

## Uncommon Upper Gastrointestinal Bleeding Linked to Leech Infestation: Insights from Dual Case Studies

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## 1. Abstract

Leeches, hermaphroditic parasites capable of attaching to various body parts and engaging in blood-sucking behavior. Exhibit a surprising ability to engorge up to 890% of their own body weight. Moreover, their saliva contains anticoagulant-like enzymes that can result in significant bleeding. Leeches can infest various segments of the gastrointestinal (GI) tract [5, 6]. GI bleeding, which is caused by leech infestation, can manifest with hematemesis, melena and rectal bleeding. GI bleeding due to leeches is rare and more common in less developed countries. We present two cases of patients admitted for minor upper gastrointestinal bleeding associated with epistaxis. In both cases, endoscopy revealed a leech attached to the oropharynx.

## 2. Introduction

Leeches, hermaphroditic parasites capable of attaching to various body parts and engaging in blood-sucking behavior [1]. Exhibit a surprising ability to engorge up to 890% of their own body weight [2]. Moreover, their saliva contains anticoagulant-like enzymes that can result in significant bleeding following infestation, occasionally leading to fatal outcomes in complicated scenarios [3, 4]. Leeches can infest various segments of the gastrointestinal (GI) tract and respiratory system, including the nasopharynx, oral cavity, larynx, esophagus, and rectum [5, 6]. GI bleeding, which is caused by leech infestation, can manifest itself in different pat-

terns, such as epistaxis, hematemesis, melena, and fresh rectal bleeding [7, 8, 9]. GI bleeding due to leeches is a rare phenomenon that is more common in less developed countries [4]. Due to the similar symptoms of this issue to the main differential diagnoses of GI bleeding, such peptic ulcer disease (PUD) and ulcers of the esophagus, erosions of the upper GI tract, variceal bleeding, gastroesophageal reflux disease, Mallory-Weiss tears, vascular lesions, malignancy, and other less common causes [7]. We present two cases of patients admitted to a surgical department for minor upper gastrointestinal bleeding associated with epistaxis. In both cases, subsequent digestive endoscopy uncovered a leech lodged behind the glottis. Treatment encompassed the extraction of the foreign body, coupled with vigilant monitoring of vital signs.

## 3. Case Presentation

### 3.1. Case 1

An 18-year-old adolescent with no prior medical or surgical history sought medical attention at the emergency department due to experiencing melena for the past week. Notably, two days prior to his hospitalization, he had encountered episodes of epistaxis and hematemesis.

Upon physical examination, no remarkable findings were noted. His haemogram and biochemical parameters, assessed as part of the emergency evaluation, were all within normal ranges. Over a 24-hour monitoring period, his hemoglobin levels remained stable.

Subsequent to this initial assessment, an endoscopic examination was performed, revealing a live leech measuring 8 cm in length attached to the oropharynx. Active mucosal bleeding was observed at the point of attachment. Employing endoscopic guidance, the leech was delicately extracted using non-toothed foreign-body forceps and removed from the body (Figure 1). Following the successful removal of the leech, a thorough inspection of the oropharynx demonstrated no evidence of ongoing bleeding.

Post-procedure, the patient's condition remained stable, and he exhibited satisfactory recovery.

### 3.2. Case 2

A 49-year-old woman, previously devoid of any medical issues, with no history of GI bleeding or recent medication usage, arrived at the emergency department experiencing a distressing episode of hematemesis and hemoptysis. The latter involved a minor bleeding event, characterized by coughing and vomiting. Furthermore, she conveyed a sensation akin to that of a foreign object lodged in her oropharynx.

Upon physical examination, the patient's condition appeared stable, with her hemodynamic status well-maintained. The conjunctivae displayed a normal coloration. Laboratory tests yielded results within the established normal ranges, and her hemoglobin level registered at 13g/dl. Coagulation parameters were also consistent with standard values.

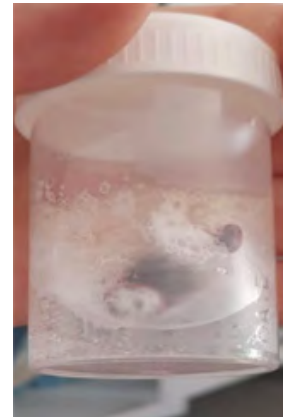
During the examination of her oral cavity, a structure resembling a blood clot was observed within the oropharynx (Figure 2). Subsequent endoscopic evaluation uncovered the presence of a leech adhered to the oropharynx. Employing endoscopic guidance, the leech was meticulously removed using non-toothed foreign body forceps. Remarkably, the bleeding ceased immediately after the successful extraction of the leech (Figure 3).



