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CASTRATION WITH ABLATION OF THE SCROTUM IN JUVENILE CATS

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Received: 19 June 2017; **Accepted:** 31 July 2017

ABSTRACT

Castration with ablation of scrotum was performed on six juvenile cats. Participated animals were generally anesthetized by and secured in dorsal recumbency. Ventral abdominal and perineal regions were scrubbed and disinfected. Two artery forceps were placed at the base of scrotum to secure testicles in place and to control hemorrhage. Scrotum was excised and removed. Spermatic cords of both testicles were ligated and transected. Testicles were removed and skin at the base of scrotum was sutured. The procedures were feasible, applicable, less time and effort consuming and cosmetically acceptable. Castration with ablation of scrotum in juvenile cats is a probable alternate castration approach in tomcats.

Key words: castration, scrotal ablation, tomcat.

INTRODUCTION

Overpopulation of unwanted or stray cats continues to be a problem in many countries all over the world. Surgical sterilization is the most reliable and commonly used method to control reproduction in cats (Bloomberg, 1996; Howe 1997; Looney *et al.*, 2008 and Reichler, 2009). Castration is a common procedure in male cats recommended to reduce the population of unwanted cats and reduce aggressive behavior. Post pubertal castration is performed within the age of six to nine months (Yates *et al.*, 2013). Prepuberal castration also called juvenile neutering in cats less than five months of age (Neven, 2013). Juvenile castration in cats aged between six to sixteen weeks was reported as acceptable age by (Bloomberg, 1996; Bushby, 2012; Neven, 2013 and Welsh, 2103). The testes in cats are fully descended at birth, they are small but easily palpated in kittens less than eight weeks of age (Stubbs, 1998), they are located within scrotum at the perineal region as illustrated in figure 1. Castration in cats is performed under general anesthesia. Different protocols of injectable induction and maintenance with inhalant agent were illustrated (Faggella and Aronsohn, 1993; Boothe, 2003; Fossum, 2007 and Tobias, 2010).

Different techniques of castration in cats were illustrated. Conventional castration comprises separate longitudinal incision over each testis, occlusion and transection of spermatic cords and removal of testicles. The scrotal incisions are left unsutured (Stubbs, 1998; Boothe, 2003 and Tobias, 2010). Closed and open castration techniques are performed in cats. Methods to occlude the spermatic cords are; performing square knots with the spermatic cord over itself, placement of square knots of the vascular part with the avascular part of each spermatic cord, application of titanium clips over the course of spermatic cord, double ligation of spermatic cord with appropriate absorbable suture material or coagulation with bipolar forceps (Porters *et al.*, 2014). The intra-operative obstacles are concluded in highly movable small testicles which are difficult to stabilize in scrotum, short spermatic cord and friable nature of the spermatic cord at this age (Howe, 2006 and Root 2014). Castration with ablation of scrotum had been recorded in equids (Barber, 1985; Palmer and Passmore, 1987; Misk and Seleim, 1987) and in ruminants (Misk, 1982). This technique offers primary closure of the wound, no drainage, minimal swelling and quicker return to activity (Palmer and Passmore, 1987 and Bassert, 2017). Ablation of scrotum is indicated in castrated pets showed post-operative exudate accumulation or infection (Stubbs, 1998; Boothe, 2003; Fossum, 2007 and Børstad, 2015). The aim of the present study was to evaluate juvenile castration with ablation of scrotum.

MATERIALS AND METHODS

Six juvenile cats (aging 2-4 months, and weight 630-850gm) were admitted for juvenile castration. All participated cats were examined for presence of both testes in scrotum. Vital values including rectal temperature, respiratory rate and heart rate were recorded.

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Preoperative management: Perineal region including scrotum and penis were clipped by using electric clipper with # 000 blade, hair was removed with vacuum and the surgical site disinfected with absolute alcohol wipes. Food withheld for 4 hours prior surgery.

