

CLINICAL RESEARCH



SURGICAL MANAGEMENT OF AN OPEN ORCHIECTOMY FOLLOWING TRAUMATIC UNILATERAL TESTICULAR EVISCERATION IN A 2 YEAR OLD NIGERIAN LOCAL DOG

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ABSTRACT

Testicular trauma results from a direct blow to the testis. Testicular trauma may occur with multiple and diverse mechanisms. But, blunt trauma is the most common, particularly in athletes. Testicular trauma is relatively uncommon in animals. It is defined as an injury to the testicle as a result of blunt trauma, penetrating abrasion or degloving trauma through the scrotum and scarcely envisaged in canines. This case report is aimed at describing the clinical findings, treatment and outcome of testicular evisceration in a 2 year old Nigerian male dog as a result of trauma. The injury described in this report could be as a result of bite during mating by other competing dogs around. This case is unique in that the clinical history and the severity of the condition of the scrotal wound and the eviscerated testicle indicated a complete rupture and soiling of the parietal tunica vaginalis, which is the layer of fibrous connective tissue surrounding the testicle. The spermatic cord and the epididymis were intact. The case was managed by surgical exploration of the trauma site and tissues followed by bilateral orchidectomy under general anesthesia. The patient was premedicated using 0.02mg^{kg} atropine, then sedated with 0.5mg^{kg} xylazine. Anesthesia was induced and maintained with 10mg^{kg} Ketamine. Orchidectomy was carried out on both testes by ligating and transecting the spermatic cord through the traumatic opening. The traumatized scrotal skin was sutured and the sutures were removed 14 days post-surgery. The patient recovered uneventfully. This case highlights that despite the low reported incidence of traumatic injury, it should be included among other causes of scrotal diseases in canines.

KEY WORDS

Evisceration, Canine, Orchiectomy, Scrotal, Surgical, Testicular, Trauma

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INTRODUCTION

The testicle is the male gonad, or reproductive organ, responsible for the production of sperm and androgens (sex hormones), primarily testosterone. The testicle is contained in an extension of the abdomen called the scrotum. Within the scrotum, the testicle is surrounded by the tunica vaginalis, epididymis, spermatic cord, and appendix testis which are all important anatomic structures that may be involved in acute testicular trauma. It is more common in humans, particularly in athletes, and is relatively rare in animals.

There are several forms of testicular injuries, but the incidence of blunt trauma (63%) was found to be higher than penetrating trauma (37%) in an investigation in 53 human patients (Altarc, 1994). Testicular trauma is defined as an injury to the testicle as result of blunt trauma, penetrating injury or degloving trauma through the scrotum in canines (Awasum, 2008) and in humans (Papoutsoglou and Thiruchelvam, 2013). Blunt trauma is the most common etiology of testicular injuries (Altarc, 1994), and mostly occur during sport events such as racing assaults or traffic accidents, and usually involves unilateral testicle (Chandra, 2007).

Penetrating injury occur as a consequence of assaults through sharp objects or animal bite. Penetrating testicular trauma usually requires scrotal exploration to determine the severity of testicular injury, to assess the structural integrity of the testis, and to control intra-scrotal hemorrhage. If the tunica albuginea is violated, early surgical exploration, debridement, and closure of the tunica albuginea are necessary (Archibald, 1974; Buckley and McAninch, 2006). The mobility of the scrotum may be one reason for rarity of severe injuries. Given the importance of preserving fertility, traumatic injuries of the testicle deserve careful attention.

History and a thorough physical examination are essential for an accurate diagnosis. Scrotal ultrasonography with Doppler flow evaluation is particularly helpful in determining the nature and extent of injury especially in blunt trauma cases, due to the difficulty of scrotal examination and the repercussions of missing a testicular rupture (Chandra, 2007).

Additional imaging tests or scrotal exploration is required if testicular rupture is suspected during clinical findings or when a patient experiences out of proportion pain to the physical examination findings. Blunt trauma to the testes may manifest as a hematocele or a ruptured testis. The complete absence of pain in a patient with scrotal swelling and hematoma raises the possibility of testicular infarction or spermatic cord torsion (Fossum, 2002; Buckley and McAninch, 2006).

