

# Veterinary expedition to Xixiakou Zoo in China

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At the invitation of the government of the Republic of China, Dr Gerhard Steenkamp of the Faculty of Veterinary Science at Onderstepoort and I travelled to Xixiakou Wildlife Zoo in the town Xixiakou in Shandong Province on China's east coast. We had been asked if we would be willing to assist with the treatment of one of the African elephants housed there. The zoo is privately owned and has one of the largest animal collections in China. It is an important tourist attraction and a significant source of income for one of China's wealthiest towns, which receives up to a million visitors a day in the peak summer season.

The zoo had imported two young elephants from South Africa in 2003, when they were four years old. The 11-year-old bull had fractured his left tusk soon after he arrived in China. We had very little information about the condition of the tusk. Veterinary facilities at the zoo are limited and we had to bring all drugs and equipment with us for the procedure. We brought all the equipment and medication we would need to fill the tusk, but were also prepared for the possibility that an extraction might be indicated.

On the morning of 19 October, we inspected the elephant enclosure, evaluated the facility and saw our patient for the first time. We were pleased to discover that his keepers had managed to keep the tusk fairly clean and infection-free by flushing the tusk's pulp daily with hydrogen peroxide and then closing it with swabs. However, the Chinese keepers reported that they were having some difficulty working with the young

African elephants. The absence of any adult African elephants at the zoo is probably a contributing factor in the unpredictable and sometimes aggressive behaviour of these two youngsters. Both animals frequently charge up to the steel gates, pushing their trunks through a gap in the bars, which results in their short tusks banging against the bar below. Dr Steenkamp pointed this out to the keepers and suggested that this may have been the cause of the fracture.

We then set about identifying a suitable place where the elephant could safely be immobilised. The option we selected was one of the night rooms. Immobilising an elephant in a confined space on a concrete floor presents a number of risks, especially during the anaesthetic induction. Sternal recumbency causes significant breathing difficulty for an elephant, and, because of the sheer size and weight of the animal, it is very difficult, if not impossible, to manipulate the animal once it has gone down, without mechanical assistance. The hard surface has the potential to cause damage to tusks if the animal falls, and there is also a risk of radial nerve damage due to hypoperfusion, especially if the procedure takes a few hours. Our aim was to get the animal down in right lateral recumbency in the middle of the room on a soft bed of hay. The bull had been starved for 24 hours, so he was quite happy to stand in the middle of the room eating from the large bed of hay. He was darted with a low dose of etorphine and azaparon, which caused some distress initially, but he soon settled down to eat. After 15 minutes he was unresponsive to major stimuli and we could move some of the bedding around to ensure a softer landing.

He went down into a sitting position and, with the help of several keepers, we managed to push him over gently into right lateral recumbency.

An intravenous line was set up and the elephant was maintained at a suitable level of anaesthesia with small doses of intravenous etorphine every 15 to 30 minutes. Dr Steenkamp proceeded to evaluate the damaged tusk. Two holes, dorsal and ventral to the pulp cavity, were explored with a rigid video endoscope. Only one of the two appeared to be communicating with the pulp cavity. The pulp itself seemed to be reasonably healthy, with very little sign of infection. The holes in the dentine were thoroughly cleaned and sealed with bone cement, while the pulp cavity was drilled, tapped and plugged with an implant. The end of the fractured tusk was then smoothed off with a file. The whole procedure took just over two-and-a-half hours and the elephant stood up calmly a few minutes after naltrexone was administered intravenously. We were impressed with the fact that, even before the procedure was finished, the Chinese workers had already started welding additional bars onto the gate to reduce the risk of the elephants damaging their tusks again.



View of the large carnivore section of the zoo.

Although our major mission had now been accomplished, we were able to assist with one or two other animals in need of veterinary attention. During the afternoon, we worked on two of the zebra. The zoo had unfortunately housed three stallions with a single mare and this had, as expected, led to a great deal of fighting. One of the stallions had taken the brunt of the damage, with a large haematoma/seroma on his left hind leg and oedema of the ventral limb. We immobilised him and the seroma was lanced and flushed, and anti-inflammatories were administered. The mare was then immobilised and translocated to another facility. We gave the zoo managers some advice on a more appropriated sex ratio for their zebras.

Earlier in our visit we were told that the zoo had a pair of elephant seals. We were intrigued and asked if we could see them, as these animals are very rarely kept in captivity. The elephant seals turned out to be a pair of walrus. The walrus were in need of Dr Steenkamp's dental expertise as they had both suffered damage to their tusks. Walrus belong to the genus *Odobenus*, which literally means 'tooth walker'. Apart from their use for fighting and possibly digging for food, their tusks are slammed into the ice for grip when the animals haul themselves out of the water. Because these walrus were housed on concrete, the tusks had suffered serious wear and possible fractures. The Chinese veterinarians had certainly shown some initiative and ingenuity by constructing steel caps to protect the damaged tusks, but the walrus bull had already developed a tooth root abscess and a draining sinus tract just below the eye. Unfortunately, we did not have the time, the drugs or the necessary equipment to treat these animals.



Dr Gerhard Steenkamp gets to work on the fractured tusk.

On our last day in the zoo, we were shown an Asian black bear (*Ursus thibetanus*) that was being led around in the zoo by one of the keepers. The lead was attached to two steel rings that had been placed through the bear's upper lip. Dr Steenkamp and I made it very clear that we were very unhappy with the situation. When we later discussed this animal with the director, he immediately ordered that the rings be removed. The managers were unfortunately unable to get a bolt cutter near the bear's face. Dr Steenkamp offered to remove them: I was sure that I could come up with some sort of drug combination from my very limited drug collection, which would provide sufficient sedation to allow us to remove the rings. Later that afternoon, I found myself sitting on a very sedated bear while Dr Steenkamp cut through and removed the steel rings with a bolt cutter. A quick look into the animal's mouth also revealed that its canines had been cut, exposing the pulp cavities.

China is reported to have about a thousand zoos and private wild animal collections. Only about 200 of these are members of the Chinese Association of Zoological Gardens. Besides the veterinarians at the Chengdu Panda Base in Sichuan Province, there are very few vets that specialise in zoological medicine in China and most of the country's zoo animals have either poor or no proper veterinary care. We have started discussions with the owner and director of the Xixiakou Zoo about establishing a proper veterinary hospital at the zoo and have discussed the possibility of assisting with the training of Chinese vets in zoological medicine. We will also provide the director with a report listing our observations and recommendations. It is hoped that a follow-up visit in April 2011 will further enhance our relationship with this zoo and open up the doors to a number of other Chinese zoos.



Dr Steenkamp examines the steel-capped tusks of the walrus bull.