

Veterinary Laparoscopy in India: A Future Perspective

Ravi Kumar¹, Bhumika², Inderjeet Yadav³

ABSTRACT

Laparoscopic surgery is a highly specialized and rapidly evolving field in veterinary science. Since laparoscopic surgery has an enormously broad scope and a high impact on welfare of animals, competence in this field should urgently be promoted and provided in India. At present, we are lacking a well-designed training course having dedicated facilities with all the instruments to maximize hands on experience for better learning of this highly sophisticated technique. We need to inculcate this technique in the veterinary education from the undergraduate program for effective learning. Initially some foundational program for learning this minimally invasive technique should be planned followed by advanced courses/trainings depending upon the specialization of veterinarians. Nowadays veterinarians across the world have started using this technique but in India, there exists no specific training programs for laparoscopy surgery, so there is urgent need to explore and implement laparoscopic training program for the veterinarians for getting them exposed in the field of laparoscopic surgery. In this article, we will discuss about the current scenario of veterinary laparoscopy, laparoscopy education and training programs availabilities, and the future perspective of implementing veterinary laparoscopy in India.

Keywords: Laparoscopy perspective, Laparoscopy training, Minimally invasive surgery, Veterinary education, Veterinary laparoscopy surgery, Veterinary surgery.

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Laparoscopy is one of the most promising diagnostic and therapeutic aids among the several current surgical technologies used in veterinary medicine. Laparoscopic surgery is the third major advancement in the field of surgery after anesthesia and asepsis. Laparoscopic surgery, a minimally invasive type of procedure, is done by inserting the laparoscope into the patient through a tiny (less than 1 inch long) incision, and it was first performed on a dog in 1901. Since then, this technique has been explored mainly for the benefits of human beings only, and there were either none or very few veterinarians who have started the use of laparoscopic surgeries all over the globe. Laparoscopy started with animals but has not been used much in the field of veterinary science. Nowadays veterinarians across the world have started using this technique, but in India, we still need to train more and more veterinarians for laparoscopic surgery. There is scarcity of training centers having adequate facilities, i.e., dry laboratory training, cadaver training, simulator, and finally hands on live animals. So, there is a dire need of intensive course on laparoscopy in India, having focus on providing essential skills and procedures required for safe laparoscopy surgery.

Laparoscopy has its origins in the discipline of endoscopy, and much of its history may be traced back to the advancement of endoscopic methods. The concept and the framework for laparoscopic surgery was initially discovered over a century ago. The technique's introduction into the field of general surgery, on the other hand, is a comparatively new development. Several attempts were made to construct endoscope-like instruments in mid-1800s, but the first effective open-tube endoscope was developed in 1853 by Desormeaux, which was used to examine the urethra and the bladder. Many physicians later refined the original endoscopic models, notably Kussmaul and Nitze, and began using their new instruments in their medical practice.¹

However, major breakthrough in this field was the work done by Kelling² on live dogs by attempting laparoscopy or endoscopically examining the peritoneal cavity in 1901 and called this examining procedure "celioscopy." It started from diagnostic biopsies under

^{1,3}National Brain Research Centre, Gurugram, Haryana, India

²Department of Veterinary and Animal Husbandry Extension Education, Lala Lajpat Rai University of Veterinary and Animal Sciences, Hisar, Haryana, India

Corresponding Author: Inderjeet Yadav, National Brain Research Centre, Gurugram, Haryana, India, e-mail: inderjeet.nbrcc@gmail.com

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direct examination to become a vital part of gynecological practice. Technology continued to evolve, but the most significant breakthrough was the introduction of a video computer chip in 1986. This technological advancement allowed the operating surgeon to project a magnified picture of the operative field onto a monitor while also freeing both of his hands, making it easier to undertake complex laparoscopic surgeries thus facilitating the integration of laparoscopy into field surgery. When we talk about humans, the first laparoscopic cholecystectomy on a human patient was performed in 1987 by the French physician Mouret, while the first laparoscopic cholecystectomy in India was performed in 1990 at JJ Hospital in Mumbai.³ All the aforementioned research and development in case of laparoscopy and endoscopy have been possible only due to animal studies.

Nowadays, veterinarians across the world have started using this technique, but in India, there exists no specific training program. Most of the interested veterinarians from India are going abroad for training, so there is a dire need to promote veterinarians for adopting and using laparoscopy in their routine practice. Laparoscopic surgery is growing at fast rate in veterinary surgery because of the increasing awareness and interest of veterinarians

in India due to reported advantages such as faster recovery, lower risks, small incision better visibility, and fewer complications. Laparoscopic surgery may provide a number of benefits but loss of depth perception, loss of touch, reduced degree of mobility for instruments, and the adoption of positions that are not usually ergonomic for long periods of time are some of the downsides of laparoscopic surgery for the surgeon. Thus, it becomes necessary for a surgeon to get enough hands-on experience in dry lab environment using simulators before moving to patients.

Laparoscopy can lead to a major revolution in veterinary surgery as surgery done using laparoscopy has faster wound healing due to small size of incision, thus providing better results in species which are generally difficult to keep immobile. Government of Himachal Pradesh has started a project of sterilization in monkeys using laparoscopy to control the population of monkeys who are responsible for great losses in agricultural crops, because it produces a relatively small surgical wound that requires very little postoperative care or regular dressings.⁴ Few veterinarians in metro cities have also started to use this technique, but still they lack good expertise and are also devoid of potential patients.