Treatment is either conservative or surgical. Conservative treatment is indicated for minor injuries such as contusion or minor lacerations. Surgical treatment is indicated for more severe injuries (Boothe, 2000; Bjorling, 2003; Atalan, et al., 2005).

This case report describes the surgical management of an open orchiectomy in a 2 year old Nigerian local dog following traumatic left testicular evisceration.

CASE REPORT

A 2 year old Nigerian local dog was presented to the Small Animal Clinic of the Veterinary Teaching Hospital, Usmanu Danfodiyo University Sokoto.

The owner complained about a deep laceration on the scrotal sac that resulted in evisceration of the left testicle and other scrotal contents which was discovered 2 hours before presentation.

According to the client, the patient was in good condition, the previous night. He also mentioned that the dog usually strays at night because of the low level fenced compound where it was kept and returns in the morning. There was history of vaccination with anti-rabies vaccine and ivermectin injection was administered 2 months before presentation.

On physical examination, it was found that the patient was in pain, restless. It weighed 20kg. The rectal temperature was 38.5°C, pulse and respiratory rates were 68 beats/min and 33 cycles/min respectively.

On further examination, the left testicle together with the attached epididymis and efferent duct were hanging outside the scrotum through a traumatic laceration (**Plate 1**). The tunica vaginalis was ruptured and soiled while the testis and the attached epididymis were intact. Another laceration was found on the left side of the face around the maxillary region (**Plate2**).

The animal was restless, the ocular mucous membrane was pinkish and the capillary refill time was less than 2 seconds. Based on the clinical findings, traumatic testicular evisceration was diagnosed and was planned to be managed by bilateral orchidectomy following the client's consent.



Plate 1: Patient on presentation showing the eviscerated testicle (see **Arrow)**



Plate 2: Patient on presentation with laceration around the left maxilla (see **Arrow**)

MANAGEMENT

Pre-surgical evaluation: Blood samples were collected for complete hemogram and all parameters were within normal physiological limits (**Table 1**). The capillary refill time was also measured and it was less than 2 seconds. The rectal temperature was 38.5°C, pulse and respiratory rates were 70 beats/min and 33 cycles/min respectively. The patient did not have any anesthetic risk.

Table 1: Pre-surgical hemogram of a Nigerian local dog with testicular evisceration.

Parameters	Obtained Values	*Reference Values
PCV (%)	38.00	36-55
RBC ($\times 10^6$ cells/mm ³)	6.06	5.4-8.5
WBC($\times 10^3$ cells/mm ³)	12.20	6-18
Neutrophils ($\times 10^3$ cells/mm ³)	9.76	3-12
Lymphocytes ($\times 10^3$ cells/mm ³)	2.074	1-5
Monocytes ($\times 10^3$ cells/mm ³)	0.244	0.2-15
Eosinophils ($\times 10^3$ cells/mm ³)	0.000	0.1-0.8
Basophils ($\times 10^3$ cells/mm ³)	0.000	0.0-0.0
*Hassan and Hassan (2003)		

Premedication and Anesthesia: The patient was premedicated with atropine (LABORATE Pharmaceuticals, India) at the dose rate of 0.02mg/kg/ IM, then sedated with xylazine (Kepro, Holland) at the dose rate of 0.5mg/kg after which the inguinal area was clipped and disinfected with diluted (10%) chlorhexidine gluconate. The patient was induced using ketamine (LABORATE Pharmaceuticals, India) at the dose rate of 10.mg/kg intravenously.

Surgical Procedure: The wound and the eviscerated left testicle were cleaned with diluted (10%) chlorhexidine gluconate. The patient was positioned on dorsal recumbency and surgical drapes were applied to expose only the surgical field (**Plate 3**).