Anesthetic protocol: Induction of anesthesia was achieved with a single shot of Xylazine[*]-Ketamine[**] combination (1mg/kg and 10mg/kg respectively) administered intramuscular in the thigh muscles. Anesthesia was maintained with halothane in a glass mask. Halothane was administered intermittently when reflexes are present and removed when surgical anesthesia is reached.

Surgical procedure: When cats reach deep sedation, they were lied in dorsal recumbency and secured to the surgical table. Tail was deviated out of the surgical field and the surgical site was disinfected with absolute alcohol wipes followed by povidone iodine[#] solution and draped with disposable sterile drape. Testicles were squeezed with the left-hand fingers to the scrotal pouch. With the other hand two curved Halsted artery forceps were clamped at the neck of scrotum as shown in figure 2. Scrotal skin was sharply incised in a circular manner over the forceps. Tunica dartos were excised by Metzenbaum scissors and the scrotum is totally ablated. Spermatic cords were double ligated with # 2-0 Vicryl[$]. Spermatic cords were transected between the ligatures with scissors. Forceps were removed and spermatic cord stumps were reduced after checking for bleeding. Wound edges were sutured in simple interrupted manner using # 2-0 silk. [$$]

Post-operative care and evaluation: The wounds were checked daily for sepsis, edema, hemorrhage and exudates. Daily wound dressing and disinfection was achieved with sterile alcohol wipes and Povidone iodine solution. Antibiotic and anti-inflammatory-analgesic were administered orally for three successive days. Sutures were removed seven days after the procedure. Operative time, feasibility and postoperative complications and cosmetic appearance were recorded.

RESULTS

Scrotum in all contributed kittens was premature. All animals have normal descended testes. They were very small, freely movable to the inguinal region. Anesthesia induction was smooth and took (8±2 minutes). Surgical anesthesia with Xylazine-Ketamine combination was light. Animals showed movements due to intervention. Hypothermia and bradycardia in all animals were recorded. Maintenance of anesthesia with halothane in a glass mask offered good surgical anesthesia. Respiratory rate decreased and respiration was superficial and shallow (Figure 3). The procedure was feasible and the mean operative time was (17±2 minutes). Minute bleeding is due to skin incision. No post-operative bleeding, swelling, edema or exudates were recoded. Penile deviation was noticed in one cat. Cosmetic appearance was acceptable.

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[*] Xylazine, ADWIA, Egypt.
[**] Ketamine, Sigmatech Pharma, Egypt.
[#] Betadine, El-Nile pharmaceutical Co., Egypt.
[$] Egycryl, Egysuture Co., Egypt.
[$$] Egysilk, Egysuture Co., Egypt.

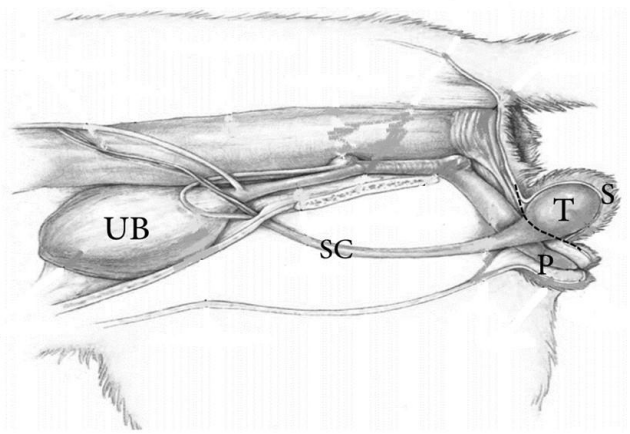

Figure 1. The normal anatomy of feline male reproductive system. Urinary bladder (UB), spermatic cord (SC), Testis (T), scrotum (S) and penis (P). The dotted line represents the line of ablation.

