

Bull elephant Ninio gets a helping hand from Somta

Zoo keepers at Poznan Zoo in Poland called in the experts when Ninio fractured one of his tusks.

Keepers enlisted the help of Dr Adrian Tordiffe, research veterinarian at Pretoria Zoo and Dr Gerhard Steenkamp, renowned veterinary dentist of the Onderstepoort veterinary faculty, University of Pretoria. The expert duo went to Poland to assess Ninio's fractured tusk and treat an infection, which had developed in the affected tusk, despite the best efforts of the 13 year old elephant's keepers.

Ninio is an African elephant bull housed in a wonderful, purpose-built facility in the Poznan Zoo in Poland. He arrived at the facility when he was five years old and is the offspring of the largest elephant bull in captivity in Europe. He weighs in at 5.2 tons

"I was naïvely confident and accepted the invitation when I was asked by the zoo, as I have performed several of these procedures over the last few years," said Dr Steenkamp.

"What transpired thereafter and how an anaesthetist and I aged significantly in five short months will never be forgotten," continued Dr Steenkamp.

Dr Steenkamp was told that the tusk had first been injured in 2005; at the time it was treated successfully, but it was weaker and subsequently fractured again a short time ago. As the left tusk had become infected, Dr Steenkamp said that it was not possible to save the tusk and it had to be removed. The right tusk was also found to be slightly cracked on close examination.

Dr Tordiffe said that the procedure had not been as straight forward as hoped, as Ninio fell down after being immobilised with his legs splayed and it took the team around 40 minutes to move his legs into a more comfortable position.

After three hours of drilling, Dr Steenkamp had only



Bull elephant Ninio recovering

managed to create a canal and remove the infected pulp and the team made the decision to postpone removing the tusk until a later date. Further treatment on the cracked right tusk would also be carried out later. The canal would act as a drainage system to prevent abscesses, infection and ensure that Ninio did not experience any pain.

New purpose-made cutters from Somta Tools

"We left Poland disappointed but promised to return to remove Ninio's tusk. I was fortunate enough to make contact with Somta Tools in Pietermaritzburg, KwaZulu Natal who produce all kinds of cutting tools. I described my predicament to them, explaining that I needed equipment that does not exist. To my astonishment they decided to take this challenge on as a project and the development began."

"Dr Steenkamp contacted us after his visit to Poland. He told us that he had been working on an elephant with tusks that were 120 mm in diameter, larger than he had done in the past and with the tools that he had he could not extract the tusk. He wanted to know if we could support their efforts and, not having a large budget he was wanting to know if we could produce tools that he could use to extract a tusk," explained Somta Tools' Technical Manager Ossie Patterson.

"It did not take us long to agree to help. We met in Durban and discussed some ideas of what tool we could make as he was limited to using a hand drill. We decided on a short tool with varying diameters that he could drill the tusk out with progressively. Since tusks are naturally curved he had to be able to follow the curve. Hence the short countersink type tool. We did some preliminary tests on a warthog tusk to decide on the clearances. Once we had the results we manufactured another larger tool, which we sent to Gerhard to test. The results were positive but we needed

to increase the number of flutes to eliminate vibration," continued Patterson.

"In Pretoria another company, HentiQ, was very keen to improve and enlarge my elevators (an instrument used to loosen and 'elevate' the teeth in their sockets prior to extraction). The largest I had were only 50 cm long. I needed to extend them to 70 cm and do a few other modifications. They were also able to design and make some other pieces of equipment for me," continued Dr Steenkamp.

"With all of our new equipment and a multitude of plans we returned to Poznan in early May 2013 determined to relieve Ninio of his problematic tusk. Last minute adjustments were made, such as the purchase of a new drill as both drills they had were too weak to drive my new purpose-made cutters from Somta Tools," said Dr Steenkamp.

"After two hours the tusk fragments I had cut were already starting to move. I was so optimistic! But by three hours into the procedure I was getting a bit dejected. We had said to one another that three hours was what we knew we could safely keep Ninio under anaesthetic for, even though he was under for about 4.5 hours the last time we worked on him, we knew that was far from ideal and things were progressing too slowly. At this point I opted for plan C."

"I have once before extracted a tooth with a winch and this was what I decided was needed in this case. The hand winch was brought in and it was attached to the most



A section of the extracted tusk

movable piece of tusk. After only about three minutes of applying traction to this piece of tusk it moved. Removing a tusk is like removing a pipe - what gives it strength is the intactness of this pipe. As soon as that first piece moved the structure of the tusk was weakened and I was able to manipulate what was left in the alveolus. The last piece I removed (with the winch) was enormous and once everything was out I wasn't sure how I had got it out in the pieces I did! For long periods of time all I had done was focus on the immediate task at hand and silently prayed. There was lots of praying!"

"With the tusk removed all



New purpose-made cutters from Somta Tools that were used in the extraction of the infected tusk

that remained was to empty the alveolus of the pulp. If left, this diseased pulp would continue to be infected and form abnormal ivory. This task took another 20 minutes of blood, sweat and tears. At one stage (while my arm was literally up the alveolus to my armpit) I overheard Adrian say to one of the 23 people in the enclosure I could have gone into obstetrics!"

"After three hours and 45 minutes Ninio was standing. Adrian and I had discussed pain relief for Ninio in depth and it was very pleasing to see that after all that this elephant had gone through the combination used by my very able anaesthetist was working well. He started eating that same day. Within the next two days he was interacting with the other elephants, allowing close inspection of the alveolus and eating as if nothing had happened."

"We left Poznan humbled as the zoo community there overwhelmed us with gratitude for what we had done for Ninio. This time we could actually see the emotion on their faces. Thankfully Ninio is doing just fine, eating, watering, interacting with keepers and behaving totally differently than after the first surgery in November. A big thanks to everyone, including Somta Tools, that made this happen," concluded Dr Steenkamp.

For further details contact Somta Tools Carbide Division on TEL: 033 355 6600 or visit www.somta.co.za



Ninio being prepared for his tusk extraction



Dr Gerhard Steenkamp, renowned veterinary dentist at work