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Case Report

Efficacy of Endoscopic Evaluation and Hemostatic Intervention for Post-hemorrhoidectomy Bleeding

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Abstract
Achieving hemostasis during post-hemorrhoidectomy bleeding (PHB) is often challenging owing to poor visibility within the anal canal. We investigated the feasibility of using endoscopy for observation and maintaining hemostasis during PHB. Endoscopic evaluation was performed in patients with normal vital signs and no severe pain or excessive bleeding was observed during proctoscopy. Hemostatic clipping was performed if the bleeding site was clearly identified. In cases with profuse bleeding and endoscopic hemostasis deemed difficult, surgical hemostasis was performed. Of the 14 patients who developed PHB during the 3-year study period, endoscopic observation was performed in 6 cases. Arterial bleeding was confirmed in five of these cases; while, spontaneous hemostasis had already occurred in the remaining case. Hemostasis was achieved with endoscopic clipping in all cases. The mean procedure time was 14.7 minutes with no adverse events or re-bleeding. Endoscopic evaluation for PHB provides a detailed view of the bleeding site and facilitates hemostasis using clips.

Keywords
post-hemorrhoidectomy bleeding (PHB), hemorrhoidectomy, endoscopic hemostasis

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Introduction

Post-hemorrhoidectomy bleeding (PHB) is a rare but serious complication of hemorrhoidectomy with a reported frequency of 0.9-5.1%, requiring hemostatic procedures in 1.0-8.0% of cases[1-5]. PHB can be categorized as early venous or late arterial bleeding[6]. Arterial bleeding often involves significant blood loss leading to shock in 4% of the cases and some requiring transfusion[7], making it a challenging issue for both patients and surgeons.

While numerous reports have assessed the risk factors for PHB, only a few have described detailed observation fields of bleeding sites or procedures for maintaining hemostasis[3-5,7]. The need for hemostatic intervention is evaluated based on factors including estimated blood loss, speed of bleeding, vital signs, and other factors. When hemostatic intervention is necessary, the bleeding site is evaluated under anesthesia in the operating room. However, blood pooling within the anal canal often obstructs this view, making it difficult to assess the bleeding within the narrow and deep anal canal. Therefore, we suggest that detailed observation field and maintaining hemostasis may be facilitated using an endoscope.

In cases of PHB with hemostatic intervention deemed necessary and stable vital signs, anorectal examination was performed using a proctoscope. If no severe pain or excessive bleeding was observed on proctoscopy, endoscopy was used for evaluation and maintenance of hemostasis.

However, in cases with profuse bleeding and endoscopic hemostasis deemed difficult, conventional transanal hemosta-

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Table 1. Patient Background Details and Endoscopic Intervention Results.

Patient	Age (years)	Sex	Procedure	ASA-PS score	Days after surgery	Assessment	Treatment	Procedure time (min)	Adverse events
Case 1	45	M	LE×3	2	5	Minor venous bleeding on endoscopic insertion	Clipping×2	5	None
Case 2	24	M	LE×2	1	7	Arterial bleeding from the ulcer around the ligated pedicle	Clipping×3	32	None
Case 3	56	F	LE×1 RBL×1	2	10	Arterial bleeding at the sutured mucosal separation site	Clipping×3	15	None
Case 4	47	M	LE×3 RBL×1	1	11	Arterial bleeding from the ulcer at the RBL site	Clipping×1	7	None
Case 5	55	M	LE×2 ALTA×1	2	12	Arterial bleeding from the ulcer around the ligated pedicle	Clipping×1	10	None
Case 6	51	F	LE×4 RBL×1	1	29	Arterial bleeding from the granulation tissue at the ligated pedicle	Clipping×3	19	None

ASA-PS, American Society of Anesthesiologists-Physical Status; M, male; F, female; LE: Ligation and Excision; RBL, rubber band ligation; ALTA, sclerotherapy using aluminum potassium sulfate hydrate

sis is used. This case series aimed to investigate the efficacy of endoscopic observation and hemostasis for PHB.

Case Report

We performed 325 hemorrhoidectomies between January 2021 and December 2023 and 14 (4.3%) of the patients developed PHB. Of the 14 cases, 6 patients that underwent endoscopic observation were included in this study. Of the remaining eight patients with PHB, five achieved spontaneous hemostasis, while three required surgical hemostasis. The background characteristics of the included patients are presented in Table 1. None of the patients received antithrombotic therapy. All hemorrhoidectomies were performed according to the Milligan-Morgan technique, and rubber band ligation (RBL) or sclerotherapy using aluminum potassium sulfate and tannic acid as needed. The median time to PHB was 10.5 days (range, 5-29 days). In most cases (cases 1-5), PHB occurred within 2 weeks postoperatively (5/6; 83.3%), while 1 (case 6) had late occurrence 1 month postoperatively (Table 1).

