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THE EXPERT'S CORNER

Postpolypectomy Bleeding

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INTRODUCTION

In everyday endoscopy practice, postpolypectomy bleeding (PPB) is a fact of life. Clinically significant bleeding within 30 days is reported to complicate 0.3–6.1% of colonoscopic polypectomies, according to published reports. However, 6% sounds a rather high estimate to me. I quote my patients a 0.5–1% risk of bleeding as sufficient to require repeat endoscopy, hospitalization, blood transfusion, or surgery, based on personal experience. (I deliberately omitted interventional radiology from this list: angiography is rarely used for PPB, and is most useful in the setting of persistent diverticular hemorrhage.) In a large survey conducted by the American Society for Gastrointestinal Endoscopy (ASGE), bleeding complicated 1.7% of 6,000 colonoscopic polypectomies. Given the biases associated with self-reporting of complications, this is likely to be an underestimate. It is difficult to know the true incidence of delayed PPB, as the patient may present at another hospital and the original endoscopist not be notified. PPB can range from persistent oozing to dramatic arterial hemorrhage (a "pumper"). Fortunately, most PPB can be controlled endoscopically. The skill set of any endoscopist who performs colonoscopy must include the ability to achieve hemostasis.

PREDISPOSING FACTORS

What causes PPB? There has been a lot of attention focused on the role of antiplatelet agents (*e.g.*, aspirin [ASA], nonsteroidal anti-inflammatory drugs [NSAIDs], clopidogrel [Plavix™]) and anticoagulants. Where and when possible, therapeutic anticoagulation should be reversed or at least reduced so that the INR (International Normalized Ratio) is $\leq$2.0. Ever-increasing numbers of patients are now on Plavix™ for coronary stents, etc. In my experience, the inhibition of platelet adhesion caused by Plavix™ is a potent source of bleeding after both colonoscopic polypectomy and biliary sphincterotomy. How should we deal with patients who cannot discontinue Plavix™ (*e.g.*, have recently had a coronary artery stent placed) but require polypectomy? It is smart to think about this *before* undertaking screening colonoscopy. If the patient is going to come off Plavix™ in a few months' time, then perhaps the better part of valor is to postpone polypectomy. Of course, this commits the patient to a second bowel preparation and procedure, which may not win you friends. Another option is to proceed with the polypectomy, but with tools to manage bleeding available or already in place. Having an EndoLoop™ already deployed on the polyp stalk or immediate clipping of the polyp base after polypectomy may head off troublesome bleeding. There is no defined "standard of care" in this situation. But remember that in the eyes of the law, the "standard of care" is what a reasonable and prudent physician would do in the same situation. As always, be sure that you can justify your actions in the event of a negative outcome. Under ASGE guidelines, neither biopsy nor colonoscopic polypectomy is contraindicated in patients on ASA or NSAIDs, but unless these drugs are essential (which is rare), it is best to have patients stop them 7 days before colonoscopy to allow platelet function to normalize. In patients who cannot safely be taken off coumadin due to high risk for recurrent thrombosis or embolism, a "window" of coagulation safety can be arranged (to perform colonoscopy) using low molecular weight heparin injections in place of the longer-acting oral agent.

PPB is not limited to pedunculated polyps; removing a sessile polyp can create similar excitement. PPB tends to be associated with large polyps (Fig. 1), the use of cutting rather than coagulating current, and the transection of a stalk or neck of tissue without cautery, or with insufficient cautery. "Cold snare polypectomy" has become fashionable for sessile polyps in the right colon, and, especially, the cecum. While we accept minor oozing of blood as the price for not cauterizing the polypectomy site during this technique, sometimes the bleeding is more impressive. In my experience, the highest risk of bleeding occurs after unintentional "cold snare" technique, when a polyp base or stalk is torn through in an effort to disengage a snare that has embedded. An inexperienced assistant may close the snare too quickly during "hot snare" technique, leaving insufficient time for blood vessels to be cauterized. When working with new or unfamiliar assistants, the endoscopist should ensure that they understand safe polypectomy technique. A good time to have this discussion is while marking the handle of the catheter to indicate the point of complete closure of the snare. It is also prudent to discuss ahead of time the possibility of PPB and how it will

