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Vishal Kumar

M.V.Sc. Scholar, Department of Veterinary Gynaecology & Obstetrics, COVAS, College of Animal and Veterinary Sciences, Sardar Vallabhbhai Patel University Agriculture & Technology, Meerut, Uttar Pradesh, India

Shubham Deep Chaudhary

M.V.Sc. Scholar, Department of Veterinary Gynaecology & Obstetrics, COVAS, College of Animal and Veterinary Sciences, Sardar Vallabhbhai Patel University Agriculture & Technology, Meerut, Uttar Pradesh, India

Prabuddh Dubey

Ph.D. Scholar, Department of Veterinary Gynaecology & Obstetrics, COVAS, College of Animal and Veterinary Sciences, Sardar Vallabhbhai Patel University Agriculture & Technology, Meerut, Uttar Pradesh, India

Garima Raj

M.V.Sc. Scholar, Department of Veterinary Gynaecology & Obstetrics, COVAS, College of Animal and Veterinary Sciences, Sardar Vallabhbhai Patel University Agriculture & Technology, Meerut, Uttar Pradesh, India

Atul Kumar Verma

Assistant Professor, Department of Veterinary Gynaecology & Obstetrics, COVAS, College of Animal and Veterinary Sciences, Sardar Vallabhbhai Patel University Agriculture & Technology, Meerut, Uttar Pradesh, India

Akhil Patel

Assistant Professor, Department of Veterinary Gynaecology & Obstetrics, COVAS, College of Animal and Veterinary Sciences, Sardar Vallabhbhai Patel University Agriculture & Technology, Meerut, Uttar Pradesh, India

Corresponding Author:

Prabuddh Dubey

Ph.D. Scholar, Department of Veterinary Gynaecology & Obstetrics, COVAS, College of Animal and Veterinary Sciences, Sardar Vallabhbhai Patel University Agriculture &

A rare case of Polyorchidism (Triorchidism) in a dog: Surgical intervention and outcome

Vishal Kumar, Shubham Deep Chaudhary, Prabuddh Dubey, Garima Raj, Atul Kumar Verma and Akhil Patel

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Abstract

Polyorchidism, the presence of more than two testes, is a rare congenital anomaly in both humans and animals. The case of a polyorchid Shih-Tzu dog presented at Veterinary Clinical Complex, College of Veterinary and Animal Sciences, SVPUA&T Meerut with a history of painful scrotal swelling, orchitis and subsequent scrotal necrosis. Surgical exploration revealed three testes: two within the scrotum and one ectopically located, caudal and left-lateral to the penis. All the three testicles had their own independent spermatic cord. This case presents a unique condition of polyorchidism in a canine patient, complicated by inflammatory pathology requiring immediate surgical intervention including castration followed by scrotal ablation.

Keywords: Canine, orchitis, Polyorchidism, surgical management, supernumerary testis, Triorchidism, cryptorchidism

Introduction

Polyorchidism is a rare developmental congenital anomaly characterized by the presence of supernumerary testes. While cases have been documented in various species including humans, horses, and cattle, it is considered uncommon in canines (Tamminen *et al.*, 2012) [1]. This condition is often asymptomatic and may be discovered incidentally during routine physical examination, surgical procedures, or post-mortem examination. Polyorchidism can be categorized based on the number of testes (triorchidism, tetraorchidism). Triorchidism is more prevalent in such cases and the location of supernumerary testis may be scrotal, inguinal or abdominal (Haddock and Burns 1987) [2]. Polyorchidism can be associated with pathologies, like cryptorchidism, inguinal hernia, testicular torsion, or tumour (Hancock and Hodgins 1984) [3]. This case report describes a unique presentation of triorchidism in a Shih-Tzu dog complicated by severe scrotal necrosis and orchitis, requiring immediate surgical management.

Case History and Observations

A two-and-a-half-year-old intact male Shih-Tzu dog presented to the clinic with a two-day history of lethargy, inappetence and severe pain associated with a swollen scrotum. The owner reported a progressive increase in the size of the scrotum, which had become dark and was leaking a serosanguinous discharge fluid.

