Advances in Laparoscopic Techniques and Instrumentation in Standing Equine Surgery

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KEYWORDS

• Laparoscopy • Standing surgery • Equine • Advances • Minimally invasive surgery

KEY POINTS

- Advances in minimally invasive techniques have potential to improve and expand equine standing surgery.
- Advancements in equine laparoscopy rely heavily on advancements in human laparoscopic techniques and equipment.
- It is important that equine veterinarians are familiar with current techniques and equipment in both veterinary and human fields to successfully accomplish the goals of the laparoscopic surgery.

INTRODUCTION

Laparoscopy is a constantly evolving field within equine surgery. It was originally considered a surgical technique only practiced in academic hospitals by surgeons with advanced training. Laparoscopic surgery is now considered, however, an important aspect of general equine surgery and is a required part of surgical residency training. Although veterinary laparoscopy has become increasingly popular throughout the past 20 years, minimally invasive surgery (MIS) lags behind the human medical field. In the authors' opinion, the reason for this discrepancy between human and veterinary laparoscopy is decreased access to appropriate training and instrumentation. This edition of *Veterinary Clinics of North America: Equine Practice* focuses on all aspects of equine standing surgery. It is nearly impossible to cover such an important topic in equine surgery without discussing advances in laparoscopy, because without such advances the authors' think that equine standing surgery lacks potential for forward progress. Although novel standing techniques continue to be published, the addition of minimally invasive laparoscopic techniques adds an entirely

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new dimension and provides an abundance of opportunities to surgeons practicing equine standing surgery. This article focuses on advances in both human and veterinary laparoscopy that have the potential, along with the standing procedures described in the articles elsewhere in this issue, to improve and progress equine standing surgical options.

ADVANCES IN HUMAN AND VETERINARY LAPAROSCOPY

The advancement of minimally invasive laparoscopic surgery in both human and veterinary medicine is generally due to improvement of existing and introduction of novel instrumentation combined with more developed training programs. In many cases there are specialized laparoscopic instruments developed for specific surgical procedures. Based on the authors' prior experiences, the ability to perform a laparoscopic procedure is as dependent on acquiring the appropriate instrument to perform a specific task as it is on surgical technique or talent. Although many procedures can be performed with basic laparoscopic instruments, the use of specialized instruments often improves the outcome of the surgical procedure. Unfortunately, there are only a few manufacturers that have focused on the development of instrumentation specific to the horse. Depending on the requirements of the surgery, it may be important to obtain human instrumentation to achieve a specific task.

Surgical training has also improved the outcome of minimally invasive surgical procedures. It is generally accepted that the best way to reduce complications of minimally invasive surgical procedures is to provide better training.[1] As surgical procedures become more complicated, the training methods have become more sophisticated. Newer trainers have been developed to assist surgeons in attaining the necessary skills to perform the surgeries. The availability of trainers in both number and type in the human field is impressive. Trainers range from basic systems to computerized models. One such model developed for equine MIS allows surgeons to practice equine ovariectomy (**Fig. 1**).

Endoscopic Imaging System

The imaging system consists of an endoscope, a camera, a monitor, a light transmitting cable, and a light source. An insufflator can be used to create a working space within the abdomen. Most commonly, endoscopes or telescopes for equine MIS are 10 mm in diameter and have a working length of between 33 cm and 57 cm. Manufacturers make longer telescopes to facilitate specific needs, such as thorough

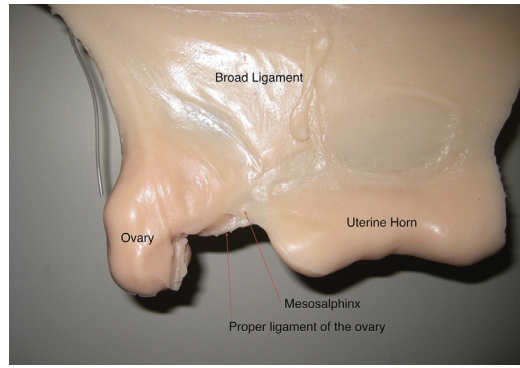

Fig. 1. Equine surgical model used to train and practice laparoscopic ovariectomies.