

Colonoscopy with polypectomy in anticoagulated patients

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Background: According to current practice guidelines for performance of colonoscopy in patients requiring long-term anticoagulation, polypectomy is considered a high-risk procedure for which anticoagulation must temporarily be discontinued. However, these guidelines are based on expert opinion, and the bleeding risk after polypectomy in anticoagulated patients is not known.

Objective: Measure the risk of postpolypectomy bleeding in patients who undergo colonoscopic polypectomy while anticoagulated.

Design: Retrospective review of patients who underwent polypectomy without discontinuation of anticoagulation.

Setting: Veterans Administration Palo Alto Health Care System.

Patients: Forty-one polypectomies were performed in 21 patients. All patients had been receiving long-term anticoagulation with warfarin; the average international normalized ratio was 2.3 (range 1.4-4.9; normal 0.9-1.2). To prevent supratherapeutic anticoagulation, warfarin was withheld for 36 hours before the procedure while the patients were on a liquid diet. The average polyp size was 5 mm (range 3-10 mm).

Interventions: All patients underwent polypectomy followed immediately by prophylactic application of one or two clips to prevent bleeding.

Main Outcome Measurements: Rate of postpolypectomy bleeding.

Results: There were no episodes of postpolypectomy bleeding. The 95% CI for the risk of bleeding was 0% to 8.6% when analyzed per polypectomy and 0% to 15% when analyzed per patient.

Limitations: Small single-center retrospective study.

Conclusions: Our experience suggests that small polyps can be removed with a very low risk of bleeding when clips are applied immediately after polypectomy. If these results can be confirmed in a larger multicenter study, our protocol may become an alternative to withholding anticoagulation in patients at high risk of thrombosis. (Gastrointest Endosc 2006;64:98-100.)

Current practice guidelines for performance of colonoscopy in patients requiring long-term anticoagulation are based largely on expert opinion.¹⁻³ According to these published recommendations, diagnostic colonoscopy with or without forceps biopsy is considered safe in patients taking anticoagulants, whereas colonoscopic polypectomy is considered a high-risk procedure for which anticoagulation must be temporarily discontinued.^{1,4,5} A variety of protocols for management of anticoagulation during the periprocedure period have been explored, and theoretical models for cost-effectiveness of various strategies have

been published in the gastroenterology literature.^{6,7} Despite all of this available information, management of anticoagulation still poses serious dilemmas for the patient undergoing colonoscopy and the endoscopist performing the procedure. All the protocols basically boil down to one question: should we stop the anticoagulation and risk thromboembolic complications or should we anticoagulate and risk bleeding from the polypectomy site? Different protocols balance these 2 competing issues in various ways, aiming to strike a balance between bleeding risk and potential thromboembolism. These protocols include (1) temporary discontinuation of warfarin starting several days before the procedure, (2) temporary discontinuation of warfarin with anticoagulation "coverage" with shorter-acting low-molecular-weight heparin or

unfractionated heparin that is discontinued a short time before the procedure, and (3) performance of diagnostic colonoscopy while the patient is receiving anticoagulants and rescheduling the colonoscopy to a later time (according to protocol 1 or 2) if any polyps are found. It is important to note that published guidelines are not always clear as to when and how to resume anticoagulation: the American Society for Gastrointestinal Endoscopy 2005 guidelines for low-molecular-weight heparin state that "The decision as to when to restart therapy should be individualized."³ Previous guidelines in 2002 stated that unfractionated heparin could be resumed 2 to 6 hours after the procedure and oral warfarin could "generally be resumed the night of the procedure."¹

All the current practice guidelines entail normalization of clotting parameters at polypectomy. The rationale for this strategy is that performance of polypectomy while patients are receiving anticoagulation therapy would result in an inordinately high bleeding risk in the first few hours after polypectomy. However, these guidelines are based on expert opinion, and the bleeding risk after polypectomy in these patients is not known. Our own anecdotal experience suggested that immediate bleeding is relatively straightforward to control with endoscopic clip application immediately after polypectomy. In contrast, we have in the past observed several unfortunate thromboembolic complications that occurred in patients in whom long-term anticoagulation therapy was withheld in anticipation of endoscopic procedures. We therefore changed our clinical protocol in the past year to perform colonoscopy and polypectomy of lesions up to 1 cm in diameter on patients without discontinuing anticoagulation.

METHODS

We retrospectively reviewed our experience from July 2004 to August 2005 in performing colonoscopy with polypectomy in patients receiving long-term anticoagulation therapy at the Veterans Affairs Palo Alto Health Care System. Informed consent for the procedure was obtained from all patients, including discussion of the potentially high risk of bleeding as a result of anticoagulation. Institutional Review Board approval was obtained for retrospective data analysis. All patients undergoing colonoscopic polypectomy without discontinuation of long-term anticoagulation therapy were included in the review. All patients were receiving warfarin. Our clinical protocol, which was followed by all patients, was to continue warfarin until 36 hours before the procedure, when a clear liquid diet was initiated in preparation for the procedure. Warfarin was not taken while patients were on a clear liquid diet to avoid suprathreshold anticoagulation during this period of potentially low vitamin K intake.

