness?

SG There are 2 ways to look at cost-effectiveness. When taking care of patients, endoscopists want to use the techniques and modalities that will get the job done. As I mentioned, this is algorithmic, and there are best practice guidelines on the standard techniques and newer modalities. A more 30,000-foot view of cost-effectiveness is when a patient admitted to the hospital for GI bleeding, especially nonvariceal upper GI bleeding, is managed successfully at the index endoscopy. Cost starts to rise the longer the patient is in the hospital and when more services are needed, such as another endoscopy, interventional radiology, and lastly, surgery (although surgery is relatively rare today). Because all of these add to the cost, doing whatever is necessary at the index endoscopy is critical for achieving the best outcome. Having the best outcome for the patient also controls cost.

G&H In your own practice, when do you discharge patients with upper GI bleeding?

SG We have a grading system for the different types of ulcers. Patients who do not require endoscopic therapy, those who are the lowest risk in terms of rebleeding (eg, those with a clean-based ulcer or an ulcer with a pigmented spot) will go home on outpatient oral proton pump inhibitor (PPI) therapy. Patients who undergo an intervention usually end up being on an intravenous PPI. Where I work, often those patients require a short hospital stay just for the intravenous medication. Other facilities may be a little more progressive and send patients home after endoscopic therapy with an oral PPI; however, most patients who are actively bleeding end up needing to stay in the hospital.

G&H Where do you see opportunities to further improve endoscopic hemostatic therapy?

SG There are still unanswered questions about the new hemostatic powders on the market, even though initial studies have shown benefit when using these as a standalone therapy, and there are studies showing the benefits of these for rebleeding in upper GI bleeding. I suspect there will be more research into the newer modalities for GI bleeding, whether it is a hemostatic powder, OTSC, or other clips and gels that may come on the market.

Disclosures

Dr Gross has served as a consultant for Olympus, Cook, Micro-Tech, and Medtronic.

Suggested Reading

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