On physical examination, the scrotum was severely enlarged, firm and exhibited extensive necrosis of the skin (Fig:1A) with active fluid seepage. The scrotal swelling extended cranially into the inguinal region. The dog's temperature was 103.5°F (39.7°C). Blood work revealed a significant leukocytosis with a left shift, indicative of a severe inflammatory or infectious process. Abdominal ultrasonography was not performed due to the dog's painful demeanor and the clear diagnosis of severe scrotal pathology. A presumptive diagnosis of severe orchitis with scrotal necrosis was made, antibiotic, analgesic and anti-inflammatory drugs were prescribed as the primary course of action for three day. On follow up after 3 days, no significant recovery was noticed as per history and physical examination. Therefore, surgical intervention was recommended.

Surgical Procedure and Findings

The dog was pre-medicated with atropine sulphate (Zespin® at 0.04 mg/kg b.wt) followed by induction with xylazine (Xylaxin® at 1.2 mg/kg b.wt) as pre-anesthetic and ketamine (Ketaset® at 7 mg/kg b.wt) as an anesthetic, and maintenance with combination of ketamine and diazepam in 2:1 (v/v) ratio. A standard surgical preparation of the caudal abdomen and perineum was performed.

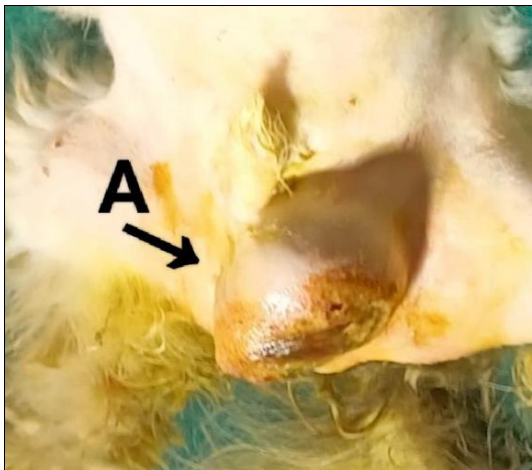


Fig 1: External appearance of scrotum (A)

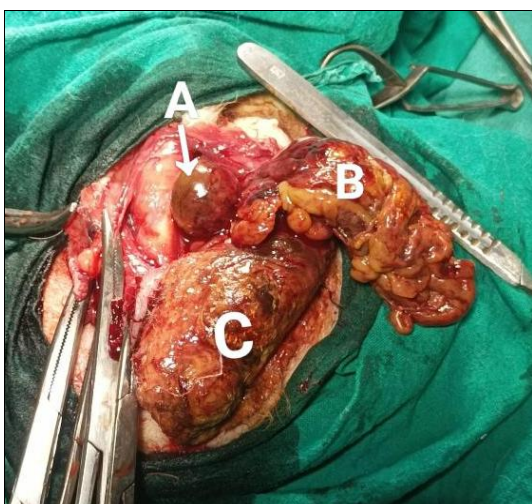


Fig 2: Left testicle showing necrosis(A) Inflammatory tissue (B) Necrotic scrotal tissue and skin(C)

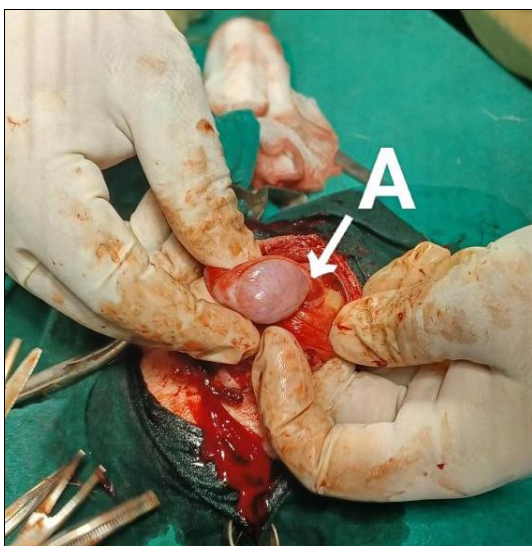


Fig 3: Right testicle(A)

