

# NASAL HIRUDINIASIS IN A TODDLER

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## **Abstract**

Nasal hirudiniasis poses a significant challenge to the patient and the attending physician, especially when involving a toddler. Herein, we report the case of a three-year-old child who presented with unilateral spontaneous epistaxis, with witnessed leech movement in the left nostril. We highlight the simple technique of nasal leech removal using an application of lignocaine nasal spray to the child's nasal cavity, under adequate sedation. The challenge in removing a leech from a toddler's nasal cavity is attributed mainly to the combination of anxious parents, an uncooperative child, and the characteristics of the leech, such as its slimy surface. A simple bedside technique using lignocaine nasal spray may be adequate and may reduce the necessity of admission and the risk of general anaesthesia.

**Keywords:** Nasal Leech, Epistaxis, Hirudiniasis, Toddler

## **Introduction**

Epistaxis following the introduction of various animate and inanimate foreign bodies into the nasal cavity is commonly encountered in otorhinolaryngology clinics. The leech is an animate foreign body that causes epistaxis when found in the nasal cavity. It is common in tropical and sub-tropical regions such as Africa and Asia. Leech removal from the nasal cavity in a child can be challenging to both the patient and the attending physician. Removal of the leech from the nasal cavity is gruelling owing to the ability of the leech to firmly attach to the tissue through its muscular sucker. However, we successfully removed the leech after it was paralysed using a lignocaine nasal spray. This method is cost-saving and time-saving and avoids the need for ward admission and removal under general anaesthesia.

## **Case Report**

A healthy three-year-old boy presented to the emergency room with the complaint of unilateral spontaneous epistaxis and witnessed leech movement by his mother. The mother noticed spontaneous painless epistaxis from the child's left nostril of a six-day duration. Each episode was described to be unprovoked, with a minimal amount of fresh blood seen flowing from the left nostril, and ceased spontaneously. The mother mentioned a history of the child swimming in the river one week prior to epistaxis. She brought the child to the hospital the same day a leech

was seen moving in the left nostril. There was no history of recent trauma or fall, and the child was not known to have any bleeding tendency. No history of familial bleeding disorders was discovered. There was no recent upper respiratory tract infection or recurrent nasal or ear symptoms. Developmental milestones were according to age, and vaccination history was up to date.

Upon examination, the child appeared pink, not in pain, and comfortable, without signs and symptoms of respiratory distress. The child was haemodynamically stable and afebrile. No stertor or stridor was heard, and there was no active bleeding from the nose, mouth, or ears. The nasal examination was performed using rigid nasal endoscopy, and the child was sedated using chloral hydrate. A small leech measuring 1 centimetre in length was noted in the left nasal cavity. An initial attempt to remove the leech using Gruenwald nasal forceps failed as the leech was slippery and attached firmly to the underlying mucosa. One puff of lignocaine 2% topical nasal spray was applied to the left nasal cavity. The leech stopped moving after about a minute, and it was removed intact using crocodile forceps without difficulty (Figure 1). Following the removal of the leech, a flexible endoscope was used to reassess bilateral nasal cavities, pharynx, and larynx to ensure no other leeches were left behind. The child was allowed home without clinic follow-up after regaining full consciousness.



**Figure 1:** Leech paralysed by local anaesthetic spray and removed from the left nasal cavity

### Discussion

Leeches are traditionally known as blood-sucking hermaphroditic parasites that attach themselves to their vertebrate hosts, bite through the skin or mucosa, and suck out the blood. During feeding, leeches secrete saliva, which contains a number of biologically and pharmacologically active substances, which include Hirudin; a potent anticoagulant which selectively binds to thrombin in the blood of the host animal to form an inactive complex, Calin; a substance that keeps the wound open for about 12 hours by binding with and thereby inactivating von Willebrand factors, as well as carboxypeptidase; which causes dilation of capillaries thereby increasing the flow of blood to the bite region (1).

Nasal hirudiniasis should come to the mind of the attending physician when treating patients from rural areas such as the Borneo region, Malaysia, especially when the patient presents with unilateral spontaneous epistaxis following swimming in a river or lake. The morphology of the leech (soft and slimy body) and its strong attachment to mucosa using powerful muscular suckers contribute to the difficulty in removing it.

Diagnosing the presence of a leech in the nasal cavity can be tricky as it is an animate object that moves freely in its confined space. Patients may present with episodes of unprovoked painless epistaxis, a feeling of something moving in the nasal cavity, haemoptysis, hematemeses, and nasal blockage when the leech reaches a considerable size. When escaping to the lower respiratory tract, the patient may even present with signs and symptoms of a compromised airway, including noisy breathing and shortness of breath (2).

Aetiologies of paediatric epistaxis include infection, nasal trauma (trauma to external nose, internal trauma caused by nasal picking), haematological disorder (haemorrhagic diathesis), use of medications that are known to or may interfere with platelet activity (e.g. ibuprofen,

acetylsalicylic acid), seasonal influence (dry air), neoplasms (e.g. nasopharyngeal angiofibroma, malignant tumours), insertion of an inanimate foreign body into the nose, and last but not least, leech infestation of the nasal cavity (3).