**Figure 1:** oropharynx exam revealing a live leech attached to the oropharynx



**Figure 2:** oropharynx exam revealing a live leech attached to the oropharynx



**Figure 3:** Final aspect after endoscopic extraction

## 4. Discussion

Leeches encompass a sizable array of hermaphroditic ectoparasites that feed on blood. Among them are various species such as sand leeches and aquatic leeches. These creatures possess cartilaginous cutting plates positioned beneath their frontal sucker. These plates have the ability to create a 2 mm incision. A single leech can drink 5 to 15 cc of blood (10 times its body weight) in just 30 minutes.

Their inclination towards blood extraction primarily stems from their saliva, which holds a natural anticoagulant called hirudin, a localized anesthetic, hyaluronidase functioning as a spreading agent, and a vasodilator similar to histamine. This vasodilator serves to enhance blood circulation in the nearby area [10]. In certain developing countries, individuals who come into contact with pond or sewage water may run the risk of encountering aquatic leeches. Primarily, these leeches tend to focus on the nasopharyngeal region [11]. But in some cases, it was reported to affect the rectum or esophagus [10]. Because leeches can infest various sites within the body, this condition presents itself through a range of symptoms. These symptoms include nosebleeds (epistaxis), vomiting blood (hematemesis), dark stool (melena), bleeding from the rectum, and in some cases, even coughing [7, 8, 9, 12]. The bleeding symptoms observed in patients can be attributed to the presence of the anticoagulant hirudin, which is present in the saliva of aquatic leeches. Hirudin is the most potent natural thrombin

inhibitor that combines with thrombin at a molar ratio of 1:1 [13]. It, thus, inhibits the cross-linking polymerization process of fibrin monomers in internal and external coagulation pathways [14].

The approach to a patient with leech infestation includes thorough history-taking and systematic examination followed by appropriate investigation. A physical examination might be unremarkable in most cases [15]. Even though complete blood cell count and other investigations are needed to supplement the case, endoscopic evaluation is generally required for diagnosis. Although coagulation profiles can help in differential diagnosis, their use in leech infestation is limited as the anticoagulant effect is only local secondary to the low level of hirudin.

The mainstay of management is the extraction of the leech from the mucosal surface. The bleeding ceases within minutes after the removal of the leech. However, in some cases, minor oozing might persist for hours after detachment due to the effect of the anticoagulant [16].

The soft and slippery body surfaces of aquatic leeches combined with strong attachment of the suckers to the mucosal surface render a challenge in the removal of the parasite, as it is more likely to rupture [17]. Thus, several techniques have been suggested. Forceps application to the center of the leech's body and giving a quick pull is one such method that is successful in several cases [18]. An electric shock of the infesting leech, 4% pantocain and oxymetazoline application, adrenaline injection followed by forceps removal, and hypertonic saline irrigation have also been effective [19,20]. Successful extraction by squeezing the midpoint of the body for up to 20 seconds, resulting in a spontaneous release of mouthparts was also reported [21]. We used, somewhat, similar technique with some modification. Application of a non-toothed extraction forceps close to the mouth part (posterior sucker) while maintaining a steady pull with a gentle squeeze will allow simpler extraction of the leech as witnessed in both cases. The detachment from the site should be immediately followed by the complete extraction of the leech from the body. The attachment site should be inspected for ongoing bleeding after the removal of the leech [5].

## 5. Conclusion

Although instances of leech ingestion leading to upper gastrointestinal bleeding are infrequently documented in the literature, clinicians must maintain vigilance regarding associated symptoms, particularly in patients hailing from rural regions. A notable history involves the consumption of non-potable water or engagement in activities such as pond or spring swimming.

In cases where such circumstances align, prompt consideration should be given to endoscopic exploration. This step is pivotal for establishing the underlying cause and devising a suitable management plan. A proficient team of specialists well-versed in this procedure can effectively execute it, ensuring a seamless process.

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