

Original Article

# High Incidence of Delayed Post-hemorrhoidectomy Bleeding in Hemodialysis Patients with Uremia

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## Key Words

End stage renal disease (ESRD);  
Hemorrhoidectomy;  
Delayed post-hemorrhoidectomy  
bleeding;  
Complication

**Purpose.** Patients with end-stage renal disease (ESRD) who are undergoing hemodialysis are associated with bleeding tendency. Hence, we reviewed our experience with the delayed post-hemorrhoidectomy bleeding (DPHB) and other complications in patients with ESRD who are undergoing hemodialysis.

**Methods.** This retrospective single-center study analyzed the data of 21 patients with symptomatic grade III to IV hemorrhoids who had ESRD and received hemorrhoidectomy between January 2000 and December 2008.

**Results.** Five patients had DPHB (5/21 = 23.8%) and thus revisited the emergency department. No significant differences in sex, age, use of anti-coagulant or antiplatelet agents, number of hemorrhoidal complexes were excised, hospital stay, and amount of blood loss were found between the DPHB and non-DPHB groups (all  $p > 0.05$ ).

Of the five DPHB patients, three were male and two were female. All the patients with bleeding events were treated with rectal irrigation. One patient received blood transfusion due to anal bleeding related anemia, and another patient who needed was managed active bleeding in the operating room (OR).

**Conclusion.** In this study, we found a high incidence of DPHB in the hemodialysis patients with ESRD. Most of the patients could be managed with conservative treatment and rectal irrigation.

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Patients with end-stage renal disease (ESRD) who are undergoing hemodialysis had significantly higher incidence of postoperative morbidity, total length of hospital stay, and 30-day mortality.<sup>1-9</sup> The most common morbidities are bleeding, infection, and poor wound healing.<sup>2-4</sup> Patients with ESRD who are undergoing regular hemodialysis may still develop an ano-rectal disease that requires surgery, especially hemorrhoidal disease. Surgical intervention is indicated

for patients with grade III or IV disease. Either open (Milligan-Morgan procedure) or close (Ferguson procedure) hemorrhoidectomy is the most standard conventional surgical method for hemorrhoid plexus excision.<sup>10-12</sup> However, hemorrhoidectomy may present some complications such as anal wound pain, constipation, wound infection, and an even more severe and life-threatening condition such as, massive bleeding.<sup>11,13-15</sup>

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Delayed post-hemorrhoidectomy bleeding (DPHB) is a clinically rare but serious complication.<sup>11,12,14,16</sup> The incidence of DPHB was reported to range from 0.3% to 10%.<sup>11-18</sup> Most recent studies evaluated the risk factors of DPHB.<sup>13-18</sup> However, none of these studies analyzed the relationship between ESRD and the occurrence of post-hemorrhoidectomy complications.<sup>11,13,17-19</sup>

Hence we reviewed our experience with 21 patients with ESRD who underwent hemorrhoidectomy between January 2000 and December 2008.

## Patients and Methods

This retrospective study reviewed and analyzed the data of adult patients with ESRD who were receiving regular hemodialysis and had grade II to IV hemorrhoid accompanied by bleeding or acute thrombosis-related pain, for which they received hemorrhoidectomy between January 2000 and December 2008 in Kaohsiung Chang Gung Memorial Hospital. Patients who received hemorrhoidal banding or electro-cauterization for hemorrhoid treatment, were lost to follow-up, or had incomplete medical records were excluded. Patients with a medical history of liver cirrhosis, malignancy history, hematology disease (leukemia, thalassemia, hemophilia, lymphoma, myeloma, or splenomegaly), or emergency surgery were also excluded.

The patients who were taking antiplatelet or anticoagulant agents were asked to stop taking the medication 7 days before the surgery. The patients were admitted to the surgery ward on the day before the hemorrhoidectomy for anesthesia evaluation and dialysis for electrolyte correction and discharged the next day after surgery, except in the event of a postoperative complication. All the patients received close hemorrhoidectomy using Ferguson procedure, and all the surgeries were performed under general anesthesia with intravenous propofol and a laryngeal mask airway.

For analysis, we collected preoperative, perioperative, and postoperative data including sex, age, use of anticoagulant or antiplatelet agents, number of he-

morrhoidal complexes were excised, amount of blood loss, hospital stay, and DPHB events.

