Ovariectomy in Queens: Two Portals Laparoscopy vs Conventional Approach

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Abstract

Objective- The purpose of this study was to compare two portal laparoscopy and conventional approach for ovariectomy in queen.

Design- Retrospective study.

Animals- Adult healthy queens (n=24).

Procedures- Queens referred to the small animal hospital, Faculty of Veterinary Medicine, University of Tehran for neutering were randomly assigned for two-portal laparoscopy (n=12) and midline open ovariectomy (conventional approach; n=12). General anesthesia was performed using the combination of ketamin (5.5 mg/kg; i.v.; Ketalar®, Alfasan) and diazepam (0.27 mg/kg; Valium®, Caspian, i.v.) followed by isoflurane in oxygen entubation.

Results- Surgical time, length of surgical incisions and recovery time were significantly lower in laparoscopic (11.9±0.95 min, 15.9±0.18 mm, 40.4±4.29 min) compared to conventional ovariectomy (20.7±0.95 min, 27.4±1.27 mm, 58.5±5.58 min; P<0.05).

Conclusion and Clinical Relevance- In conclusion, two portals laparoscopy is a simple, safe and suitable approach for elective neutering in queen.

Key Words- Queen, Ovariectomy, Laparoscopy

Introduction

Surgical sterilization is the most common elective procedure in small animal practice[1]. Since the first ovariohysterectomy in 1930, the technique only has little been changed[2]. In queen, ovariohysterectomy is traditionally performed through a small ventral midline incision[2]. Since the first laparoscopic sterilization of bitch in 1985[3], several studies were examined the superiority of laparoscopic sterilization, particularity due to less morbidity compared to open surgery[4,5,6,7].

Besides, smaller incision required for laparoscopic ovariohysterectomy improved cosmesis, with less complication and decreased postoperative pain [8,9,10].

The rational of performing ovariohysterectomy rather than ovariectomy is debatable. There are no distinct advantages of removing the healthy uterus with ovaries[11,12]. Therefore, from 1981, Utrecht University began performing bilateral ovariectomy in place of traditional ovariohysterectomy for neutering bitches[13]. The purpose of this study was to investigate the potential advantages of two portal laparoscopic ovariectomy and its intra and post operative complications compared with the conventional open surgery in queen.

Materials and methods

Surgical preparation

Short domesticated hair cats (3.1-4.4 kg body weight; 6-40 months) were assigned to ovariectomy via laparoscopy (n=12) or open surgery (n=12), upon the permission of cat owners. General anesthesia was performed using the combination of ketamin (5.5 mg/kg; i.v.; Ketalar®, Alfasan) and diazepam (0.27 mg/kg; Valium®, Caspian, i.v.) followed by isoflurane

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in oxygen entubation. A single prophylactic dose of cefazolin (20 mg/kg; i.v.; Ancef®; Loghman) was injected at the time of inducing anesthesia. Aseptic preparation of the abdomen in both groups was performed in dorsal recumbency. In order to increase the abdominal maneuver and to decrease inadvertent puncture with the Veress needle, the urinary bladder was emptied manually prior to surgery. All surgeries were performed by the same surgeon.

Open ovariectomy

A midline skin incision was started from the umbilicus and extended 3-4 cm caudally. Following identification of the more accessible ovary, two simple ligature using 3-0 polygalactin 910 were placed around the ovarian artery and vein. The mesovarium and proper ligament were transected and the ovary was removed. The ovarian artery and vein are then ligated and severed at the proper ligament. In this way, cranial tip of the uterine horn ligated and the ovary removed. The stump was checked for hemorrhage and released to the abdomen. Finally the incision was closed in a routine three- layer manner.

Laparoscopic ovariectomy

The ventral abdomen and linea alba was pulled upward by the surgeon's hand to prevent injury to other organs during insertion of the Veress needle and trocars. Then the Veress needle was inserted from the midway between pubis and umbilicus at the anticipated location of the second portal. Then pnuemoperitoneum was established using carbon dioxide. After an adequate insufflation of the abdomen, the pressure was adjusted to 10-12 mmHg, and the first 5 mm portal was placed at the umbilicus through 5 mm skin incision. Then the gas disconnected from the Veress needle and re-connected to the portal and the 5 mm 30 degree camera (Wolf, Germany) inserted. The second portal was placed at the same location of the Veress needle under direct visualization (Fig 1). The cat tilted 30 degree to the right to perform the left ovariectomy. The bipolar 5 mm forceps was inserted from the second portal and grasped ovarian pedicle with bipolar coagulate forceps. The suspensory ligament, ovarian pedicle and proper ligament of ovary coagulated and then cut by the scissor. The stump checked for any sign of hemorrhage. There was no need to extend the incision for removal of the ovary because of its small size. Thus each ovary removed immediately after resection. Pneumoperitoneum stablished at 12mmHg intraabdominal pressure automatically with insofilator. Finally the ovary removed from the caudal portal. Then the animal tilted to left and the right ovariectomy performed in a similar way. Following portals removal, rectus sheath and the skin were sutured with single cruciate suture.

Figure 1. Placement of two laparoscopic portals in linea alba from umbilicus to pubis region using carbon dioxide for pneumoperitoneum.

Measured parameters

Surgical and recovery times and the length of surgical incisions were recorded. One week after surgery, the sutures were removed and the wounds were checked for any complication like inflammation, infection or hernia formation. Three and twelve months after surgery, any wound or complications of spayed queens were reported by owners.

Statistical analysis

Single point measurements, at any particular times, were analyzed using student t-test considering the assumptions for parametric tests and suitable data transformation. If the assumptions were violated, Kruskal-Wallis test was implemented using SAS[14]. Data were presented as Mean±SEM.

