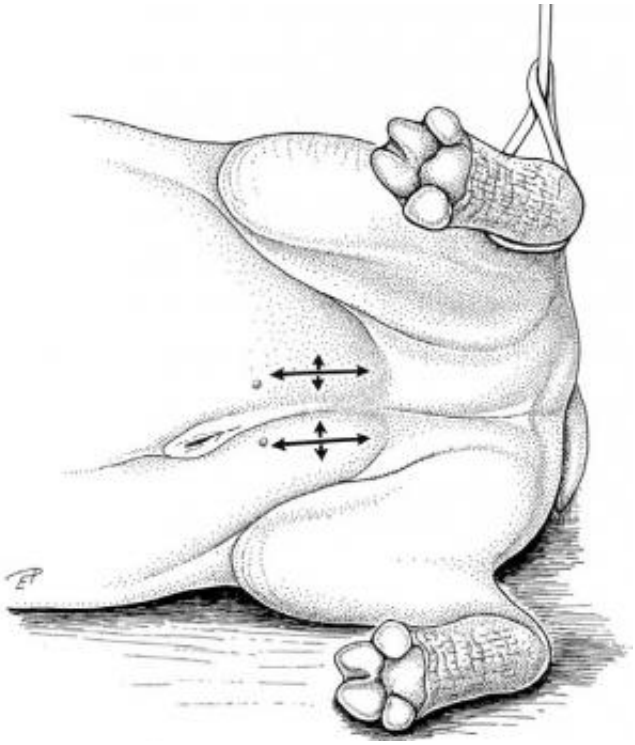
Birth control at the zoo: Vets meet the elusive goal of hippo castration

December 20 2013, by Christian Walzer



The location of the testes varies greatly. A preliminary investigation with ultrasound can accurately determine the location. Credit: Eva Polsterer/Chris Walzer/Elsevier-Theriogenology

One method for controlling zoo animal populations is male castration. For hippopotami, however, this is notoriously difficult, as the pertinent male reproductive anatomy proves singularly elusive. Veterinarians from the Research Institute of Wildlife Ecology of the University of

Veterinary Medicine, Vienna, and colleagues, have demonstrated a successful method for castrating male hippos. Their results are published in the journal *Theriogenology*.

Common hippopotami (Hippopotamus amphibius) are vulnerable to extinction in the wild, but reproduce extremely well under captive breeding conditions. Females can give birth to up to 25 young over their 40 year lifespan – evidently too many for zoos to accommodate. Captive populations of hippopotamus must therefore be controlled. Male castration is useful in this respect because it can simultaneously limit population growth and reduce inter-male aggression. However, documented cases of successful hippo castrations are scant. The procedure is notoriously difficult due to problems with anaesthesia and difficulties in locating the testes.

Physiological adaptations to life in the water

Hippos are well adapted to an aquatic lifestyle (indeed they are distantly related to whales and other cetaceans), and this is reflected in peculiar physical and physiological features. While whales have truly internal testes that remain in the abdomen at all times, hippos "hide" them in the inguinal canal, a passage in the frontal abdominal wall. Thus the testes are externally difficult to locate by sight or touch. A team supporting Chris Walzer from the Research Institute of Wildlife Ecology of the Vetmeduni Vienna as well as colleagues from three zoological institutions and the Leibniz Zoo for Zoo and Wildlife Research (IZW) evaluated surgical castration in ten adult common hippopotami held at various zoos. Walzer and colleagues had previously developed a successful hippo anaesthesia protocol, a challenge in itself, because delivery of sufficient anaesthetic is hampered by the hippo's thick skin and dense subcutaneous tissue. Also, the anaesthetics can cause breathing irregularities and sometimes even death.

Retracting tricks

All animals in the study were anaesthetized with close monitoring of the vital functions. The testes were located using ultrasound. Locating the testes once, however, is not sufficient, as they are sometimes retracted following incision, making intra-surgical ultrasound location necessary. "We used an adapted version of a castration technique commonly used for horses", explains Walzer. "In horses location is easier, because they have an external scrotum, but in hippos you cannot really see anything. We had not seen any previous reports of the use of ultrasound for locating the testicles, but this proved essential, because the location of the testes is highly variable and can change from one moment to the next." All surgery and ligations had to be performed under conditions of extremely low visibility and with difficulty of mobilizing and grasping the elusive testicles.

Resilient heavyweights

Like their whale cousins, hippos have excellent wound healing which is not surprising, given that they often injure one another in fights and would otherwise succumb to bacterial wound infections in an aquatic environment. This is based on the secretion of a red sweat, with antibiotic-like properties. Following surgery, the hippos were simply returned to their respective pools with no ill-effects to wound healing.

More information: Chris Walzer, Thierry Petit, Gabrielle L. Stalder, Igal Horowitz, Joseph Saragusty, Robert Hermes. "Surgical castration of the male common hippopotamus (Hippopotamus amphibius)," *Theriogenology*, Available online 26 October 2013, ISSN 0093-691X, dx.doi.org/10.1016/j.theriogenology.2013.10.018.

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