The outcomes were assessed, focusing on the incidence of DPHB events related to the surgery. The patients were suggested to take a sitz bath on the day after surgery, but medicines such as laxatives were not prescribed routinely, except for patients with a history of constipation. After discharge, all the patients were scheduled for follow-up visits within 10 days. Patients with any clinical record before the last visit that showed complications related with hemorrhoidectomy were enrolled in this study. In our records, all bleeding events occurred within 15 days after discharge.

In our hospital, DPHB was defined when the following criteria are met: 1) an interval from operation to the onset of bleeding events > 3 days; 2) bleeding or blood evacuation amount of at least a bowl (200 ml) of blood or clot via the anus at one time; and 3) bleeding observed on rectal examination.<sup>14,16,20</sup> Even for minimal post-hemorrhoidectomy bleeding, a sitz bath at home and dietary education for constipation prevention were suggested. If symptoms worsened, requiring the patient to visit the emergency room, and active bleeding or blood clots were observed on digital rectal examination, rectal irrigation will arranged after stabilization of vital signs and intravenous fluid administration. Blood transfusion was administered only if the patient's hemoglobin decreased or vital signs were unstable on arrival in the emergency department.

If the patient presented unstable vital signs despite the prescribed colloid fluid resuscitation and, blood transfusion, or was found to have active bleeding during rectal irrigation examination or digital rectal examination, further surgical intervention was considered.

## Results

Twenty-one adult patients with ESRD were enrolled in this study. The patient's characteristics are described in Table 1. The sex (male-to-female) was 9:12. The patients' ages ranged from 37 to 78 years, with a mean of 53. Of the patients, 43% (9/21) had hypertension, 4.8% (1/21) had diabetes mellitus, and

**Table 1.** Characteristics of the study patients

Group	Total (n = 21)	DPHB (n = 5)	Non-DPHB (n = 16)	p value
Age (years)	52.5 ± 9.8	49.6 ± 8.4	53.4 ± 10.2	0.457
Sex				0.400
Male	9	3	6	
Female	12	2	10	
WBC (1,000 U/dL)	7.22 ± 2.5	6.8 ± 0.99	7.35 ± 2.9	0.687
Hb (g/dL)	10.3 ± 2.5	8.1 ± 1.97	11.0 ± 2.29	0.017
PLT (1000/ $\mu$ L)	192.2 ± 59.4	137.8 ± 81.3	209.1 ± 40.5	0.014
Na (mEq/L)	138.0 ± 3.89	138.6 ± 3.36	137.9 ± 4.13	0.726
K (mEq/L)	4.51 ± 0.67	4.78 ± 0.5	4.43 ± 0.70	0.321
Hypertension	9	3	6	0.400
DM	1	0	1	0.589
Heart disease**	1	0	1	0.589
CVA	0	0	0	----
Perioperative blood loss(mL)	10.1 ± 12.7	17.8 ± 15.8	7.1 ± 10.6	0.541
Number of excised-hemorrhoidal complexes	2.7 ± 0.57	3	2.6 ± 0.65	0.446
Length of hospital stay (days)	3.4 ± 0.98	3	3.69 ± 0.95	0.079
Blood transfusion	2	2	0	0.0058
Second operation	1	1	0	0.072

WBC, white blood cell count; Hb, hemoglobin; PLT, platelet; DM, diabetes mellitus; CVA, cerebro-vascular accident.

\*\* Including one patient with valvular heart disease who was taking warfarin regularly and asked to stop the medication 7 days before hemorrhoidectomy.

4.8% (1/21) had valvular heart disease under medical control with aspirin use and regular follow-up. None of the patients had a history of cerebro-vascular accident.

All the patients were followed up at the outpatient department after discharge. Of the patients, five had DPHB that led to a visit to the emergency department. Of the patients with delayed bleeding episodes, three were male (33%, 3/9) and two were female (16.7%, 2/12). Between the DPHB and non-DPHB groups, no significant differences in preoperative hemogram data, sex, hypertension, history of diabetes mellitus, quadrants of hemorrhoidal excised, amount of perioperative blood loss, and length of hospital stay were found. The mean hospital stay is 4.9 days.

Two patients had DPHB that required blood transfusion, to which a significant difference in blood transfusion rate ( $p = 0.0058$ ) between the two groups is attributed.

One of the five patients had severe anemia, with decreased hemoglobin level of 6.6 g/dL but, stable vital signs. No active bleeding was found on rectal irrigation examination; thus, packed red blood cell transfusion was prescribed. The patient rest at emergency

department before discharge without anal bleeding or any illness.