On the day of the procedure, a measurement of the prothrombin time and international normalized ratio

(INR) was performed. However, these results were not always available before the procedure. Colonoscopic polypectomy was performed only on polyps up to 1 cm in size (the size was estimated by comparison with a fully opened 1-cm snare) and only on patients who were not on concomitant therapy with aspirin or other antiplatelet agents. Polypectomy was performed with standard cautery (ERBE endocut 3 mode, ERBE America, Atlanta, Ga). Immediately after polypectomy, 1 or 2 endoscopic clips were placed prophylactically to close the polypectomy defect. After the procedure, warfarin anticoagulation was continued on the patient's standard schedule with adjustments performed on the basis of prothrombin time measurements on the day of the procedure. All patients had follow-up visits in the clinic or by telephone 3 to 8 weeks after the procedure and were questioned specifically about the development of bleeding.

RESULTS

Twenty-one patients underwent a total of 41 colonoscopic polypectomies during the study period. The average INR on the day of the procedure was 2.3 (SD 0.8, range 1.4-4.9, median 2.0; normal 0.9-1.2). The average polyp size was 5.0 mm (SD 1.5 mm, range 3-10 mm). Immediately after polypectomy, 1 or 2 endoclips were placed prophylactically to close the polypectomy defect. Because this was typically done within 1 minute of the polypectomy, no more than minimal (<10 mL) bleeding occurred in any of the cases. Thirty-seven specimens were retrieved and submitted for histologic examination: 27 (73%) were adenomas and 10 (37%) were nonneoplastic. None of the resected polyps were found to contain significant villous elements or high-grade dysplasia.

There were no episodes of bleeding or other complications of colonoscopy in the 21 procedures. All patients were followed up 3 to 8 weeks after the procedure either by telephone or during a clinic visit, and all stated that there was no bleeding after the procedure.

DISCUSSION

Postpolypectomy bleeding is generally divided into 2 types: immediate bleeding after the polypectomy and delayed bleeding that can occur up to 2 to 3 weeks after the procedure.^{8,9} Immediate bleeding is particularly common after endoscopic mucosal resection of large sessile polyps, and it is generally effectively treated by expert endoscopists using established techniques such as clipping.^{10,11} In patients who require long-term anticoagulation, all the published guidelines recommend temporary discontinuation of anticoagulation so that the patient has normal clotting parameters at the time of polypectomy. Thus, all the commonly discussed protocols essentially aim to eliminate the presumably inordinately high risk of immediate bleeding

in these patients. In contrast, delayed bleeding typically occurs 1 to 7 days after the procedure. Anticoagulation protocols that entail resumption of heparin within a few hours of the polypectomy are therefore unlikely to prevent delayed bleeding. Protocols in which only warfarin is resumed shortly after the procedure may decrease the risk of delayed bleeding in the first few days after the procedure, until the warfarin takes effect. The variability in management of anticoagulation after the procedure suggests that there is little agreement on the need for withholding anticoagulation after polypectomy to prevent delayed bleeding.

As endoscopists who focus on resection of large polyps and endoscopic mucosal resection, where immediate bleeding is exceedingly common and is generally easily treated with endoclip application,¹⁰⁻¹² we reasoned that if immediate bleeding occurred during polypectomy of small lesions in patients receiving anticoagulant therapy, it should be relatively straightforward to treat the bleeding with endoclips. After observing several unfortunate thromboembolic complications from withholding anticoagulation in preparation for colonoscopy, we changed our practice 1 year ago and now perform colonoscopic polypectomy on lesions up to 1 cm in size while patients remain on anticoagulants. The size cutoff of 1 cm was based on our subjective impression from previous experience that substantial immediate bleeding rarely occurs in lesions of this size or less.

In our series of 21 patients, there were no bleeding episodes after resection of 41 polyps up to 1 cm in size. The 95% CI for the risk of postpolypectomy bleeding was 0% to 8.6% when analyzed per polypectomy and 0% to 15% when analyzed per patient. Because we applied endoclips prophylactically in all cases, it is impossible to ascertain whether prophylactic endoclip application reduced the bleeding risk, and if so by how much. However, we consider clip application to be reasonable in the absence of further data, given their low cost (at our institution \$15 for the reloadable Olympus HX-20 clips, Olympus America, Melville, NY). Our experience, although small and limited to 1 center, suggests that small polyps can be removed with a very low risk of bleeding when clips are applied immediately after polypectomy. If these results can be confirmed in a larger multicenter study, our protocol may become an alternative to withholding anticoagulation in patients at high risk of thromboembolism. Patients at low risk of thromboembolism may still be best treated by withholding anticoagulation, whereas patients at high risk may benefit from a protocol such as ours. A minority

of patients undergoing screening colonoscopy while receiving anticoagulation therapy will be found to have lesions larger than 1 cm; in this situation, a second procedure will likely need to be performed after normalization of clotting parameters.

DISCLOSURE

The authors have no disclosures and no conflicts of interest.

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