Laparoscopy is divided into two parts mainly:

- Surgical laparoscopy: A number of surgical procedures are being done presently in field of veterinary surgery such as ovariectomy, gastropexy, laparoscopically assisted enterotomy, cystotomy, and urethrocystoscopy.
- Diagnostic laparoscopy: Laparoscopy was also used for visualizing, examining, and collecting biopsies from different organs from different species of animals. Pregnancy diagnosis has also been done successfully using laparoscopy, but with the introduction of sonography, its use in pregnancy diagnosis has become obsolete.⁵ Laparoscopy has also been used for insemination and embryo transfer of animals.

The biggest advantage of laparoscopic surgery is that animals experience less pain and discomfort, primarily because of the smaller incisions, which results in less damage to both the affected area and the surrounding tissues. Additionally, it results in less blood loss, reduced risk of infections, reduced anesthesia time, and significantly shorten their recovery time. Veterinarians can not only use this revolutionary new tool for various surgical procedures but also as an aid to help disease diagnosis. Laparoscopic surgery is a growing area of clinical expertise that has benefited from many scientific breakthroughs in recent years, resulting in better outcomes and fewer surgery-related complications, eventually benefiting our voiceless animals.

While the basic scope has remained relatively unchanged over time, the equipment quality has certainly improved. The training must also improve as laparoscopic instrumentation and methods improve. Overall, surgeons are more concerned with equipment that will facilitate and simplify surgery than with their own skill development. It is worth noting that the majority of these inherent laparoscopic surgical difficulties are linked to the lack of expertise of surgeon and his team, with a higher incidence occurring during the early stages of the learning curve.⁶

While laparoscopy has been available in human medicine for quite some time now, it is still not as prevalent in veterinary surgery.

Veterinary laparoscopy certainly has advanced, but we hope to see it expand even further. Most surgeries that are being done in veterinary medicine can be done laparoscopically. Some of the more commonly performed procedures include spay, cryptorchid neuter, abdominal exploratory, biopsy of internal organs, bladder stone removal, gastropexy to prevent gastric dilation volvulus. Laparoscopic surgical techniques allow veterinarians to perform procedures with less risk and discomfort, which is a win for all involved.

Laparoscopic science has an enormously broad scope and a high impact on welfare of animals; competence in this field should urgently be promoted and provided in India. Efforts should be made to train the veterinarians in the field of laparoscopy to improve their understanding and learn surgical skills in laparoscopy, which will be very helpful for the veterinarians in acquiring not only techniques and responsibility toward animals but also help them to develop an ethical attitude toward animals by improving animal welfare.

We would like to see more veterinarians shifting from conventional surgery to laparoscopic surgery. The capacity for a veterinary hospital to offer laparoscopic surgery necessitates a large financial investment, both in terms of the time it takes for a veterinarian to obtain the advanced training required to operate laparoscopic equipment and in terms of the cost of equipment itself. Increased training availability is a good start, but equipment cost reductions would be even better. We hope that future perspective of implementing laparoscopy surgery can be achieved by providing cost-effective newly developed intensive hands-on training program on veterinary laparoscopic surgery in the centers having the state-of-the-art facilities and infrastructure where participants can launch their journey for keyhole surgery using laparoscopy. This type of centers will help participants to develop the psychomotor skill for laparoscopic surgery by a distributed practice training program consisting of theory, dry lab, cadaver training, simulator training, and finally wet lab practice. The overall goal will be to train veterinarians for changing their approach and practice so that they can implement this technique with greater insight and confidence for the benefit of voiceless animals in Indian context.

REFERENCES

1. Spaner SJ, Warnock GL. A brief history of endoscopy, laparoscopy, and laparoscopic surgery. *J Laparoendosc Adv Surg Tech-Part A* 1997;7(6):369–373. DOI: 10.1089/lap.1997.7.369.
2. Kelling G. U"ber Oesophagoskopie, Gastroskopie und Colioskopie. *Munch Med Wochenschr* 1901;49:21–24. Available from: https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q=+Kelling+G.+U%E2%80%9Dber+Oesophagoskopie%2C+Gastroskopie+und+Colioskopie.++Munch+Med+Wochenschr+1901%3B49%3A21%E2%80%9324.&btnG=.
3. Udwardia TE. Laparoscopy in India – a personal perspective. *J Minim Access Surg* 2005;1(2):51. DOI: 10.4103/0972-9941.16526.
4. Monkey Sterilization Programme. Himachal Pradesh Forest Department. Available from: <https://hpforest.nic.in/pages/display/NjU0c2RhIHZlZGZlbnQ==-monkey-sterilization-programme> [Accessed August 9, 2021].
5. Goel AK, Agrawal KP. A review of pregnancy diagnosis techniques in sheep and goats. *Small Rumin Res* 1992;9:255–264. DOI: 10.1016/0921-4488(92)90155-W.
6. Lekawa M, Shapiro SJ, Gordon LA, et al. The laparoscopic learning curve. *Surg Laparosc Endosc* 1995;5(6):455–458. PMID: 8611992.