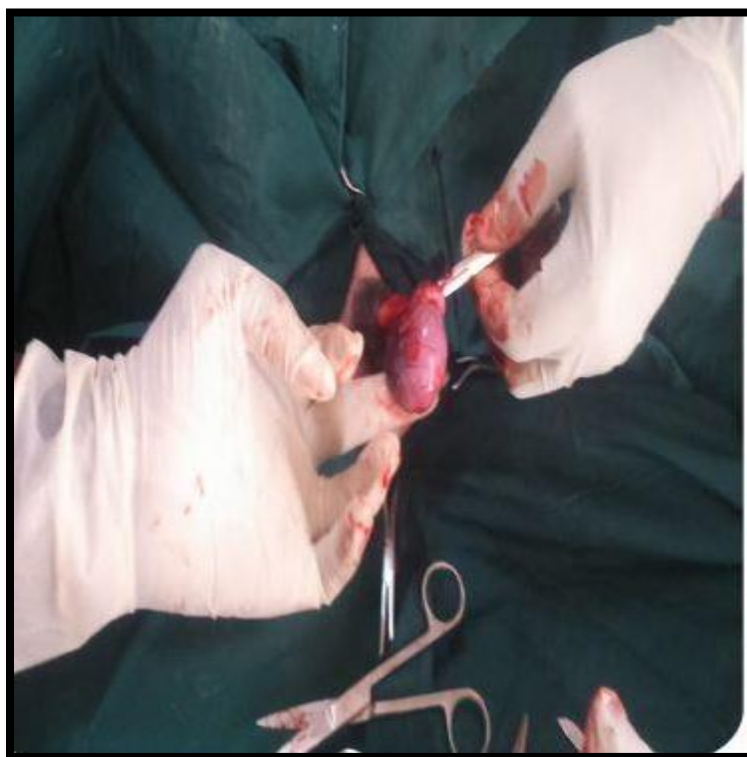
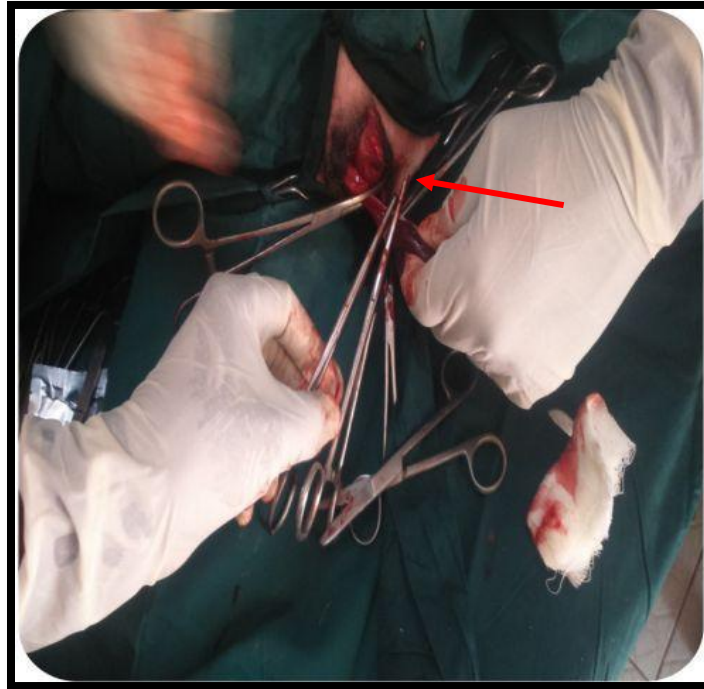


Plate 3: Exposed surgical Field

The spermatic cord was then maximally exteriorized by reflecting fat and fascia from the parietal tunic with a gauze. Traction was applied on the testicle and the fibrous attachments between the spermatic cord tunic and scrotum were removed and these were crushed with 2 haemostatic forceps proximally and distally. An encircling ligature was placed around the entire spermatic cord and tunics using size-0 chromic cat-gut (Agary[®], China). Trans-fixation ligature proximal to the first ligature was made by passing the needle between structures within the tunic (**Plate 4**).