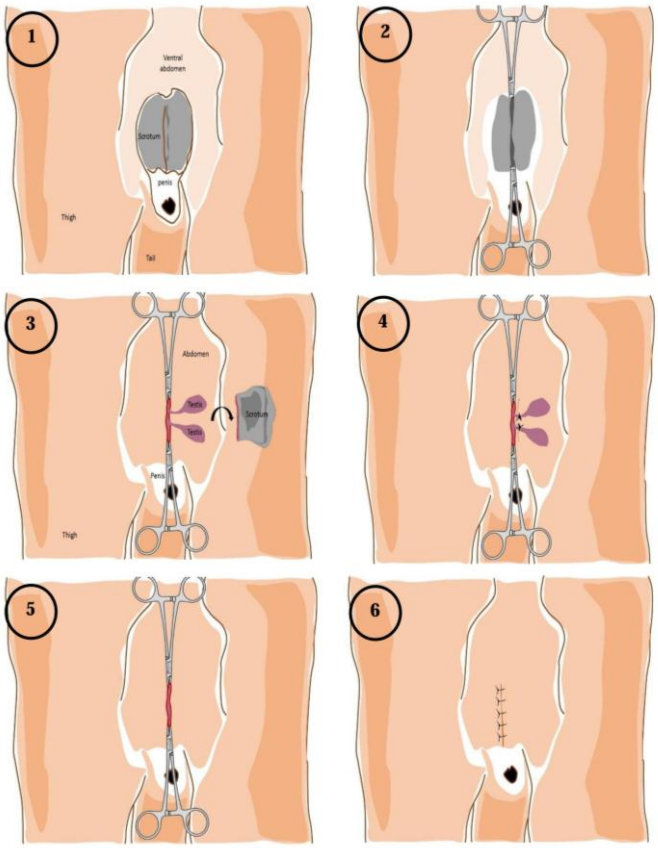

Figure 2. Castration with scrotal ablation in juvenile cats. 1, cat placed in dorsal recumbency, 2, two Halsted artery forceps were fixed to the base of scrotum, 3, scrotum is ablated, 4, spermatic cords are double ligated, 5, testicles are removed, 6, scrotal wound is sutured in simple manner.

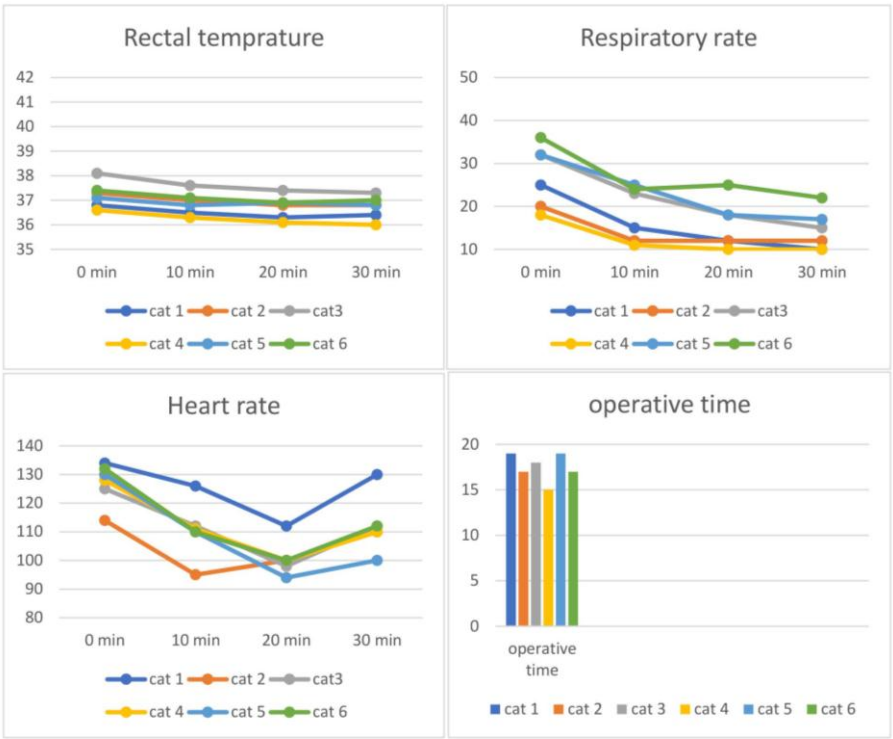

Figure. 3. The vital parameters and operative time.