As with other cases of foreign bodies in the nose, the nasal cavity is examined using a rigid or flexible nasal endoscope. Nasal endoscopy enables foreign bodies as well as complications pertaining to foreign bodies, such as septal perforation, epistaxis, and synechiae, to be detected. In our case, nasal endoscopy revealed a leech in the nasal cavity. For children with a serious comorbidity and older children who can remain calm and obey instructions, sedation may not be necessary during endoscopic assisted removal of the leech from the nose. Patients must be thoroughly evaluated to avoid undesirable outcomes from sedation. Precautions must be practised during and after the procedure is carried out under sedation. This includes continuous monitoring of vital signs until the child fully regains consciousness, knowing about antidotes for different types of sedatives, anticipation of possible allergic and adverse reactions, and, most importantly, resuscitation in case of cardio-respiratory collapse. For patients who are not cooperative during nasal endoscopy, the examination may need to be carried out under general anaesthesia. It is advisable to perform the examination of the nose under general anaesthesia to rule out the presence of leeches when a child presents with unprovoked epistaxis with a positive history of fresh water submersion and no identifiable cause upon nasal endoscopic examination. Radiological investigation, such as magnetic resonance imaging (MRI), may also be advocated if a clinical diagnosis of nasal hirudiniasis is highly suspected but the organism is not visualised using endoscopic examination. MRI may also be used to confirm complete clearance of the nasal cavity from parasitisation after the initial removal.

Various innovative methods were previously reported in regard to the removal of leeches from the nose. We reviewed articles published in English on paediatric nasal hirudiniasis and the proposed methods of leech removal. A total of 12 articles found between 2002 and 2023 were analysed (Table 1) (4-15). Proposed methods of nasal leech removal in the paediatric population include:

1. Application of topical intranasal anaesthetic spray followed by leech removal using forceps
2. Leech extraction from the nasal cavity using the negative suction method
3. Nasal irrigation using normal saline, followed by leech extraction using forceps
4. Leech removal using forceps after applying bipolar electric shock to the leech
5. Injection of an anaesthetic solution into the body of the leech, followed by removal using forceps

6. A kidney tray is filled with fresh water and placed about 1 cm below the nasal vestibule. The leech is then caught using artery forceps as soon as the leech is seen crawling out of the nasal vestibule towards the water.

**Table 1:** Case writeups published on nasal hirudiniasis involving the paediatric population and proposed methodology of nasal leech removal

No.	Author (Year)	Country	Number of patients	Age	Method of leech extraction
1	Singhal SK (2002) (4)	India	1	4	Forceps removal and suction
2	Tseng CC (2005) (5)	Taiwan, Republic of China	2	9, 65	Injection of 4% lidocaine solution into body of leech, followed by removal using forceps
3	Foanant S (2006) (6)	Thailand	1	11	Leech removal using alligator forceps
4	Adhikari P (2009) (7)	Nepal	40		Anterior rhinoscopy was done and suction was used to remove the leech from nasal cavity. Water was poured into the kidney tray and adjusted 1 cm below the nasal vestibule. As soon as the leech was seen in the nasal vestibule, they were caught with artery forceps.
5	Chen WC (2009) (8)	Taiwan, Republic of China	6	4, 6, 7, 8, 60, 74	Leech removal using forceps after bipolar electric shock Leech removal using forceps after administering 64% lidocaine local spray
6	Sarathi K (2011) (9)	Nepal	1	7	Irrigation of nostril with normal saline followed by leech removal using artery forceps
7	Husain S. (2012) (10)	Malaysia	1	9	Topical anaesthesia using 10% cocaine-epinephrine spray, followed by removal using Tilley's forceps
8	Manandhar S (2015) (11)	Nepal	1	3	Leech removal using artery forceps
9	Cai Q (2015) (12)	China	5	5, 7, 72, 78, 83	1% tetracaine nasal spray, followed by 1% ephedrine spray, then a negative suction tube with an inner diameter of 3 mm and a negative pressure of 30–40 kPa was used for leech removal
10	Dutta S (2016) (13)	India	6	4, 8, 10, 40, 60, 75	Leech removal using artery forceps with/without application of saline water
11	Nadhirah MS (2023) (14)	Malaysia	1	8	Topical anaesthesia using co-phenylcaine nasal spray, followed by removal using Tilley's forceps
12	Tuang GJ (2023) (15)	Malaysia	1	9	Leech removal using forceps

We have reported the fourth case of paediatric nasal hirudiniasis in Malaysia, along with the simple technique of applying topical lignocaine spray to the nasal cavity before removing a leech from a child's nostril, under adequate sedation, in the emergency room. This technique enabled the safe and timely removal of the leech from the nostril without the need for the child to undergo general anaesthesia.

The difficulty faced during removing a leech is caused by its soft and slippery body, which ruptures easily (16). Firm traction should be avoided during leech removal as parts of its mouth may be retained, leading to the continuation of symptoms and secondary infection. It is worth noting that

leeches breathe through their body wall. The application of anaesthetic spray on their body causes them to asphyxiate and weakens their attachment to the underlying mucosa, thereby increasing the ease of removal (17).

### Conclusion

Removal of a leech from a child's nasal cavity is a great challenge to any attending physician. A proper nasal examination followed by leech removal must be carried out as soon as circumstances permit. Paralysis of the leech using a topical anaesthetic spray is cost-saving and time-saving, prevents risks of intubation and general anaesthesia, and avoids the need for ward admission.

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### Informed consent

Informed consent was obtained from both parents.

### Competing interests

The authors declare that they have no competing interests.

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