

# Envenomation by a Gaboon Viper

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## Background

The Gaboon viper is a venomous snake endemic to West Africa known for producing large amounts of venom<sup>1</sup>. Effects of envenomation include coagulopathy, local cytotoxicity, cardiotoxicity, and hypotension<sup>1</sup>, and bites can be fatal. Because of the snake's passive nature and habitat confined to rainforest areas, bites are rare<sup>2</sup>, with few reported in the literature. However, the snake has gained popularity with collectors in the United States, and handling can lead to envenomation.

## Objective

The objective of this case report is to detail the presentation, management, and outcome of a case of a man bitten on the hand by his pet Gaboon viper.

## Case Report

A 29 year old male presented to the emergency department as a level 1 trauma two hours after being bitten on the right hand by his pet Gaboon viper. The patient presented with swelling of the right hand and arm, swelling of the face, oropharyngeal bleeding, and ecchymosis of the back, abdomen, and leg. The patient was subsequently intubated for respiratory failure, and mass transfusion protocol was initiated. He was administered cryoprecipitate, vitamin K, and PCC for coagulopathy. The patient was started on vasopressin, epinephrine, and norepinephrine, with persistent shock, and his initial lactate was 11.4.

Initially, the patient's blood cultures tested positive for *Kytococcus sedentarius* and *Kocuria varians*, for which he was given ceftriaxone and metronidazole.

The patient developed an acute kidney injury thought to be secondary to ischemic acute tubular necrosis. Because of his acidosis and renal failure, hemodialysis was initiated.

After developing coagulative necrosis in his third finger, the patient underwent amputation of this digit. The patient was subsequently transferred to the University of North Carolina for continued care by orthopedics, plastic surgery, infectious disease, and hematology. There, he underwent serial debridement of the hand and tissue grafting.

Tissue cultures grew multidrug resistant *Pseudomonas*, and the patient was administered vancomycin, cefepime, and metronidazole. He then developed a second acute kidney injury secondary to vancomycin, prompting a change in his antibiotic regimen to daptomycin and meropenem.

After demonstrating clinical improvement, the patient was discharged with follow up with nephrology, infectious disease, and plastic surgery.

Figure 1: Evolution of the patient's hand wound throughout hospitalization



Evolution of the patient's hand wound throughout hospitalization: upon initial presentation (at left), during hospitalization (center), and after debridement and amputation (right).

Figure 2: Fibrinogen and platelet count by hospital day.

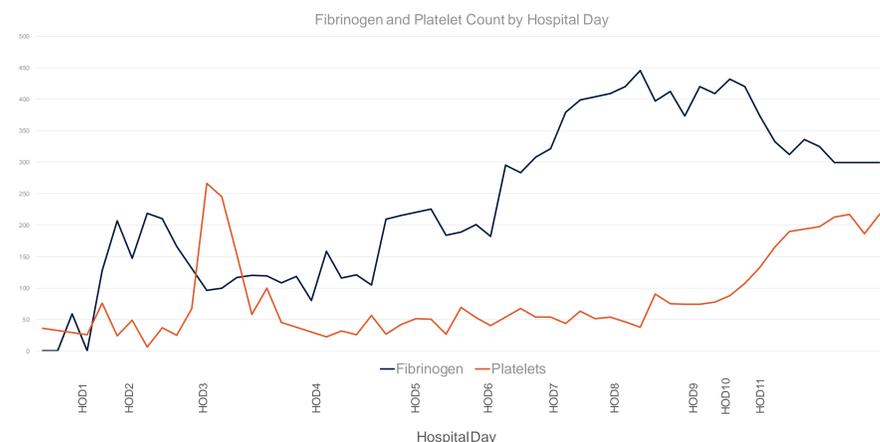


Table 1: Administration of blood products and antivenom by hospital day.

Hospital Day	InoSerp Antivenom	SAIMR Antivenom	Fresh Frozen Plasma	Cryoprecipitate	Platelets	DDAVP	Packed Red Blood Cells
2		14	18	10	10	11 given	11
3					2	4 given	2
5			7		4	10	1
6			3			2	1
10							2

Note that the patient initially presented late in the evening on hospital day 1, and unfortunately, no data was available on products administered on day four. Note the gradual uptrend in fibrinogen on the graph in Figure 2 after the patient received the majority of the antivenom on hospital day two.

## Discussion

Venomous snake bites can cause a range of physiologic effects, from local tissue damage to hemodynamic instability<sup>3</sup>. As in this patient, tissue damage can be severe enough to warrant debridement and amputation (Figure 1). Another important consideration in venomous snake bite is coagulopathy. Venom induced consumptive coagulopathy (VICC) is the most common coagulopathy resulting from snake bites, and is treated by administration of antivenom. In the case of Gaboon viper envenomation, VICC is correlated with a decrease in fibrinogen<sup>4</sup>. This patient presented with a depressed fibrinogen in the days after his bite, which, notably, began to correct after the patient received multiple vials of antivenom (Figure 2 and Table 1). The patient's platelet count follows a similar trend, further suggestive of a consumptive coagulopathy. Due to his coagulopathy, the patient required massive transfusion, receiving over 40 units of blood products in the initial days after his bite. A final consideration for this patient was his renal injuries requiring dialysis. Snake bites are known to cause acute kidney injury, and do so by multiple mechanisms. Thrombotic microangiopathy may damage the kidneys, as well as direct cytotoxicity of venom and rhabdomyolysis. Decreased renal blood flow secondary to hemorrhage may also contribute to renal injury<sup>5</sup>, further stressing the importance of control of venom induced coagulopathy.

## Conclusion

This case report demonstrates numerous effects of a rare envenomation by the Gaboon viper, including consumptive coagulopathy, shock, and tissue necrosis. Other important considerations for this patient included kidney injury and infection.

## References

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