DISCUSSION

The technique reported here proved to be a quick and safe method for removing descended testicles from juvenile cats through ablation of scrotum followed by primary closure of the skin. The technique was associated with minimal complications.

Scrotum of juvenile cats was premature with a wide base and small cavity as reported by (Stubbs, 1998 and How, 1999), this make it slight difficult to clamp it with the testicles inside with the artery forceps. Further suggestion of ablation of scrotum while testicles aren't within should be evaluated. Anesthesia was adequate. Hypotension, bradycardia and respiratory depression associated with Xylazine administration were the anesthetic risks. They were reported by (Boothe, 2003, Fossum, 2007 and Tobias, 2010), whom recommended using of diazepam or midazolam instead. (Fossum, 2007 and Tobias, 2010) recommended using of isoflurane for maintenance of anesthesia to increase safety. In the present experiment, halothane in a glass mask gave acceptable results. Regarding difficulty of juvenile cat intubation reported by (Stubbs, 1998 and Boothe, 2003), open delivery of halothane in a glass mask was used. It was quite adequate, but, halothane smell was in the operating room air. Ligation of spermatic cords was time and effort consuming. Bipolar coagulation and cutting of spermatic cord reported by (Porters *et al.*, 2014) seems to be more advantageous.

As a result of closing the incisions and not having a continued source of contamination of the surgery site, it's believed that, the current technique should decrease the occurrence of incisional sepsis and accumulation of exudates. Although we did not have any postoperative infections in the cases reported here, the numbers are too low to evaluate. Similar results were obtained to those reported in large animals where castration with primary skin closure have been performed (Misk, 1982; Misk and Selim, 1987; Palmer and Passmore, 1987 and Bassert, 2017). Stubbs, 1998; Boothe, 2003 and Fossum, 2007 recommended ablation of scrotum in castrated pets. The current technique differs in that the ablation of scrotum is an initial step and not secondary to sepsis or accumulation of exudates within the scrotum.

In summary, the technique reported here provides a quick, safe and reliable method for removing descended testicles from juvenile cats through total scrotal ablation followed by primary closure of the skin.

ACKNOWLEDGEMENT

Thanks are due to Mrs. *Gosefik Ahmed* for giving me the opportunity to perform castration with ablation of scrotum to her own juvenile cats.

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خصي صغار القطط مادون البلوغ وازالة كيس الصفن

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هدفت الدراسة لدراسة امكانية خصي ذكور القطط تحت سن البلوغ مع أستئصال كيس الصفن وتقييم هذه الطريقة من حيث سهولة الأداء والوقت المستهلك في أجراء الجراحة ومضاعافات ما بعد الجراحة. تمت الدراسة علي ستة من ذكور القطط البالغة من العمر مابين شهرين الي اربع شهور. لوحظ عدم اكتمال نمو كيس الصفن وكبر قاعدتة وحرية حركة الخصيتين الصغيرتين داخل المنطقة الاربية وهو ما مثل تحديا لتثبيت الخصيتين داخل الصفن باستخدام الماسك الشرياني. بعد تثبيت الخصيتين داخل الصفن باستخدام ماسكين شريانيين تم تثبيتهما علي قاعدة كيس الصفن تم شق الجلد باستخدام المبضع وإزالة كيس الصفن كلياً باستخدام مقص التشريح. تم ربط الحبل المنوي بخيط جراحى قابل للأمتصاص ثم إزالة الخصيتين. تم تقطيب الجرح باستخدام خيط الحرير الجراحي بغرز متقطعة. تميزت الجراحة بالسهولة والامكانية وتراوحت مدة اجراء الجراحة مابين الخمسة عشر دقيقة الي عشرون دقيقة. عند متابعة الحيوانات في فترة ما بعد الجراحة لم تسجل اية مضاعفات وتم التئام الجرح أولياً وتم إزالة الغرز بعد أسبوع من اجراء الجراحة.