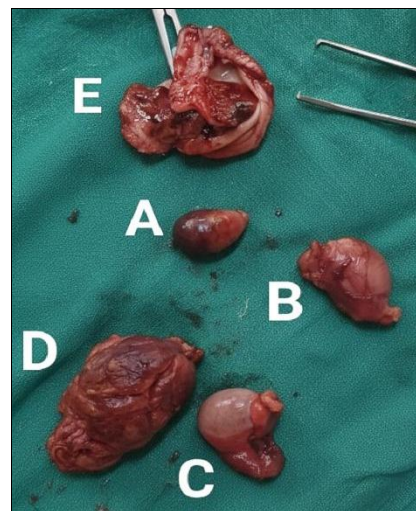


Fig 4: Left necrosed testicle(A) Right testicle (B) Ectopic testicle (C) Inflammatory tissue (D) Necrosed scrotal skin (E)



Fig 5: Skin is sutured after castration and scrotal ablation

A prescrotal to caudal scrotal lateral incision was made to expose the affected tissues. The superficial layers of the scrotum were found to be necrotic and sloughing. Upon entering the scrotal sac, left testicle found to be mildly inflamed (Fig:2A), surrounded by necrotic tissue. The right testicle was somewhat normal (Fig:3A).

As the dissection proceeded to remove the inflamed tissues, an unexpected finding was made. A separate, encapsulated mass was discovered attached to the deep subcutaneous tissue, caudal and left-lateral to the base of the penis. Upon careful dissection, a third testis was found. This third testis was not connected to the main scrotal sac or the other two testes. All three testes (Fig:4A, 4B, 4C), inflammatory tissue (Fig:4D) and the entire affected scrotal and perineal skin (Fig:4E) were removed by the procedure consisting castration and scrotal ablation. The spermatic cords of the two main testes were ligated and transected as per a standard castration procedure. The third testis was removed with its surrounding capsule and tissue upon ligation of its independent spermatic cord. The surgical site was thoroughly lavaged, and a multilayered closure was performed.

Discussion

Polyorchidism is a rare condition in canines, and the majority of reported cases are incidental findings in other animals as in horses (Davies 2010) ^[4] and also in humans (Savas *et al.* 2010) ^[5]. The reason behind the polyorchidism is not known

(Tamminen *et al.*, 2012) ^[1]. The development of extra testis is suggested to occur during embryogenesis by genital ridge duplication or longitudinal/transversal division (Leung 1988) ^[6]. Polyorchidism have been classified into two types mainly: type A with ductus deferens and type B without ductus deferens (Bergholz *et al.* 2007) ^[7]. The unique presentation in this Shih-Tzu, with painful scrotal swelling, necrosis, and orchitis, highlights that supernumerary testes can be a site of significant pathology. The exact cause of the severe inflammation is speculative, but it is plausible that the condition was a complication of the patient's polyorchidism and possibly a form of cryptorchidism affecting the third testis. In this the third testis was found on left side that show the similarity with previous finding (Leung 1988) ^[6]. The ectopic location of the third testis, combined with its lack of a direct connection to the main scrotal sacs, may have predisposed it to an inflammatory event or even torsion, which subsequently spread to the other two testes and the surrounding scrotal tissue. The management of this case involved radical surgical excision, which was critical for a favorable outcome. The successful resolution of the dog's symptoms and the confirmed diagnosis of triorchidism underscore the importance of thorough surgical exploration in cases of complex scrotal and testicular pathology.

Conclusion

This case report describes a rare and clinically significant presentation of triorchidism in a two-and-a-half-year-old Shih-Tzu dog. The polyorchidism was complicated by severe orchitis and scrotal necrosis, which required castration and scrotal ablation. The findings highlight the importance of considering polyorchidism as a differential diagnosis in cases of canine testicular pathology and the need for thorough surgical exploration to identify all affected structures.

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Contribution by Authors

All the authors contributed equally to writing the manuscript. The final manuscript was read by all the authors and consented to publication.

Conflict of Interests

There is no conflict of interest.

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