Results

Duration of surgical time was significantly lower in laparoscopic (11.9±0.93 min) compared to open surgery group (20±0.95 min; P<0.0001; Table 1). Total incision length was longer in open surgery (27.4±1.27 cm) compared to laparoscopic group (15.9±0.18 cm; P<0.0001; Table 1). No complications occurred during laparoscopic surgeries; while, there was no need to convert the procedure to open surgery. One week after operation, there was no wound complications. Only hernia formation at the umbilical portal occurred in one queen in laparoscopic group. Owners were satisfied with laparoscopic procedure and no behavioral or pathologic complications were reported by owners.

Discussion

The purpose of this study was to compare the simplicity, feasibility and post operative complications following laparoscopic and conventional (open) ovariectomy in

queen. Performing laparoscopy could improve visualization resulting in less intra-abdominal trauma and create better cosmoses [15]. In the present study, mean surgical time was significantly lower in laparoscopic group. There is no data available on surgical time for open surgery in queen. Surgical times in previous reports were 47 minutes [13], 19 minutes [16] and 30 minutes [17] for ovariectomy in dogs. During the open surgery, identification of ovaries was more time consuming compared to laparoscopy. This in turn, increases the time required to accomplish the operation in open surgery. Besides, due to improved visualization of the ovaries during laparoscopy, the incidence of ovarian remnant syndrome could be reduced[18]. Successful removal of the entire ovarian tissue is a critical issue in ovariectomy. Since the uterus will stay intact, presence of functional ovarian tissue may not only lead to reproductive behavior, but also could predispose female to pyometra[1, 19]. Use of bipolar vessel sealer during laparoscopy was the other reason to reduce the surgical time compared to conventional double ligature of the ovarian pedicle. Application of bipolar vessel sealer was also encouraged in previous reports during laparoscopic ovariectomy in bitch and queen[13, 15]. After one year, there was no long term complication such as pyometra. In conclusion, laparoscopic ovariectomy is superior to open technique due to less surgical time and complications and better cosmoses.

Acknowledgments

Table 1. Operative parameters (Mean ± SEM) following conventional and laparoscopic ovariectomy in queen.

Group	N	Surgical time (min)	Recovery time (min)	Incision length (mm)
Conventional	12	20.7±0.95[a]	58.5±5.58[a]	27.4±1.27[a]
Laparoscopy	12	11.9±0.95[b]	40.4±4.29[b]	15.9±0.18[b]

[ab] Values within columns with different superscripts differ (P<0.05).

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چکیده

مقایسه ارجحیت روش عقیم سازی بر داشت تخمدان با لاپاروسکوپی دو پورتی و جراحی باز در گربه

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هدف– مقایسه ارجحیت هموستاز تک قطبی و دو قطبی در جراحی برداشت رحم و تخمدان به روش لاپاروسکوپی در سگ

طرح– مطالعه تجربی انتخابی

حیوانات– بیست و چهار گربه ماده بالغ

روش کار– بیست و چهار گربه ارجاعی به بیمارستان دامهای کوچک دانشکده دامپزشکی برای عقیم سازی با موافقت صاحبان گربه هـا در دو گروه مساوی برای جراحی به روش لاپاروسکوپی دو پورتی(گربه۱۲) و جراحی سنتی باز (گربه ۱۲) تحت بیهوشی عمومی بـا مخلـوط کتـامین (۵/۵ میلی گرم در هر کیلو گرم وزن بدن داخل وریدی) و دیازپام (۰/۲۷ میلی گرم در هر کیلوگرم وزن بدن داخل وریدی) در حالت خوابیده به پشت و زاویه ۳۰ درجه نسبت به خط افق به طوریکه سر در سطح پایین تری نسبت بـه بـدن قـرار داشـت و بـه ایزوفلـوران و اکسـیژن متصل گردیدنآماده شدند. در گروه یک تروکار ۵ میلیمتری برای عبور دوربین در ناحیه ناف کـار گذاشـته شـد. سـپس پـورت ۵ میلیمتری دوم در ۵ سـانتیمتری خلفـی نـاف کـار گذاشـته شـد. پـس از شناسـایی تخمـدانها، لیگامنـت معلقه و پایـه عروقـی تخمـدانها، در گـروه یـک پـس از الکتروکواگولاسیون قطع شدند و در گروه دوم همانند گروه یک کلیه گربه ها بر روی میز جراحی بـدون زاویـه خوابانیـده و پـس از شناسـائی تخمدانها به روش روتین لیگاتور با نخ ویکریل دو صفر کار گذاشته و تخمدانها قطع و خارج گردیدند. در کلیه گربه هـای هـر دو گـروه پـس از اطمینان از هموستاز کامل، به روش روتین لایه های شکم بخیه گردید. کلیه جراحی ها با موفقیت انجام شد و هیچگونه عوارضی حین جراحی و پس از آن در گربه ها دیده نشد.

نتایج– در این مطالعه فاکتورهای مختلفی شامل مدت زمان جراحی، میزان برش خط جراحی و مدت زمان ریکاوری گربه ها بترتیـب در گـروه یک (۱۱/۹±۰/۹۵ دقیقه ،۱۸//۰±۱۵/۹ میلی متر،۴/۲۹±۴۰/۴ دقیقـه) در مقایسـه بـا روش روتـین سـنتی جراحـی بـاز(۲۰/۷±۰/۹۵دقیقـه ،۱/۲۷±۲۷/۴ میلی متر،۵/۵۸±۵۸/۵ دقیقه) ارزیابی گردید.

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کلید واژه– گربه، اواریوکتومی، لاپاروسکوپی