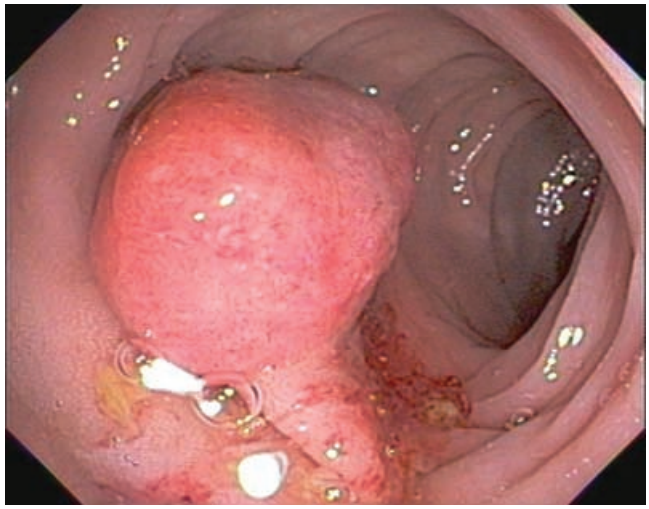

Figure 1. A large pedunculated colon polyp, a risk factor for post-polypectomy bleeding.

Figure 2. Endoscopic clips applied to a freshly cut polyp stalk to control bleeding.

be dealt with. This avoids frantic, purposeless movement in all directions (Brownian motion) by support staff when dramatic bleeding occurs. Endoscopic mucosal resection (EMR) is a useful technique for removing large colon polyps, but it is associated with increased risk of bleeding and perforation. Failure to create a sufficiently large "base" using "saline (or other) lift" technique is the usual cause of EMR complications. The endoscopist removes a large chunk of tissue and is left with a gaping hole that may bleed or perforate.

PREVENTION

How can significant PPB from a polyp base or stalk be prevented? Some polyps are just too large to attempt endoscopic polypectomy, even with EMR. Large polyps may be malignant and better managed surgically. One option is to simply biopsy the polyp in multiple sites, then tattoo the site for later surgical excision. If the biopsies show adenocarcinoma, then a cancer operation is mandatory. Increasingly, small segmental resections for large nonmalignant polyps can be done laparoscopically, so leaving the polyp for the surgeon does not necessarily commit the patient to an "open" procedure. Large polyps may also be resected in pieces ("piecemeal"), which is technically easier, but the disadvantage is leaving a broad base with the likelihood of recurrence. In patients who are unfit for surgery, piecemeal resection is an acceptable alternative. If polypectomy is planned in the setting of uncorrected coagulopathy, applying clips to the base immediately afterwards is a good way to head off PPB. If a double channel colonoscope is available, two snares can be applied to a large stalk. The one nearest the bowel wall is left snug (loosely tightened) while the "higher" snare loop is used to perform the polypectomy. Should the stalk bleed after transaction, the remaining loop is tightened and used to apply pure coagulating current to seal off the "offending" vessel(s). Theoretically, applying electrocautery or argon plasma coagulation (APC) to the polyp base should provide useful prophylaxis against delayed bleeding. However, there is no literature that I am aware of to support this, and I have seen APC actually cause a polyp base to bleed! Finally, injecting the polyp stalk with 5–10 cc of saline solution ± dilute epinephrine prior to polypectomy should vasoconstrict any vessels and reduce the risk of bleeding.

MANAGEMENT

So, what should be done in the event of significant PPB? First, don't panic. Even arterial bleeding from a polyp base or stalk will not immediately obscure the endoscopic view. The tools to manage this problem should be on the endoscopy cart at the start of the procedure, including sterile saline and epinephrine solution, EndoLoop™ ± endoscopic clipping catheters, spare snares, and a thermal or APC probe. Clipping a spurting vessel is a very satisfying and often immediately effective intervention (Fig. 2). The correct application of endoscopic clips requires a little practice, so learn how to do this *before* you need to do it in an emergency. Similarly, EndoLoop™ application can be effective provided several centimeters of stalk were left behind to grab on to. Injecting the polypectomy site with dilute epinephrine solution rarely stops arterial bleeding, but is helpful for persistent venous oozing. In my mind, there is no role for the use of sclerosant agents in the management of PPB. Don't even think about it! The application of thermal energy to a deep polyp base risks perforation, especially in the cecum, so care must be taken when using a heater probe or APC to manage bleeding.

Should patients who require endotherapy to stop bleeding be admitted to the hospital for observation? Provided the patient has remained hemodynamically stable and confidence in the hemostasis provided is high, a few hours' observation should be adequate. However, careful discharge instructions

are necessary, with an accessible way for the patient to contact the physician should bleeding recur. ASA, NSAIDs, and Plavix™ should be discontinued for 7–10 days if possible, and coumadin withheld for as long as possible, preferably at least 48–72 h. Patients who have had uneventful polypectomy need to be told that late PPB can occur up to 14 days after their procedure.

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Recommended Reading

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