



International Journal of Veterinary Sciences and Animal Husbandry



ISSN: 2456-2912

NAAS Rating (2025): 4.61

VET 2025; 10(9): 269-271

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www.veterinarypaper.com

Received: 04-07-2025

Accepted: 08-08-2025

S Rajasekar

Assistant Veterinary Officer,
Madras Race Club Equine
Hospital, Guindy, Chennai,
Tamil Nadu, India

HS Mahesha

Chief Veterinary Officer, Madras
Race Club Equine Hospital,
Guindy, Chennai, Tamil Nadu,
India

T Jeyentra Balaji

Veterinary Officer, Madras Race
Club Equine Hospital, Guindy,
Chennai, Tamil Nadu, India

D Srinivas

Consultant Veterinary Officer,
Madras Race Club Equine
Hospital, Guindy, Chennai,
Tamil Nadu, India

J Vasandhan

Veterinary Officer, Madras Race
Club Equine Hospital, Guindy,
Chennai, Tamil Nadu, India

Corresponding Author:

S Rajasekar

Assistant Veterinary Officer,
Madras Race Club Equine
Hospital, Guindy, Chennai,
Tamil Nadu, India

Surgical management of testicular torsion in race horse: Case report

S Rajasekar, HS Mahesha, T Jeyentra Balaji, D Srinivas and J Vasandhan

DOI: <https://www.doi.org/10.22271/veterinary.2025.v10.i9d.2567>

Abstract

A 3-year-old thoroughbred racehorse was presented to the Madras Race Club Equine Hospital with History of colic signs, including abdominal discomfort, with slight elevations in heart rate and respiratory rate and exercise intolerance. Upon examination at the time of admission, the left side of the scrotum appeared moist and edematous, the left testicle was enlarged, firm, and slightly retracted toward the abdominal cavity. Per rectal examination revealed no palpable abnormalities in the internal inguinal ring, although the spermatic cord was large beyond the normal limits. Surgical removal of torsed testicle was performed using a half closed Technique with an emasculator for crushing, followed by vascular ligation. This traditional castration technique allows for second-intention healing of the scrotal wound. The horse was rested for seven days, during which daily wound dressings were applied, before resuming race training or riding. No significant complications were observed on physical examination following the gelding surgery during the horse's subsequent racing journey. A therapeutic regimen combining analgesics, neurotonics and antibiotics supported a successful recovery.

Keywords: Torsion, testicle, emasculator

Introduction

Testicular torsion, also referred to as spermatic cord torsion, is considered one of the emergency conditions affecting intact male horses (Davoodi *et al.*, 2021) ^[4]. The anatomical positioning of the scrotum in horses, predispose the condition. In horses, the testes are aligned horizontally along their long axis (Dyce *et al.*, 2009) ^[6], a factor that could contribute to the condition. Torsion compromises the vascular supply to the testis, initially obstructing venous outflow and potentially affecting arterial inflow as well. Complete ischemia ultimately results in testicular infarction (Auer & Stick, 2018) ^[1]. This condition arises when the testis rotates around its vertical axis. Contributing anatomical factors may include an unusually elongated caudal ligament of the epididymis or an extended proper ligament of the testis (Pascoe *et al.*, 1981) ^[7]. The core pathological process in testicular torsion is ischemia, often followed by reperfusion injury when blood flow is restored (De Bock *et al.*, 2007) ^[5]. Research indicates that torsions of 180° or less may remain asymptomatic and are often discovered incidentally. In contrast, rotations of 360° or more usually present with evident clinical symptoms (Auer & Stick, 2018) ^[1]. Clinically, affected horses may exhibit mild colic signs, discomfort, scrotal swelling, an enlarged spermatic cord, increased fluid accumulation in the scrotum, reluctance to move the hindlimbs freely and leg abduction during movement. Among these, mild colic has been reported as the most frequent presenting symptom (Benson, 2008; De Bock *et al.*, 2007) ^[2, 5].

Case history and Clinical observation

A 3-year-old Thoroughbred racehorse was presented to the Madras Race Club Equine Hospital, Guindy, Chennai-600032, with a history of acute onset of pain, exercise intolerance, reduced racing performance, abnormal respiratory rate and heart rate and elevated body temperature following a morning workout. A thorough physical examination was performed to assess the condition. The examination revealed that the left testicle was enlarged, firm and slightly retracted toward the abdominal cavity. Per rectal examination of the internal inguinal ring revealed no abnormalities. Based on clinical signs and findings consistent with testicular

torsion as described by Pascoe *et al.* (1981) ^[7], the case was considered an emergency, and the stallion was prepared for surgery.

