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Laparoscopic Ovariohysterectomy in Dogs

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Abstract

The purpose of this study was to evaluate the surgical technique of Laparoscopic ovariohysterectomy (LOVH) in dogs. LOVH was evaluated in eight healthy intact bitches. The surgical procedure was applied under xylazine-ketamine anesthesia; insufflation was performed by CO_2 at the pressure of 12 mm Hg. Monopolar electrocautery and titanium clips were used for haemostasis. LOVH was performed successfully in all bitches. No surgical complications were observed during surgery and one month after surgery. The mean surgical time (incision to suture) was 35 minutes (ranged 45-25). In conclusion, Laparoscopic ovariohysterectomy in a dog could be an alternative procedure to conventional ovariohystrectomy.

Keywords: Laparoscopy, Ovariohystrectomy, Pneumioperitoneuim, Monopolar electrocautery

Introduction

Ovariohysterectomy (OVH) is the most common surgical procedures performed in veterinary practice, (Jason, 2009) to prevent or decrease the risk of the development of mammary cancer and pyometra and the inconvenience of vaginal discharge and male attraction during estrus. OVH is the method of choice for sterilization in the bitch (Jason, 2009; David, 2010). Traditional OVH involves surgical removal of the ovaries and uterus through a median celiotomy. Three points of attachment of the uterus and ovaries are double ligated and transected, whereas, the abdomen is typically closed in 3 layers (Djemil et al., 2010). Immediate or short–term surgical complications include hemorrhage from uterine and ovarian vessels, anesthesia accidents, tissue reaction to suture material may lead to granulomas, wound infection, or delayed healing (Pearson, 1974; Muir et al., 1991; Burrow and Batchelor, 2005). Other complications include recurrent estrous, stump pyometra and delayed hemorrhage may also appear (Güngör et al., 2004; Pollari, and Bonnett 1996; Romagnoli, 2008). Therefore, alternative surgical techniques are always needed to avoid these complication or at least some of them. One of these techniques is the Laparoscopic sterilization of bitch which was first reported in 1985 (Freeman, and MacFarlane 2007). Laparoscopic ovariohysterectomy (LOVH) offers a minimal invasive surgical option for clients who resist traditional OVH for their pets. Compared with OVH, LOVH has potential advantages, such as decrease pain, less or no risk of dehiscence and hemorrhage, in addition to the less risk of post-operative wound complications. Other advantages may include decreased postoperative pain, and shortened hospitalization and convalescence. The aim of this study was to evaluate the surgical technique of LOVH in bitches.

Materials and Methods

LOVH was performed in 8 intact stray female dogs. The bitches' age and weight ranged from 6 to 12 months and 12 to 28 kg (19.8 ± 6.7), respectively. The dogs were treated against internal and external parasites.

General anesthesia was given to all dogs, by intramuscular injection of ketamine HCl (Tekam 50, Hikma, Amman, Jordan) at the rate of 15 mg/kg body weight, and xylazine (Bntex Holland B.V.) at the rate of 5mg/kg. Both drugs were given as a single bolus injection, in the femoral muscle. When necessary, ketamine alone was repeated. All bitches were held off feed for 24 hours and off water for 12 hours before surgery to decrease the amount of intestinal filling. One cm skin incision was made on the ventral midline

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through the umbilicus. A small stab incision was then made through the *linea alba*. A veress needle was inserted into abdominal cavity. Care was taken to ensure that the cannula was in the abdominal cavity to prevent extra-abdominal insulation. Insufflation tubing was attached to the veress needle, and the abdomen was insufflated to 12 mm Hg. Once proper intra-abdominal pressure was achieved, the veress needle was removed, and a 10 mm cannula (pyramidal trochar and sheath) was inserted into umbilical incision with carefully controlled pressure and twisting motion to avoided damage of abdominal viscera. All dogs were placed in the trendelenburg position that was tilted with the head down to move the abdominal viscera cranially. Exploration of the abdomen revealed the uterus and ovaries. The other 2 ports were inserted under vision. The approximate locations of these ports were 5 cm caudal to the umbilicus and about 4 cm lateral on each side of the midline. A ten mm port was placed on the right side while a 5 mm port was placed on the left side. Accurate placement was accomplished under vision. Cannulae were inserted into each of these portals using a technique similar to that used for the first cannula while observing with a laparoscope. Babcock forceps were inserted into the left ports to hold the uterus (Figure 1).