Endoscopy for PHB was performed with the patient in the left lateral position, without bowel preparation or premedication. We used a colonoscope (Fujifilm, EC-L600ZP7, Tokyo, Japan) equipped with a distal-end cap, water jet, and CO_2 insufflator. While irrigating the rectal lumen with a water jet, blood clots were meticulously suctioned. Venous bleeding was confirmed in one patient (case 1) with a tendency of spontaneous hemostasis; however, preventive hemostasis was performed. The remaining five cases (cases 2-6) had arterial bleeding. Two patients (cases 2 and 5) had ulceration around the ligation site (Figure 1). Mucosal separation at the suture site (case 3), ulceration at the RBL site (case 4), and poor granulation tissue formation (case 6) were also observed (Figure 1). In all cases, the PHB site was clearly identified, and hemostasis was successfully achieved using hemostatic clips (Sumius SB Clip™, Tokyo, Japan, or OLYMPUS EZ Clip™, Tokyo, Japan) (Figure 1). The average time from endoscope insertion to removal was 14.7 min (range, 5-32 min), with no adverse events or re-bleeding observed. After endoscopic hemostasis, vital signs were reassessed and, if normal, the patient was discharged.

Discussion

We performed endoscopic observation for six cases with PHB, and in all cases, bleeding sites were identified, and hemostasis was successfully achieved. One of the advantages of endoscopic evaluation for PHB is that the clots retained in the rectum were relatively fresh and easily aspirated during endoscopy. Furthermore, owing to the left lateral position, blood did not pool at the bleeding site and flowed towards the proximal rectum, facilitating a good field of view. Irrigation with a water jet provided clear bleeding site visualization.

The mean time required for endoscopic observation and hemostasis was 14.7 minutes, which was much shorter than that required for conventional hemostatic procedures. No adverse events or instances of re-bleeding were reported, suggesting that endoscopic hemostasis is an excellent choice for PHB. Case 1, who developed PHB five days postoperatively, reported significant pain during the endoscopic procedure; while, the other patients presented with mild tolerable pain. Thus, sedation may be considered for endoscopic observa-

