

Vascular Injury After Hippopotamus Bite to the Groin in a Rural Hospital Setting

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Hippopotamus attacks are uncommon but can cause devastating trauma with high mortality, especially in low-resource settings. We report a young adult with a left groin bite causing major vascular injury and hemorrhagic shock. Emergency surgical exploration achieved temporary hemorrhage control and restoration of limb perfusion despite limited resources. The patient initially survived but later died from delayed massive groin hemorrhage. This case highlights treatment challenges for major vascular injury after contaminated mammalian bites and we discuss potential temporary endovascular solutions as a bridge to definitive care by the EndoVascular resuscitation and Trauma Management (EVTM) concept.

Keywords: Hippopotamus; Animal Bite; Vascular Trauma; Iliac Artery; Femoral Artery; Rural Surgery

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INTRODUCTION

Large wild animal attacks remain an important cause of severe trauma in parts of Africa [1–3]. There are several reports on camel-related injuries, patterns and treatments, but published reports on injuries caused by African large animals are sparse [4–6]. Hippopotamus bites can combine penetrating, crush, and avulsion mechanisms and are heavily contaminated, leading to complex soft-tissue destruction, infection, and limb loss. Major vascular injuries in the groin are particularly challenging and limitations, which are common in low-resource settings, in imaging, blood products, and vascular tools might reduce the chance of definitive repair. We present a case of a 20-year-old male with suspected external iliac/common femoral region injury after a hippopotamus bite, treated in a small rural hospital, with delayed fatal hemorrhage. We also discuss endovascular and hybrid solutions that might be of use in selected cases, as part of the EndoVascular Resuscitation and Trauma Management (EVTM) concept [7].

This case report followed the CARE guidelines for case reports.

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CASE PRESENTATION

A 20-year-old male was brought to a small rural hospital in an African country after being attacked by a hippopotamus. The patient sustained a bite to the left inguinal region with heavy bleeding at the scene. On arrival to the rural medical facility (Figure 1), the patient was conscious but in hemorrhagic shock with blood pressure 80/60 mmHg and a heart rate of 120 beats/min. Hemoglobin was 8 g/dL. His temperature was 37°C and time from injury to hospital arrival was 120 minutes. A left groin bite wound measuring approximately 6 cm x 6 cm was present (Figure 2). A smaller wound was noted posteriorly on the medial side of the left gluteus maximus, possibly representing a tooth puncture



Figure 1 The operating room in this low-resource facility.

or exit wound. There was no active external bleeding on arrival. A pressure dressing had been applied, and removal did not trigger bleeding. Plain radiographs showed no bony injury to the pelvis/femur (not available for this case report). No computed tomography angiography (CTA) or ultrasound Doppler was available in this setting.

Urgent exploration was performed under spinal anesthesia in the rural operating room. Upon exploration, profuse bleeding occurred, requiring immediate packing. Dissection was difficult owing to extensive soft-tissue destruction, contamination, and loss of normal



Figure 2 External appearance of the left groin bite wound on presentation.



Figure 3 Intraoperative view demonstrating extensive soft-tissue destruction during exploration of the left groin.

tissue planes (Figure 3). Minor bleeding vessels were ligated. Several puncture holes with iliac and proximal femoral artery wall destruction were found, but the vessels were intact. The veins could not be identified clearly and were handled with compression only. Restoration of arterial flow in the external iliac/common femoral region was attempted by placing sutures on the vessel wall. No dedicated vascular instruments, shunts, or graft material were accessible; also, there was no available transport to a regional hospital. The repair was done by gaining proximal and distal vessel control and direct 5.0 or 6.0 sutures to the injured vessel, and no shunt or interposition graft was used. At the end of surgery, distal pulses were palpable and the foot was clinically viable. Estimated blood loss was around 2 L and no blood transfusion was given intraoperatively as it was not available. The patient received cephalosporin antibiotics, which were the only antibiotics available. A passive drain (14Fr) was left in place and the wound was sutured. After surgery, the patient received two units of blood from family donors. The patient survived the acute event and gradually regained some function in the left leg. The limb remained slightly colder than the contralateral side and the patient had difficulty walking but did not suffer clear distal ischemia. There is no follow-up data on limb status or any further control after surgery owing to the local rural setting. Approximately three weeks after the visiting surgical team departed, the patient reportedly suffered a sudden massive hemorrhage from the groin wound and died owing to a suspected blow-out before arriving at the medical facility.