Once the right ovary was identified, it was grasped and clipped using 2 titanium (metal) clips (one proximal and one distal), then it was cut with by a scissors. Care was taken to avoid injuries to other abdominal organs such as the small intestine. The same procedure was performed on the left ovary (Figure 2). When the uterus was identified, the cervix was retracted upward with Babcock forceps and clipped using 2 titanium (metal) clips (one proximal and one distal), then it was cut by scissors, the uterus was withheld by Babcok forceps to expose the broad ligament for the transaction. The broad ligament was transected close to the uterine horn but not close enough to cut the uterine artery, which runs parallel to the uterus in the broad ligament, continued cutting was performed with a monopolar electrocautery and a sessior till reaching the ovary. Once the blunt dissection of broad ligament was finished, the uterus with the ovaries then removed using a tissue extractor and enlarging the instrument portal. The pneumoperitoneuim was reduced and skin incision was closed using silk No.1 and one stitch horizontal matters suture.

Results

The mean surgical time (incision to suture) ranged between 25-45 min. No bitch died during or after surgery as they were observed for one month. No bitch developed any sever complication except, two bitch suffer from slight anorexia one day after operation with mild dullness. All dogs returned to normal activity 2-3

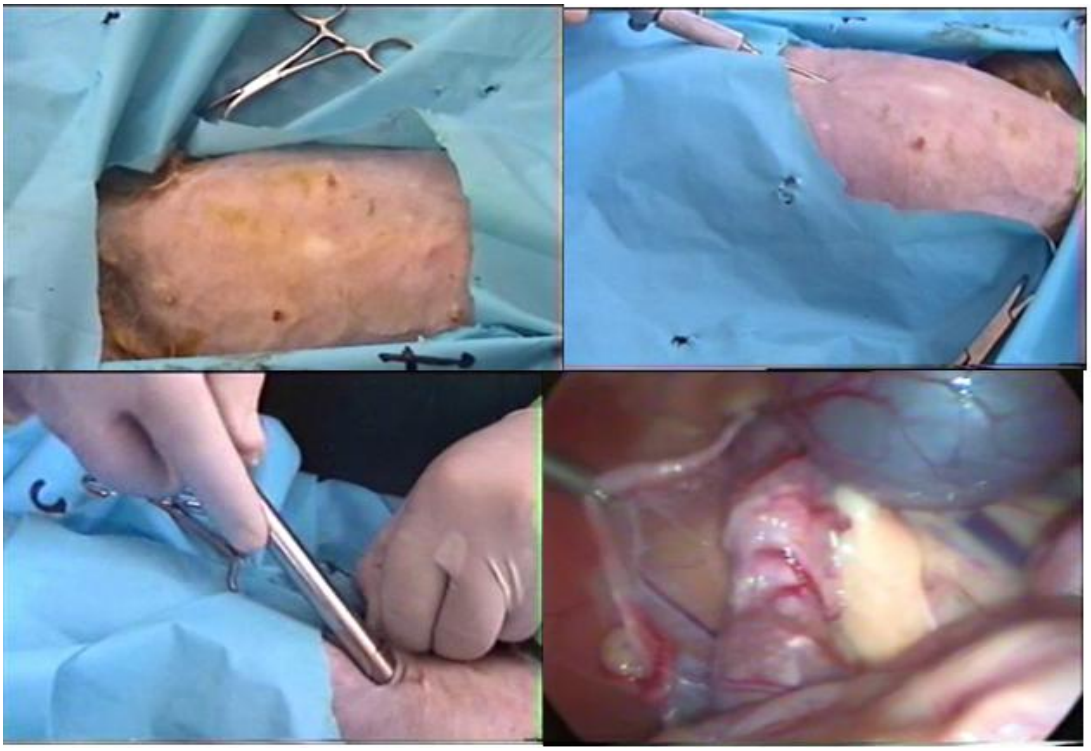

Fig. 1: Pneumoperitoneuim, introduction of cannula and exploration

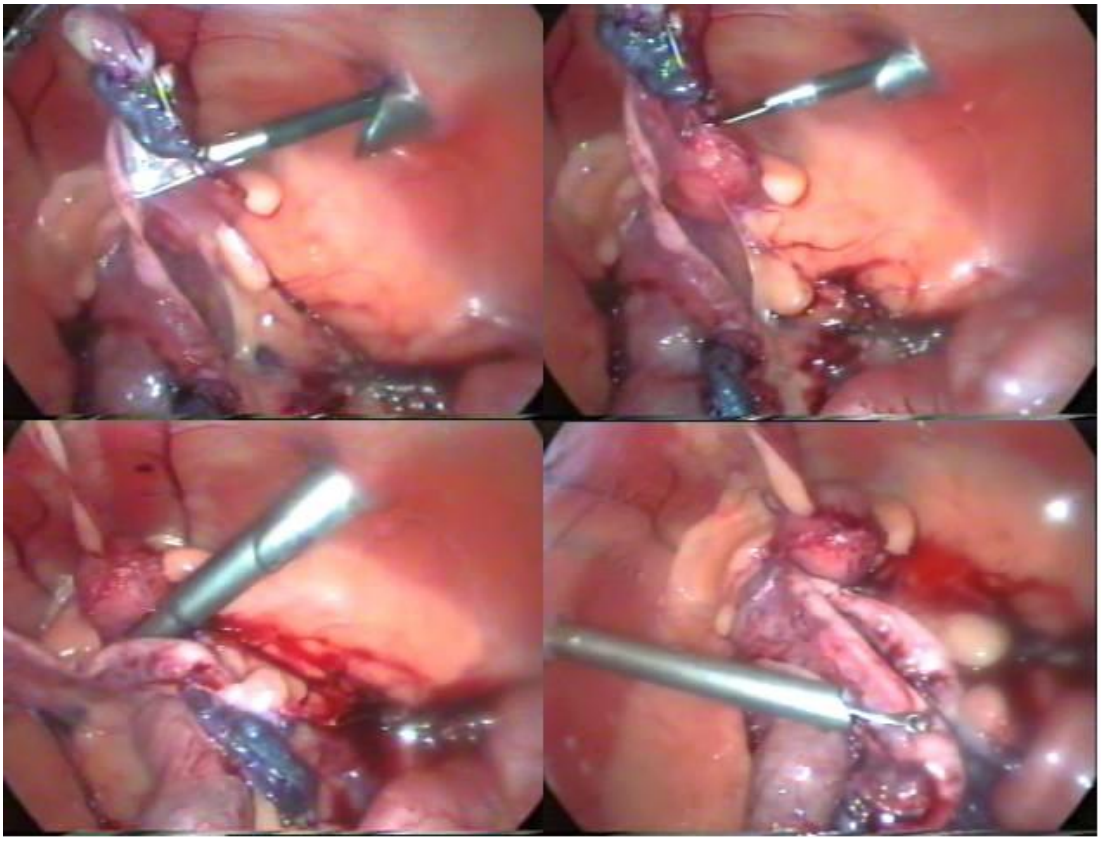

Fig. 2: Laparoscopic stapling with double titanium clips

days after the surgery. Seven days later after removed of the of the skin suture no any complication was found.

