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SURGICAL REPORT OF A NEPHRECTOMY IN A CANINE PATIENT

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Abstract

Surgical intervention in animal patients affected by different pathologies is indicated so that they will have a better quality of life. Surgical procedures are now possible due to several advances in intervention technologies that are developed and updated for veterinary surgeons. In many cases, promptness in surgical intervention actions is the line of survival that tutors have available to save the lives of their PETs. Nephrectomy, which is the surgical removal of a kidney, may often be indicated as the only way to save the life of an animal patient. Therefore, knowledge about this surgery is very important. In this report, this surgery and those effects resulting from this intervention were addressed. We conclude by establishing the importance that veterinary medical professionals have in maintaining animal welfare and the importance of always being updated and centered on improving their surgical skills. Our results demonstrated that the applied nephrectomy surgery was performed according to expectations.

Keywords: Kidney removal. Surgery. Veterinarian.

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1 Introduction

Presently we observe a significant number of domestic animals inserted into society. Most belong to families with quite diverse characteristics: couples without children attribute parental sentiments to them; lonely people may devote day-to-day companionship to them; and families with children may adopt animals to entertain their offspring. There remains a percentage of people, the minority, that have animals for protection and security of their property. Whatever the role of the animal, either as a family member or acquired for protection of the owner, animal holders require that veterinarians become skilled for the well-being of their pets. Such abilities include health care and maximizing life quality (COSTA, 2014; FURTADO; SILVA; TELES, 2018; FURTADO, 2020; FURTADO et al., 2020).

Veterinary routines reveal growing care with animals, and increasing concern of owners, ever more dedicated to the quality of treatment afforded to their pets. The demand for specialized service thus is increasing in clinics and veterinary hospitals, permitting animal patients to receive adequate diagnoses and treatment. This pleases owners and ensures higher success in the recovery of the animal and extending its life expectancy (FURTADO; SILVA; TELES, 2018).

Within this reality, nephrectomy is one of the many interventions requiring shrewdness and knowledge on the part of the veterinary surgeon. It becomes important that the extraction of one kidney does not impair the quality of life of the animal patient (CAMPIONE; MANTOVANI, 1998).

The procedure of nephrectomy varies depending on how the surgery is done and how much of the kidney is removed (CURY et al., 2008; DAVIS et al., 2013; MALDONADO GOMES et al., 2013; FERRO et al., 2018). Such variations include:

a. Laparoscopic surgery. In this minimally invasive procedure, the surgeon makes a few small incisions on the abdomen in order to insert devices similar to small sticks equipped with video cameras and small surgical instruments. The surgeon must make a larger incision when the entire kidney must be removed.

b. Open surgery. In an open nephrectomy, the urological surgeon makes an incision along or sideways to the abdomen. This procedure permits interventions that are not entirely safe under less invasive techniques.

c. Radical nephrectomy. Under this procedure, the surgeon removes the entire kidney, the adipose tissues that surround the kidney, and a portion of the tube (ureter) that connects the kidney to the bladder. The surgeon may remove the adrenal gland located above the kidney if a tumor is close to or surrounds the adrenal gland. In some cases, the lymph nodes and other tissues are also removed.

d. Partial nephrectomy. Also known as a nephron saver surgery. The surgeon removes the cancerous tumor and affects the tissue but retains as much of the healthy renal tissue as possible.

e. Nephrectomy. The surgical removal of the kidney and its associated ureter. This surgical procedure is used to treat irreversible conditions of the kidney and of the ureter. The conditions treated under nephrectomy include trauma of the kidney and/or ureter, cancer, ureter anomalies, and persistent infections. Depending on the case, nephrectomy may represent a primary intervention, in cases such as kidney cancer not involving metastases, or a measure to prevent more advanced illnesses, such as a persistent renal infection.

Our aim is to produce a pedagogical report/tutorial for students in veterinary medicine, using nephrectomy surgery as an example of a common practice used in dogs.

2 Material and Methods

Methodology

The report is based on procedures supervised by duly qualified veterinarians, in order to ensure the success in the intervention and the best outcome for the canine patient. Procedures for pedagogical report was based on Gil (2008).

This study was authorized by ASSVET Ethical Committee, following the ethical standards according to Law 11.794/2008 of the Ministry of Health of the Federative Republic of Brazil (BRASIL, 2008).

Study Area

This report is based on a nephrectomy surgery performed at ASSVET (Veterinary Center Casa dos Criadores/"Centro Veterinário Casa dos Criadores"), located in the municipality of João Pessoa (State of Paraíba, Brazil), Road Barão de Mamanguape, 150, Torre District. ASSVET is a clinic open 24h/7, providing specialties such as clinical attendance, urgencies, emergencies, surgeries, among other.

3 Results and Discussion

Tutorial of nephrectomy surgery

In this surgery the right kidney was totally removed. The animal patient was forwarded to the surgical center after presenting alterations in trial (CAMPIONE; MANTOVANI, 1998; PICCOLI at al., 2017).

Ventilation was provided for the patient. The variables monitored were: electrocardiogram, arterial pressure by oscillometry, oxygen saturation, and capnography. The latter was verified every 5 min by a multiparametric monitor.

The surgical incision extended along the median line of the abdomen, from the xiphoid process to the pubic region. Concomitantly to the removal of cavity liquid, several organs were inspected, searching for possible causes of bleeding.

During renal inspection, the presence of coagula and lacerations of the capsule, cortex and medulla of the right kidney were observed. The renal hilum was not affected. Considering the significant commitment of the renal parenchyma, it was decided to remove the organ, with the nephrectomy technique described by Rosin (2004). Under this procedure, after the mobilization of the organ to be removed, the renal hilum was dissected in order to expose the ureter, renal artery, and renal vein (Illustrations in **Appendix 1**).

Next the ureter was dissected to as close as possible to the urinary vesicle. A section of the ureter was then made between bandages. After the removal of the organ, the intestines and the greater omentum were returned to anatomical position. The abdominal cavity was stitched in the usual way.

4 Conclusions

Among the usual practices of a veterinarian, surgical interventions become increasingly important for the treatment of animal patients in a critical stage of health. It becomes necessary for veterinary professionals to become well trained in surgery practices in order to keep up with the best standards of their profession.

The reported nephrectomy surgery was a success. It shows that interventions made by qualified professionals contribute significantly to the well-being and quality of life of the animal patients under their care. In this way, the pedagogical practices were quite meaningful for the veterinary students, demonstrating their enthusiasm in assimilating and learning the content taught during the classes.

CREDIT AUTHORSHIP CONTRIBUTION STATEMENT

GDD, through actions and research, participated in the operation practice and the writing of this article. GDF, with practice in surgeries and pedagogical training, participated in the methodology and writing of the article, and in the revision of the utilized data. MLC revised the final text and translated the text into English.

DECLARATION OF INTEREST

The authors declare no conflict of interest with the participants or collaborators of this article, either directly or indirectly.

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Appendix 1. Nephrectomy intervention and nephrectomized kidney. Source: The authors.



Nephrectomy intervention



Nephrectomized kidney



Detail of nephrectomized kidney