DISCUSSION

This case demonstrates the high lethality of hippopotamus bites and the difficulty of managing major groin vascular trauma in resource-limited settings. Even when initial hemorrhage control and limb perfusion are achieved, delayed vascular catastrophe can still occur. The late hemorrhage might represent arterial blow-out due to infection and vessel wall necrosis, rupture of a pseudoaneurysm, or failure of the vessel wall repair. Mammalian bite wounds are heavily contaminated and hippopotamus bites have been associated with wound infection, severe soft-tissue injury, amputation, and permanent disability [1–3]. Because of the extremely limited resources, there is no information in this case on bacterial growth or resistance.

In a higher-resource setting, CTA or formal angiography would be recommended to define the injury, detect pseudoaneurysm, and guide definitive repair. Ultrasound duplex or hand-held Doppler might also be a useful alternative. In similar low-resource environments, alternatives may include bedside Doppler examination, serial neurovascular checks, and, if available, simple contrast angiography using portable fluoroscopy

or plain radiography. Early planned re-exploration and aggressive debridement with prolonged broad-spectrum antibiotics might reduce infection-related blow-out risk. Another treatment option would be negative pressure wound therapy (Vacuum-assisted closure; VAC) around, but not directly over, the exposed vascular reconstruction [4–6].

Theoretically, some EVTm tools could be used in selected high- and low-resource facilities [7]. A covered stent-graft could theoretically function as a temporary damage-control bridge in major iliac/common femoral injuries when open repair is not feasible, particularly to rapidly control bleeding and maintain limb perfusion [7–9]. In practice, this would require at minimum: (1) arterial access (contralateral femoral crossover or ipsilateral), (2) basic imaging (fluoroscopy or limited radiographic guidance), (3) an appropriately sized covered stent, and (4) post-procedure antithrombotic and infection management. In general, especially in young patients and in contaminated groin wounds, this treatment is not recommended as definitive therapy because any implanted prosthesis carries a major infection risk. If used, the stent-graft should be considered a temporizing measure, ideally followed by early transfer, if possible, for definitive surgical debridement and reconstruction, or planned exploration and autologous reconstruction once the patient is stabilized and VAC treatment has been initiated. In settings without transfer options, careful wound care, repeated debridement, and long-course antibiotics become critical, although delayed blow-out could still occur.

Another endovascular tool that might help is balloon occlusion; in this case via contralateral access and proximal iliac or even aortic proximal occlusion. This might help reduce blood loss during dissection and provide temporary hemostasis. Arterial shunting, or an endoshunt with a sheath from the contralateral femoral artery to the injured distal artery, might also reduce ischemia time if needed. In low-resource settings, a temporary open shunt can sometimes be improvised, for example by cutting a nasogastric tube. Both tools require experienced hands and are highly dependent on the injury pattern, location, anatomy, treating team, and the possibility of evacuation to a medical center with more resources.

Limitations

This report is limited by incomplete physiological and operative details typical of austere environments, absence of CTA/angiography, absence of microbiology data and limited follow-up data. The presumed mechanism of delayed hemorrhage (infection, pseudoaneurysm, repair failure, and blow-out) could not be confirmed.

CONCLUSIONS

Hippopotamus bites can cause catastrophic vascular injuries. Initial surgical control might be achievable even with limited resources, but delayed fatal hemorrhage

remains a major risk. Early recognition of vascular injury, meticulous debridement, infection control, and structured follow-up are essential. Where feasible, temporary endovascular balloon occlusion, shunts, and covered stent-grafting may offer a bridge to definitive care, but infection risk must be carefully weighed, and definitive treatment should generally be open surgical repair or reconstruction.

Ethics Statement

The author declares that he read and agrees to the JEVTm statement of ethical standards, including rules of informed consent and ethical committee approval as stated in the article. Ethical review was not required in the country where the case occurred. Informed consent was not needed according to the laws of the country in which the incident occurred.

Conflicts of Interest

ME has no conflicts of interest. TH serves as Editor of the journal.

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Author Contributions

ME operated on the patient and drafted the manuscript. ME and TH wrote and edited the manuscript, and reviewed its final form.

Data Availability

The clinical data underlying this case report are not publicly available due to patient confidentiality and the austere setting in which the case occurred.

Declaration of the Use of Generative AI and AI-assisted technologies in the writing process

During the preparation of this work the author used Chat GPT 5.2 for both structural and English revision. After using this tool/service, the author reviewed and edited the content as needed and take(s) full responsibility for the content of the publication.

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