

A COMPARATIVE STUDY OF TWO METHODS OF PROSTATECTOMY IN DOGS

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ABSTRACT

The present investigation was designed to determine the differences between two methods of prostatectomy in dogs. The study conducted on eight aged, male street dogs of local breed. The experimental animals were randomly divided into two equal groups. The animals were surgically treated by two surgical techniques; first, *Complete Prostatectomy* (CP), and second, *Subtotal Intracapsular Prostatectomy* (SIP). The results showed that dogs in group1 underwent urinary incontinence after prostatectomy of normal glands, and one animal died from complications. As compared to that in group 2, the urinary obstruction was not a postoperative complication as appeared from the clinical signs. In conclusion, CP led to a series of complications could lead to death, and is indicated only for those patients with proliferative prosthetic disease and for patients with prostatic neoplasms. While, SIP procedure indicated affectivity, because urethral obstruction and urinary incontinence have not been a postoperative complication, in addition, to the fewer complications occurred, when it's compared with CP.

دراسة مقارنة لطريقتين في إزالة البروستات في الكلاب

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الخلاصة

صممت هذه الدراسة لتقييم الفرق بين طريقتين لإزالة البروستات في الكلاب. وتم إجراءها على ثمان كلاب معمرة سائبة من الأعراق المحلية. قسمت حيوانات التجربة عشوائياً بالتساوي إلى مجموعتين وتم إجراء عمليات جراحة البروستات على جميع الكلاب.

في المجموعة الأولى، تم إجراء إزالة كاملة للبروستات. أما في المجموعة الثانية، فقد تم إزالة جزء من البروستات من داخل المحفظة. بينت نتائج الدراسة معاناة حيوانات المجموعة الأولى من أللم وصعوبة أثناء التبول. كما تم تسجيل حدوث الموت لأحد

الحيوانات. في حين كانت نتائج الأزالة الجزئية للبروستات من داخل المحفظة من دون مضاعفات حيث لم يلاحظ فيها حدوث انسداد للمجرى البولي بعد إجراء العملية. أوضحت النتائج بأن الإزالة الكاملة للبروستات تصاحبها مضاعفات قد تؤدي لموت الحيوان، وينصح بأجرائها فقط حين الضرورة كما في إصابات أمراض البروستات المتكاثر وسرطان البروستات. في حين كانت طريقة الإزالة الجزئية للبروستات فعالة ولم تصاحبها مضاعفات مثل السلس التبولي و انسداد المجرى البولي وغيرها التي تشكل عائقا في نجاح العملية الجراحية.

INTRODUCTION

The prostate gland is the only accessory sex gland of the male dog. It is a retroperitoneal organ with only the craniodorsal surface covered by peritoneum. The gland completely surrounds the neck of the bladder and the prostatic urethra, and is bounded by the rectum dorsally and the symphysis pubis ventrally (1). The blood supply consists of two prostatic branches of the urogenital artery on each side. The prostate is surrounded by a fibro muscular capsule, and is bilobed with a ventral longitudinal septum which is palpable on the dorsal surface per rectum (1-3). Diagnosis of prostatic disease may be done by non-invasive techniques. Plain and contrast radiography, ultrasonography, cytological evaluation of prostatic fluid and culture are important techniques prior to surgery. Urinary tract infections are commonly associated with prostatic disease and must be documented so examination of prostatic wash specimens can be interpreted properly (4). Prostatic diseases are fairly common in the dog with a reported incidence of 2.5%, and the incidence of all types of prostatic disease increases with advancing age (5). The most common prostatic disease was adenocarcinoma. Mean age at onset of prostatic disease was 8.9 year (6). Total prostatectomy (TP) can be used for patients with tumors that have not metastasized. It is rarely performed for sever trauma or chronic prostatic diseases that has been no responsive to other treatment (5), the procedure is infrequently performed because urinary incontinence commonly results (7). While, subtotal intracapsular prostatectomy (SIP) is indicated when the abscesses or cysts are multiple, and located in the dorsal portion of the prostate gland, or are too small to be effectively exteriorized by marsupialization. Although SIP is effective in cases of chronic prostatitis, it should not be used on glands that require total removal (8). The aim of this study was to compare between two methods of prostatectomy, TP and SIP in aged dogs.

MATERIALS AND METHODS

Eight street male dogs, from local breed, aged from 3.5-6 years, and weight from 22-35 kg, were used and were kept under similar conditions of feeding and housing. The animals were divided into two groups:

Group A; Complete Prostatectomy (CP): Four dogs were randomly selected and prepared for aseptic surgery. Surgical operation were done under general anesthesia, using atropine sulphate (0.04 mg/kg) Intramuscularly as premeditation agent followed 10 min later by intramuscular administration of mixture of ketamine hydrochloride (50 mg/ml), and xylazine hydrochloride (2%), at the dose rate of 15 mg and 5 mg /kg body weight, respectively. The perineum, external genitalia, abdomen and upper halves of both thighs was shaved before

surgery. Each dog was then placed on dorsal recumbency, and the skin was prepared for aseptic surgery.