One patient with tachycardia and decreased hemoglobin level from 8.6 g/dL to 3.9 g/dL visited emergency department on post-operative day 12. Active bleeding was found on rectal irrigation evaluation. Thus, a secondary operation was performed to examine the bleeding after packed red blood cell transfusion. The patient was admitted after suture ligation for the multiple bleeders found in the granulation tissue above the posterior quadrant. The patient recovered well and was discharged 5 days after the surgery.

## Discussion

The association between bleeding tendency and anemia in patients with renal dysfunction has been recognized.<sup>1-5</sup> Although the physiopathology is not well established, anemia and platelet dysfunction are known to related to bleeding tendency in patients with uremia.<sup>1,4,9</sup> Thrombus formation may be complicated by decreased activity of the von Willebrand

factor and concentration of red blood cells, and may be influenced by prostacyclin and nitric oxide levels.<sup>1,4,9</sup>

Hemorrhoidectomy is a common operation for severe hemorrhoid but still has annoying complications, such as pain, constipation, and bleeding. Post-hemorrhoidectomy bleeding is a common and serious complication and could be life-threatening.<sup>10,11,14,20</sup> In some studies, the incidence of DPHB was reported to range from 0.3% to 6.5%. In our previous experience, the incidence of DPHB was 0.9% to 11.9%, with constipation, male sex, and surgical method as risk factors. The longer anal canal and heavier load in daily activities that are typical in male patients in Taiwan were speculated as risk factors.

In this study, we found a much higher incidence (23.8%, 5/21) of DPHB in the patients with ESRD despite hemodialysis than in previous studies and analysis reviews of hemorrhoidectomy-related complications. The incidence of DPHB was higher in male than in females (33% vs. 18%). However, our limited sample size may not have adequate power to detect this difference in our analysis. Concerning the patients' characteristics, the relatively low platelet count and anemia status of the patients with ESRD might have predisposed them to the risk of DPHB. Further multi-variable analysis in a larger patient population is required to address this issue.

According to our experience, most patients who revisit the emergency department because of DPHB, could be managed with conservative treatment, and only few patient require management for bleeding in the operating room.<sup>14,16,20</sup>

In our study, the DPHB group had two patients who required blood transfusion, with a significant difference in blood transfusion rate. from non-DPHB group. The baseline line of hemoglobin level may conduct to poor tolerance from bleeding in patient with ESRD. One patient required a second operation due to active bleeding. The incidence of secondary operation was 20% (1/5) in hemodialysis patients with ESRD who had DPHB. Most hemodialysis patients with ESRD can be treated with conservative management such as bed rest, fluid supplement, and rectal irrigation.

## Conclusions

Patients with ESRD may have a risk of post-hemorrhoidectomy bleeding. Once they experience DPHB, they can be treated with bed rest, fluid supplementation and rectal irrigation as in the general population.

## Funding and Conflict of Interests

The authors declare that they have no conflict of interests.

## Ethical Approval

This article does not contain any studies with human participants performed by any of the authors.

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原 著

## 接受血液透析之末期腎臟病病患， 痔瘡切除手術後有較高之致遲發性出血風險

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**目的** 末期腎臟病病患，已知常伴隨著術中或術後之出血傾向。在此收集與討論先前接受血液透析之末期腎臟病病患，接受痔瘡切除手術後之遲發性出血比率。

**方法** 此篇為回溯性研究。收整了從 2000 年 1 月至 2008 年 12 月之單一醫學中心，共 21 位接受血液透析之末期腎臟病病患，因 3 度到 4 度痔瘡接受手術切除後之臨床觀察及數據分析。

**結果** 其中共有五位  $5/21 = 23.8\%$  有遲發性出血之表現，皆返回急診求治。其中，年齡、性別、抗凝血/抗血小板藥物之使用、切除痔瘡之數量、術中失血量、住院天數等，與是否發生遲發性出血皆無達到統計學上之意義 ( $p$  值大於 0.05)。

遲發性出血的五位病患中，三位為男性；五位病患皆接受肛門直腸灌洗。兩位因嚴重貧血需要紅血球之輸注，其中一位因流血情形嚴重，須接受二次手術進行止血。

**結論** 我們發現，接受血液透析之末期腎臟病病患，接受痔瘡切除手術後，相較於一般族群，有較高之遲發性出血比率。

**關鍵詞** 末期腎臟病、痔瘡手術、遲發性出血、併發症。