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# Laparoscopy as an Aid to Animal Care and Conservation in Elephants

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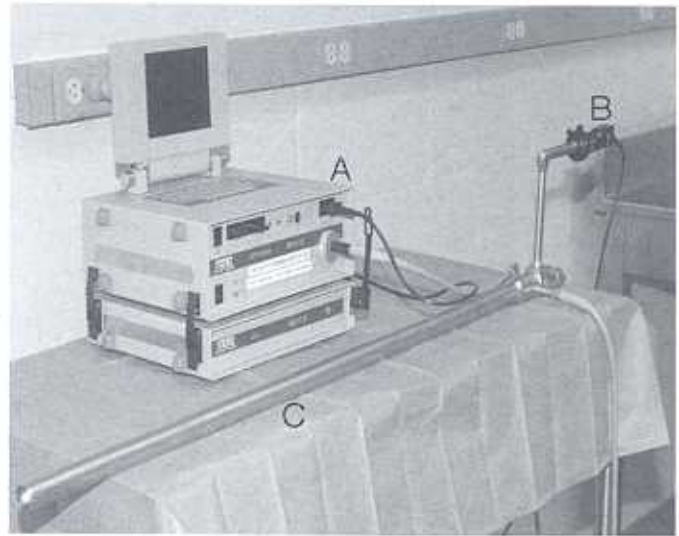
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**Due to the elephant's immense size,** many of the routine methods of disease diagnosis are not possible. Standard diagnostic tools, such as abdominal palpation, radiology and ultrasonography are of little value when trying to diagnose medical problems in elephants. While determining the cause of an elephant's ailment can be challenging, we know that elephants develop a wide variety of medical disorders.

What a major breakthrough it would be if we could actually look inside our patient! What if we could make a small hole that we could peer through and see the internal organs, such as the liver, spleen, kidney, uterus, testicles and ovaries? If we were concerned about an elephant having an infectious disease such as tuberculosis or a virus, we could safely take a small sample for testing. This kind of futuristic medicine has actually arrived for humans and many species of animals. Laparoscopy, the use of small fiber optic cables to look inside an animal, is being safely utilized on humans and animals by the thousands every day. Recent advances in technology and equipment make elephant laparoscopy a realistic medical tool.

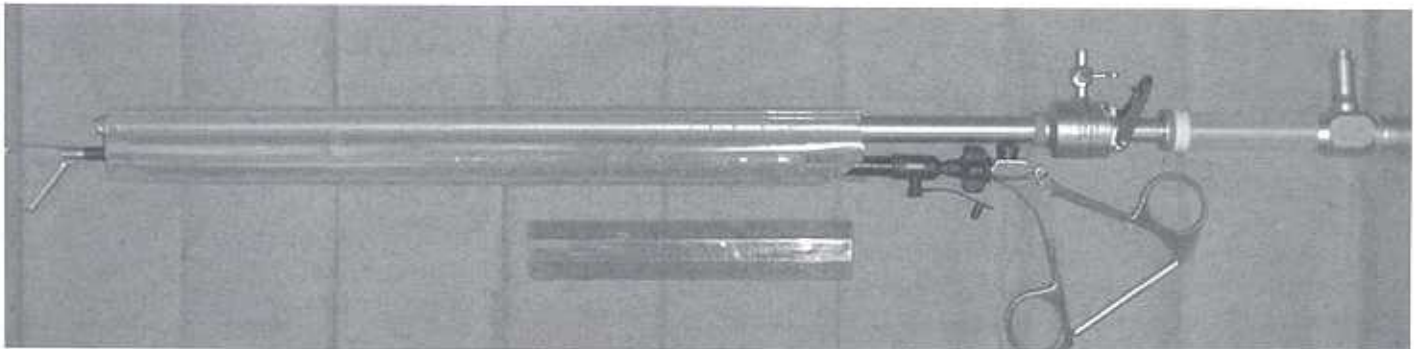
For several years we have been working with elephant facilities and manufacturers to develop laparoscopic techniques and specialized equipment for elephants. We have also been working with institutions that maintain elephants, requesting to be contacted when an animal is being euthanized or has died. Prior to conducting a post-mortem examination, we have been given the opportunity to develop our surgical techniques and equipment as a means of refining our laparoscopic procedure and perfecting our instruments. In this way we assist our partners in the information-gathering process following the death of an elephant, and at the same time become better prepared for future clinical elephant cases.



(Opposite) Laparoscopic surgery being performed on a free ranging African Elephant. This animal is under general anesthesia and is having a surgical sterilization procedure performed.

(Above) Portable elephant laparoscopic equipment including battery operated technopack (A), camera (B), and elephant laparoscope (C). The technopack combines a monitor screen, light source and flash card image recording device (Karl Storz Veterinary Endoscopy America, Inc.)

(Below) Standard equine laparoscopic equipment, which has been modified for use with elephants. The laparoscope is 58 cm long and has been attached to an instrument port using a silicone sleeve. This arrangement allows endoscopic instruments to be placed in the channel and immediately be viewed at the end of the laparoscope.





In addition to working with elephant mortalities in the United States, successful laparoscopic surgery on captive and free ranging elephants has been completed. In one captive animal, a laparoscopic exploratory procedure was conducted on a sedated adult female, which enabled diagnosis of a ruptured uterus and associated peritonitis. In free ranging African elephants, a hand assisted laparoscopic surgical sterilization has been completed on two adult female cows in South Africa.

It is anticipated that elephant laparoscopy will continue to develop, and that it will become a viable medical tool for a variety of uses in the years ahead. ■

(Above) Close up view of the tip of the elephant laparoscope demonstrating the operating instrument channel with cupped biopsy instrument extruding from the tip.

(Opposite) Image of an elephant's spleen through the laparoscope. Note the laparoscopic biopsy forceps in the upper right, which are in the process of obtaining a biopsy sample.

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