A polypropylene urinary catheter was placed within the urethra and into the bladder, which was emptied. The abdomen entered through a mid line skin incision extending from umbilicus to the pubis symphysis and through the linea alba. The peri-prostatic fat was dissected to expose the gland. Caution was taken to avoid the pelvic plexus nerves which lie on the dorsal surface of the prostate. Dissection was started as close to the gland as possible, just superficial to the prostatic capsule. The gland was rolled toward the surgeon's hand to dissect its dorsal border, and was rolled away from the surgeon's hand to dissect along its opposite border. The prostatic parenchyma surrounds the urethra and butts against the neck of the bladder was avoided and kept intact to overcome urinary incontinence postoperatively. By blunt dissection the cranial surface of the prostatic tissue was teased from the bladder neck, so that the proximal urethra was identified. The prostate was severed from the urethra just proximal to the entry of the vas deference on the dorsal surface. The urethra was transected as close as possible to the caudal edge of the prostate to ensure anastomosis with minimal tension. The gland was removed from the catheter, and the catheter was reinserted in to the bladder. The urethral segments were anastomosed with 3-0 polygalactine suture in a simple interrupted pattern. From 6-8 sutures were placed, at approximately 2-mm intervals with their knots placed outside the lumen. Finally the abdomen was thoroughly lavaged with warm saline solution and closed routinely. The urinary catheter left in the bladder for 3-5 days. The surgical site and indwelled urethral catheter were protected by using a bucket. Systemic antibiotic (Penicillin/Streptomycin 10.000 IU and 20 mg/kg, was administered intramuscularly, for 5 days, and skin sutures removed at the 10th postoperative day.

Group B; Subtotal Intracapsular Prostatectomy (SIP): Four aged dogs were used. They were prepared and anesthetized the same as for group A. Laparotomy and prostatectomy was the same, except that over 80% of the glandular parenchyma from the center of the capsule at the ventral median septum, on each side, was removed. Most of the gland was removed laterally and dorsolaterally, leaving a thin shell of parenchyma inside the capsule to protect it from rupture. The ventral walls of the prostatic urethra were then amputated and closed with 3-0 polygalactine suture in a simple continuous pattern to obliterate the gland's cavity. The same postoperative care was applied on each dog as in group A.

RESULTS

The clinical findings of the experimental animals revealed that in Group A; postoperative pain associated with local swelling in operative site, reluctant to move, loss of appetite and urinary incontinence were common feature following complete prostatectomy. After 48 hours the signs of inflammation were subsided at the site of operation and animals regained normal appetite, but urinary incontinence remained. In animal's No. 2 and 4, the catheter was left for a maximum of 7 days. Urinary continence returned in two to three weeks without any specific treatment. While, dogs numbered 1 and 3, removed the catheter during the next 48 and 72 hours postoperatively, respectively. Urine leakage in animal's number 1 and 3 occurred, 3 and 5 days, respectively postoperation. Presence of leaked urine within the abdomen produced signs of uremia and

peritonitis and animal No. 1 died after 5 days of the operation. While dog No. 3 survived, because a Foley catheter with inflated bulb within the bladder successfully decompressed the bladder and acts as a stint around which the leaking anastomosis healed.

On the other hand, in Group B; all 4 dogs exhibited clinical signs during the first 48 hours post the subtotal prostatectomy, similar to those observed in group A. The Foley catheter maintained bladder decompression for 5-7 days postoperation in all dogs. The animals were fully improved after 7-10 days of operation, with preservation of urinary continence.

DISCUSSION

Prostatic surgery may be technically difficult, because of the caudal location of the gland in the abdominal cavity. Prostatic surgery is indicated for resolution of prostatic cysts, prostatitis where multilocular collections of septic fluid exist, prostatic abscessation, prostatic neoplasia, and for paraprostatic cyst treatment (6). Enlargement of prostate gland in aged animals causes retention of urine lead to death due to increase blood urea and systemic reaction this needs surgical interference which very difficult and very danger due to serious complication after operation (7). In the present study the results revealed that, animals following complete prostatectomy of normal glands suffered from urinary incontinence. Continence returned in 2-3 weeks in three dogs. Urinary incontinence following prostatectomy is common. It may return in 2 weeks after prostatectomy of normal glands. Higher incidence of urinary incontinence occurs after prostatectomy of diseased glands than after prostatectomy of normal glands, due to disrupting the nerves of the pelvic plexus or urinary bladder sphincter tone (8). Premature Foley catheter removal can result in serious complications caused by urinary leakage from the site of urethral anastomosis with subsequent cellulites, uremia, generalized peritonitis and death (4). In dog No. 1, premature Foley catheter removal by the dog was the main cause for the occurred complications and death of the animal.

Partial excision of prostatic tissue or subtotal prostatectomy may be done in instances when total prostatectomy deemed unnecessary. The intent of subtotal prostatectomy is preservation of urinary continence, shortened operative time, and preservation of vas deferens and resolution of prostatic disease (4,9,10). The poor results obtained after subtotal prostatectomy may be due to the incomplete removal of all diseased prostatic tissue. Otherwise the technique provides good response for the treatment and tends to shorten the period of hospitalization (9,10). In conclusion, the present investigation showed that SIP procedure indicated affectivity, because urethral obstruction and urinary incontinence have not been a postoperative complication in 10 to 14 days, in maximum, following the operation. In addition, male don't loss their fertility and shorter operation time was required and fewer complications occurred, when it's compared with TP (8,10).

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