Field Immobilization for Management of Gunshot Wounds in an African Savannah Elephant *Loxodonta africana* at Yankari Games Reserve, Bauchi State, Nigeria

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**Abstract:** A sub-adult male African Savannah Elephant was chemically immobilized for the treatment of multiple gunshot wounds at the Yankari Games Reserve, Bauchi State, Nigeria. Quality induction was achieved within 9 minutes of an intramuscular (IM) administration of Etorphine hydrochloride (7 mg) and Azaperone (40 mg) using a dart gun. Pulse and Respiration rates and rectal temperature remained stable throughout the immobilization period. Recovery was rapid and smooth following the antagonist administration of Naltrexone (85 mg) on completion of the examination and treatment of the wounds. Chemical Immobilization was repeated after 10 days in a follow-up treatment. Post treatment monitoring indicated the overall operation was successful with the animal reuniting with the herd thereafter.

**Keywords:** Elephant, Chemical Immobilization, Etorphine Hydrochloride, Naltrexone, Azaperone

**INTRODUCTION**

The African Elephant *Loxodonta africana*, is scheduled as a vulnerable species on the International Union for the Conservation of Nature (IUCN) Red list of Threatened Species (Thouless et al., 2016). Poaching is largely responsible for the reduction in elephant’s population in Africa. The illegal wildlife trade is a threat to the persistence of animal populations worldwide, mainly due to overexploitation to meet the black-market demand (Rosen and Smith, 2010; Patel et al., 2015). An additional conservation concern in protected areas is the threat emanating from gunshot wounds, poachers’ traps and snares (Lotter et al., 2016).

Injured survivors rarely escape death, as the complications arising from the wounds make them become potential targets for poachers and predators. The resultant effects of untreated gunshot, trap/snare related injuries and wounds pose a severe threat to the survival of wildlife species, thereby making interventions for reasons of health fundamental in the conservation of free-living wild animals. Gunshot wounds have been reported in some wild animals (Vijay, 2013; Champeaux, 2014; Showkat, Wali, and Tasadug, 2014).

A report on the reasons for veterinary interventions in National Parks, National Reserves, Private and Community Conservancies in the Northern and Eastern Parts of Kenya between January to December 2014 provided by the Mountain Region Veterinary Unit (2015), revealed that gunshot wounds from attempted poaching on either elephants or rhinos contributed to the bulk of the cases attended to, with rhinos accounting for 27% of the number of interventions per species in the area, followed by elephants with 26%. Poaching of the African Elephant is a great threat to their existence.

A sub-adult male African Elephant was reported sighted alone in a bush cluster around the Wikki Camp of the Yankari Game Reserve, abstaining from weight bearing on the right forelimb. Close observation revealed that the animal had a deep a gunshot wound around the shoulder part of the scapular region. Here, we report a case of chemical immobilization of an African Savannah Elephant for the treatment of gunshot wounds.

**METHODOLOGY**

Chemical immobilization was decided for further examination and treatment of the wounds. The elephant was anaesthetized by using a combination of 7mg Etorphine Hydrochloride (Captivon® Krüger-Med South Africa) in combination with 40mg Azaperone (Stresnil®, Janssen Pharmaceuticals (Pty.) Ltd., South Africa), delivered intramuscularly (IM)
from a distance of about 25 meters on ground, in a 3mls dart syringe fitted with barbed needles, using a Dan-Inject rifle (Dan-Inject APS, Sellerup Skovvej, Denmark). The drug took effect after about 9 minutes with the animal going down on lateral recumbency. Once immobilized, the animal was blindfolded, dart was immediately removed and the animal was placed on lateral recumbency, with the trunk-maintained patent to allow for unobstructed for airflow.

On clinical examination, it was observed that the bullet penetrated the right ear lobe to the shoulder part of the scapular region leaving an exit wound on the ear lobe (Figure I) and a piercing bullet wound with pyogenic exudates (Figure II) on the shoulder part. The wounds were checked for bullets or any foreign body, and there was no active bleeding. The necrotic, highly contaminated and pus-oozing wounds were washed generously and irrigated using hydrogen peroxide.

The wounds were subsequently flushed with 0.05 % chlorhexidine solution before being infiltrated with a combination of penicillin and streptomycin (2.5 g), topical spray (Benzene hydrochloride), Gentian violate and Povidone iodine solution 1 %. Further treatments were provided by intramuscular administration of long-acting oxytetracycline at a dose of 20mg/kg and 200mls multivitamins. Vital parameters (temperature, pulse, respiratory rates and oxidation) were taken at ten minutes interval throughout the procedure. Fluid (0.9 % normal saline) was infused throughout the exercise to take care of the blood loss. Tissue swab, blood and faecal samples were collected for laboratory investigations and elephant was tagged for proper identification. Water was doused intermittently on the elephant to keep the body temperature within range. Reversal of the anaesthesia was achieved in 5 minutes after an intramuscular administration of 85mg Naltrexone (Trexonil ® Kruger-Med South Africa).

RESULTS
Recovery from anaesthesia was smooth and the animal was up within 5 minutes. No ballistic evidence was retrieved and prognosis was good after treatment. The elephant was immobilized for follow-up treatment 10 days after (Figure 111 and Figure IV).

The drugs and doses used in this case provided a reliable, safe and reversible protocol for the immobilization of a sub-adult male African Savannah Elephant. Radiological examination which would have assisted for further diagnosis was not available.

The overall operation was successful with the elephant reuniting with the herd after the follow up treatment.

DISCUSSION
Successful conservation of elephants in protected areas should have the emergency care and provision of veterinary interventions and rehabilitation, in the event of life threatening conditions, as an integral and complimentary part of the strategic plans in saving the population of the African Elephant. With elephants under threat, each life saved provides hope for the species.

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REFERENCES
Figure I: Bullet entry wound penetrated through the ear flap

Figure II: Bullet entry wound with pyogenic exudate

Figure III: Bullet entry wound on second treatment

Figure IV: Recovered Elephant after the follow up treatment