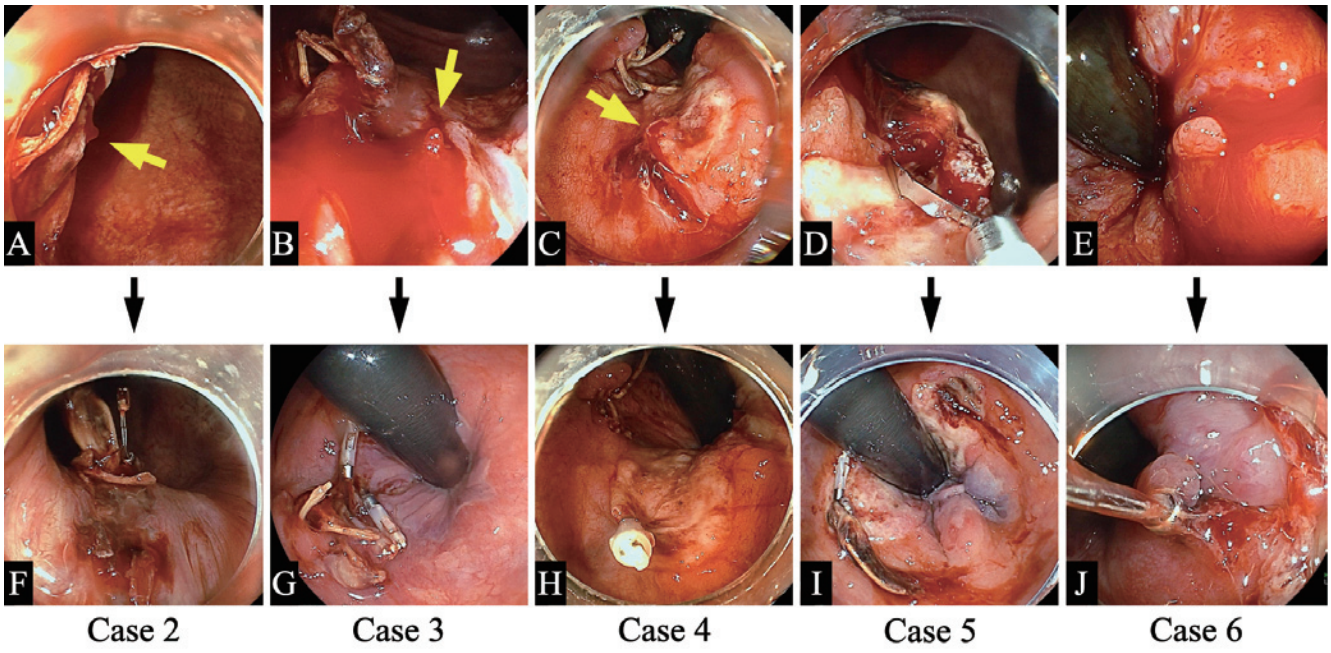

Figure 1. Endoscopic images of bleeding sites identified by endoscopic observation and after hemostasis with clips in cases 2-6. A. In case 2, arterial hemorrhage was observed around the ligated pedicle (yellow arrow). B. In case 3, the semi-closed mucosa was separated, and arterial hemorrhage was observed from the marginal region (yellow arrow). C. In case 4, ulceration and an exposed blood vessel were observed at the rubber band ligation site (yellow arrow). D. In case 5, arterial bleeding from the ligated pedicle base was observed. E. In case 6, arterial bleeding was observed from the poor granulation tissue at the ligated pedicle. F-J. In all cases, the bleeding site was identified and hemostasis was successfully achieved using clips.

tion for PHB in the early postoperative period.

Case 1 exhibited spontaneous hemostasis during evaluation, suggesting venous bleeding, the other five cases had arterial bleeding. In case 3, bleeding did not originate from the ligation site but from the mucosa of the partially closed layer, probably due to the physical force applied during defecation. Patients 2, 4, and 5 had ulceration, likely attributed to excessive tissue tension or impaired blood flow in the surrounding mucosa due to hemostatic manipulation. Case 6 presented with bleeding from poorly formed granulation tissue at the ligation site during a postoperative outpatient visit, possibly indicating delayed wound healing.

PHB requiring hemostasis occurs in approximately 1% of the cases[1-5]. However, the incidence of PHB requiring hemostasis in this study was as high as 2.8% (9/325 cases). During the study period, dissection of the dorsal and oral sides of the hemorrhoids was more extensive, and meticulous coagulation hemostasis was performed. Postoperative ulcer formation in cases 2 and 5, and poor granulation due to delayed healing in case 6 were attributed to these technical issues. Since surgical techniques improved after the study period, the incidence of PHB decreased (data not shown). Thus, endoscopic observation for PHB cases facilitates detailed evaluation of the surgical site, revealing issues with hemorrhoidectomy techniques, and potentially providing insights to improve postoperative outcomes.

Literature on the endoscopic treatment for PHB is limited. A PubMed search using keywords “hemorrhoid,” “endoscopic treatment,” and “endoscopic hemostasis” revealed only one relevant paper[8]. In this report, hemostasis was achieved using an over-the-scope clip (OTSC) in three cases of PHB without complications, demonstrating effective hemostasis in all cases. OTSC is a useful endoscopic technique that uses a specially designed large clip with sharp teeth to pinch the target tissue after aspiration into hood[9] and is commonly used to treat bleeding ulcers and for mucosal closure procedures. However, it has limitations, including difficulty in handling larger tissue volumes compared to standard hemostatic clips and limited availability in facilities, restricting its utility. Particularly, areas of mucosal separation near the dentate line, as seen in case 3, are contraindicated for OTSC owing to the pain associated with this site. While, the endoscopic hemostatic clips used in our study are readily available in endoscopy facilities, easy to use, and cost effective. All five cases of arterial bleeding in our study were successfully treated with clips, suggesting that endoscopic hemostatic clips could be a reasonable first choice for endoscopic hemostasis.

The limitations of this study include its retrospective, observational design, the potential for selection bias, and the absence of a control group. Therefore, prospective comparative studies are required to confirm the results of this study.

In conclusion, using endoscopy for observation and maintaining hemostasis for PHB enable accurate evaluation and identification of the bleeding sites for achieving hemostasis. This procedure can be performed by gastroenterologists and is a feasible hemostatic intervention even in the absence of a surgeon, making it a promising approach for widespread adoption in the future.

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Conflicts of Interest

There are no conflicts of interest.

Author Contributions

All authors contributed substantially to the manuscript. Both KOH performed the surgical operation. AS, KOT, and KK provided backup for the treatment of high-risk patients and postoperative complications. All authors read and approved the final manuscript.

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