Discussion

All operations were done under the effect of ketamine–xylazine, which was successfully done in the dogs. The combination provided a good analgesia as well as a good muscle relaxation. This agrees with several studies using this mixture for general anesthesia in dogs anesthetic drug (Green et al., 1981; Atalan et al., 2002; Mir et al., 2011). The pneumoperitoneum with CO_2 was successfully done in all animals without any complications.

LOVH was completed relatively quickly. In contrast, Ellen et al. (2004) rejected the laparoscopic technique because of its prolonged duration when compared to the open technique. The current results agreed with those Brugmans et al. (1996) who regarded surgical times to be suitable.

Variety of methods have been reported for achieving hemostasis during laparoscopic surgery as monopolar electrocautery, bipolar electrocautery, titanium clips, harmonic scalpel and ligation (Böhm et al., 1994; Schuster and Wolf, 2001; Hancock et al., 2005; Al-Badrany, 2007; Aziz et al., 2007; Pukacz et al., 2009). In the present study, hemostasis of the uterus, cervix and ovarian pedicle was performed by double titanium clips and this agreed with Delling (2005). Hemostasis of the vessels within the mesometium were achieved using monopolar electrocautery and this agreed with Al-Badrany (2009), whereas, Ausstin et al. (2003) used harmonic scalpel. Results of this study revealed that titanium clips and monopolar electrocautery were satisfactory for haemostasis of laparoscopic ovariohysterectomy in the bitch. In conclusion, Laparoscopic ovariohysterectomy in the canine could be an alternative procedure to conventional ovariohystrectomy.

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