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Surgical correction of contracted flexor tendon in a two week old Punganur calf

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Abstract

A two-week-old Punganur calf was presented to the Veterinary Clinical Complex, Veterinary College and Research Institute, Salem with a history of being unable to stand and walk properly and placing the fore limb improperly since birth. On physical and clinical examination, the calf was diagnosed as bilateral congenital flexor tendon contracture. The complete blood count revealed no pronounced changes. The calf was anaesthetised using cocktail preparation of Ketamine and Diazepam. The caudal aspect of the metacarpal region was prepared aseptically. Superficial and deep digital flexor tenotomy was performed and a PVC splint applied post-surgically. The calf was able to walk and place his forefoot properly from the 14th post-operative day.

Keywords: Congenital defect, contracted flexor tendon, PVC splint, Punganur calf and tenotomy

Introduction

Ongole and Punganur cattle are considered as the popular native cattle breeds of Andhra Pradesh for 21st century due to its higher adaptability and productivity in the changing climatic conditions of this state. Punganur dwarf cattle which originated from the Chittoor district of Andhra Pradesh in southern India is among the world's smallest humped cattle breeds [1].

Contracted tendons are a common congenital problem, more prevalent in the calf (Salas, 2021 and Steiner, 2014) [2,3] within 1 or 2 weeks of age. The deformity ranges from a mild, moderate to severe. The cause for congenital flexural deformity is unknown (Schoiswohl, 2019) [4], but a calf seen with additional congenital abnormalities may have a heritable condition and should be removed from the breeding pool [5]. Mild and moderate cases can be managed by physiotherapy combined with medical therapy (Saglam, 2021) [6] whereas severe form requires surgical intervention by tenotomy [2]. Good prognosis is warranted in cases presented earlier without other congenital abnormalities (Schoiswohl, 2019) [4] and corrected by transection of superficial digital flexor tendon (SDFT) and deep digital flexor tendon (DDFT) followed by splint application [7,8].

Case History and Clinical Observation

A two-week Punganur calf was brought to the veterinary clinical complex, veterinary college and research, Salem with the complaint of unable to stand and walk since birth. On examination of forelimb, the calf was knuckling and an abnormally angled metacarpo-phalangeal joint without joint swelling was noticed (Figure 1). A complete blood count revealed no observable changes.



Fig 1: Abnormally angled metacarpo-phalangeal joint

Treatment and Discussion

The calf was sedated using Xylazine hydrochloride @ 0.1 mg/kg intra muscularly and induction with Cocktail preparation of Ketamine hydrochloride @ 2.2mg and Diazepam @ 0.1mg/kg intravenously. Anesthetised calf was placed in lateral recumbency and then the caudal aspect of the metacarpal region prepared aseptically using 5 % povidone iodine with surgical spirit. After aseptical preparation, a linear incision was placed on the caudal aspect of the mid metacarpal region. The fascia surrounding the flexor tendons were incised care to be taken to avoid damage to lateral and medial digital palmar artery, vein and nerve. The superficial flexor tendon was elevated (Figure 2) using blunt curved artery forceps and transected, the same procedure was followed for the deep digital flexor tendon. Fetlock extension and flexion was checked immediately after transection of flexor tendons. The skin is closed with Polyamide 2.0 by a cruciate pattern. After skin closure, PVC splint was applied to the caudal aspect of the metacarpal region from the heel and extended up to the radius and ulna (Figure 3). Post operatively, the calf was administered with Amoxicillin @ 12.5 mg/kg i.v for five days and Flunixin meglumine @ 1.1mg/kg i.m for three days. The splint was changed once in 3 days. The calf was able to stand and walk properly after the removal splint on the 14th post-operative day (Figure 4).

Contracted tendon is a common congenital problem. The cause of congenital flexural deformity is unknown [3]. Earlier reports opined that inherited factors, in-utero malpositioning of foetus also responsible for development of contracted tendon [4, 5]. Flexural deformities are classified as mild, moderate and severe forms. In milder cases, the calves are able to walk on their feet but the heels do not contact the ground. In moderate cases, the dorsal aspect of the claw breaks over a vertical plane perpendicular to the ground and in severely affected animals, walk on the dorsal aspect of the fetlock, pastern or in carpus [3]. Mild and moderate cases will respond well to physiotherapy. But severely contracted tendons and the ones which do not respond to medical therapy require surgery [6]. However, surgery alone is not sufficient, it should be combined with other interventions. Surgery failed on an extremely contracted tendon [9, 10]. The present case was similar observation with the Schoiswohl (2019) [4] who also performed transection of superficial digital flexor tendon and deep digital flexor tendon for the treatment of contracted flexor tendon. Recovery depends on the severity, therapy employed, time of presentation and presence or absence of another congenital abnormality. The present case was brought earlier with moderately contracted flexural deformity without another congenital abnormality. Hence, the calf was managed by surgery followed by splint application. The calf had an uneventful recovery on the 14th post-operative day and had normal gait and hoof placement after splint removal.



Fig 2: Elevated superficial flexor tendon



Fig 3: PVC splint application



Fig 4: Normally angled metacarpo-phalangeal joint

Conclusion

The present case placed a record on surgical correction of contracted flexor tendon in a Punganur calf.

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