The remaining intact right testicle was popped out through the same opening and the same procedure as described above was repeated. The wound was closed subcuticularly and the scrotum was close using interrupted suture pattern with size-0 nylon suture materials (Agary[®], China) (**Plate 5**).



**Plate 4: Proximal and distal crushing of the Spermatic cord with haemostatic forceps
(Arrow)**



Plate 5: Closure of the scrotal wound with size-0 nylon suture materials



Plate 6: Aseptically prepared facial wound

The area around the wound on the face was shaved aseptically prepared and debrided ([Plate 6](#)). Three interrupted suture pattern using size-0 nylon suture material was used to close the wound. Testicular salvage was not attempted because of the informed owner's consent for neutering.

Post-Surgical Management: 2.5% Diclofenac Sodium (Nouvasant Pharm Health Ltd, China) was administered at 2.5mg/kg IM for 3 days ([Abubakar et al., 2012](#)). Penstrep (Procaine penicillin 200,000 IU, Dihydrostreptomycin 250mg) were administered at dosage of 20,000 IU and 20mg/kg/ IM respectively for 5 days. 50 mg of multivitamin injection (Thiamine hydrochloride 25mg, Riboflavin Sodium 5 Phosphatate Niacinamide 50mg, Cyanocobalamin 50mcg, Chlorine Chloride 25mg, Phenol 0.5% w/v) were also administered IM for 3 days. Oxytetracycline spray BLUE® was applied topically on the wound. Sutures were removed 14 days post-surgery and the patient recovered fully.

DISCUSSION

Testicular evisceration in dogs and cats is very rare but it can occur during mating season through a bite by an aggressive competitor. It can also occur as a result of trauma by a sharp piercing object, barb-wire or automobile accident ([Meige et al., 2008](#); [Halfacree et al., 2011](#); [Yayinggul et al., 2016](#); [Muresan et al., 2019](#)). In a review ([Cerundolo and Maiolino, 2002](#)) identified infectious, immune-mediated, endocrinological and neoplastic conditions as the most common etiology encountered for canine scrotal lesions, contrary to traumatic lesions.

Surgical management is indicated for very severe scrotal and testicular injuries. Depending on the severity and the viability of the affected testicle, surgical intervention to restore and maintain the sexual capacity and fertility of the patient can be achieved ([Lulich et al., 2000](#); [Yayinggul et al., 2016](#)).

Penetrating scrotal and testicular trauma in humans account for approximately 15%, while such information is uncommon in animals (Saleh et al., 2009). The injury described in this report could be as a result of bite during mating by other competing dogs around. This case is unique in that the clinical history and the severity of the condition of the scrotal wound and the eviscerated testicle indicated a complete rupture and soiling of the parietal tunica vaginalis which is the layer of fibrous connective tissue surrounding the testicle. The spermatic cord and the epididymis were intact.

Considering the contaminative nature of the wound, the removal of the eviscerated testicle was considered. However the client requested for complete castration of the patient so as to prevent further straying behavior. Similar cases were reported in humans especially in pediatrics, where scrotal bites by dogs as results of attack were reported to involve testicular damage (Rosenthal, 1994; Cummings and Boullier, 2000; Presutti, 2001).

In dogs, a case of scrotal wounds complicated with urethral rupture has been reported by Yaygingul et al. (2016) and a testicular evisceration sequel to trauma was reported by Nurhusien et al., (2015) in rabbit. Orchidectomy is usually indicated depending on the viability and extent of damage to the organs and the surrounding tissues as reported in this case.

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UNDERTAKING



It is certified that the research paper named **MANAGEMENT OF TRAUMATIC UNILATERAL TESTICULAR EVISCERATION IN A 2-YEAR OLD NIGERIAN LOCAL DOG** is an original work carried out by the authors in the Department of Veterinary Surgery and Radiology and Department of Theriogenology and Animal Production, Faculty of Veterinary Medicine, Usmanu Danfodiyo University, Sokoto Nigeria. It has neither been published nor contemplated for publication elsewhere.

A handwritten signature in blue ink, appearing to read 'Yakubu, A.S.', on a white background.

(Yakubu, A.S)

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