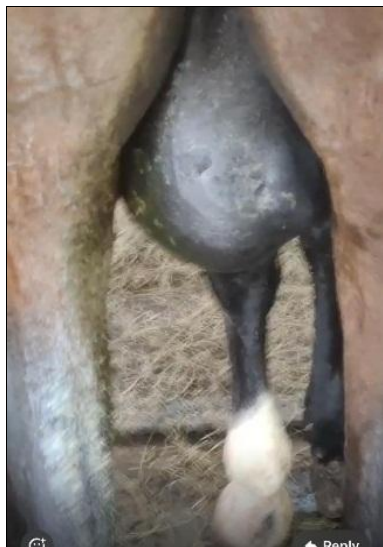


Fig 1: Retracted and edematous testicle



Fig 2: Spermatic cord torsion



Fig 3: Emasculator application

Surgical procedure and Treatment

The horse was initially premedicated with xylazine (1.1 mg/kg) and butorphanol (0.01 mg/kg). Anesthesia was

induced with ketamine (2.2 mg/kg) and maintained using a triple-drip mixture containing 5% guaifenesin (50 mg/mL), xylazine (500 mg) and ketamine (1000 mg). The procedure was performed with the horse in lateral recumbency and the hind limb was securely restrained by an assistant. The surgical approach resembled the half-closed castration technique with a modification, once the parietal tunic and cremaster muscle were exposed, a 2-3 cm vertical incision was made through the parietal tunic just proximal to the testicle. The interior of the parietal tunic was inspected for any signs of herniated intestine. Upon confirmation of no abnormalities, the entire spermatic cord was emasculated as proximally as possible. Subsequently, both the vascular and avascular components, along with the parietal tunic, were ligated using No. 2 Catgut. Post-surgery, the surgical site was topically treated and flushed with normal saline and a betadine solution for three consecutive days. Post-operative care included intravenous administration of Artizone (4.4 mg/kg once daily), Benzyl penicillin (2 vials, BID), and a single dose of Tetanus toxoid (2.5 mL) on the first day. Additionally, Ranitidine (20 mL, BID), Tonophosphan (20 mL once daily), and Neurobion Forte (20 mL once daily) for a period of seven days for quick recovery.

Discussion

Pinto *et al.* (2001) explained that in stallions, spermatic cord torsion can occur as either chronic or intermittent and clinical signs may not always be evident. Tibary *et al.* (2007) ^[10] explained that mild torsions, typically 180 degrees or less, are often discovered incidentally during routine examinations or surgical procedures, as they usually do not elicit noticeable clinical symptoms. Waqas *et al.* (2024) ^[11] concluded that diagnosis of a 180-degree torsion relies primarily on the anatomical positioning of the tail of the epididymis and the proper ligament of the epididymis. Raisi *et al.* (2022) ^[9] explained that torsions exceeding 180 degrees lead to significant clinical changes in the scrotal contents due to vascular compromise, resulting in tissue hypoxia, ischemia, oxidative stress, thrombosis and germ cell apoptosis.

In terms of treatment, Bergstrom *et al.* (2023) ^[3] and De Bock *et al.* (2007) ^[5] told that orchiopexy is commonly recommended in human cases of spermatic cord torsion, but it is not typically performed in stallions. Instead, hemicastration remains the treatment of choice, often combined with postoperative antibiotic therapy and pain management. De Bock *et al.* (2007) ^[5] also recommended that bilateral castration is preferable for horses that are not intended for breeding.

From our clinical experience, stallions with a 180-degree rotation of the spermatic cord frequently do not exhibit overt signs of discomfort or anatomical abnormality which is accordance with the report of Pascoe *et al.* (1981) ^[7] who described that such torsions might result from a loose attachment between the caudal extremity of the testicle and the vaginal tunic, which may be associated with an elongated caudal ligament of the epididymis. The cremaster muscle has been known for its strong reflex in horses which could trigger this rotation. In the present case, the presence of an elongated scrotal ligament, epididymis and mesorchium likely contributed to the torsion mechanism, aligning with the anatomical predispositions reported by Pascoe *et al.* (1981) ^[7]. In the current case, no postoperative complications were noted and the horse experienced an uneventful recovery following surgical intervention.

Conclusion

Based on the physical examination, the half-closed method of gelding was effective in relieving the torsion of the spermatic

cord. This technique offers a safe, cost-effective and time-efficient approach for the successful treatment of testicular torsion in horses. Additionally, it has the potential to improve the performance of racehorses without resulting in any postoperative complications.

Acknowledgement

The authors express their sincere gratitude to the Madras Race Club Equine Hospital, Guindy, Chennai - 600 032 for providing the necessary facilities and support to carry out this surgical procedure.

Conflict of Interest

Not available

Financial Support

Not available

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How to Cite This Article

Rajasekar S, Mahesha HS, Balaji TJ, Srinivas D, Vasandhan J. Surgical management of testicular torsion in race horse: Case report. International Journal of Veterinary Sciences and Animal Husbandry. 2025; 10(5): 269-271.

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