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Surgical correction of congenital superficial and deep digital flexor tendon contracture in a day-old calf

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Abstract

A three days old calf was brought with the history of unable to stand and walk on both forelimbs and hindlimbs since birth. On physical examination there was moderately contracted tendon in both forelimbs and severely contracted tendon with toe-out condition in hindlimbs. Then tentatively diagnosed as contracted tendon and decided for surgical correction. Animal was placed in lateral recumbency and Z-Plasty tenotomy was done under local infiltration of 2% lignocaine along the length of superficial and deep digital flexor tendon for hindlimbs and partial tenotomy was done for forelimbs. Post-operatively limbs were stabilized with wooden splint. Immediately on post-operative day calf started bearing weight on all limbs. Surgical correction along with proper application of splint will provide satisfactory outcomes.

Keywords: Calf, flexor tendon, tenotomy, SDF, DDF

Introduction

Contracted tendons was most frequently observed congenital anomaly in dairy breeds, and rarely acquired. It was more prevalent in the calf within 1 or 2 weeks of age ^[1]. Due to affection of tendon animal inability to achieve or maintain the normal extension of the limb ^[2]. This condition may affect the flexor tendon of one or both the fore limbs and hind limbs but fore limbs affection is more common ^[3]. The cause for congenital flexural deformity is unknown ^[4]. But some authors suggest, it was due to inherited factors, in utero malpositioning and overcrowding caused by size of the fetus relative to the dam. At birth, calves were not able bear weight on affected limbs due to shortening of superficial and deep digital flexor tendon (SDF and DDF) and associated muscles at fetlock and pastern region ^[5]. Mild and moderate cases can be managed by physiotherapy combined with medical therapy ^[6] whereas severe form requires surgical intervention by tenotomy.

Materials and Methods

A three days old punganur cross calf was brought to department of VSR veterinary college hebbal, Bengaluru, with the history of unable to stand and walk on both forelimbs and hindlimbs since birth. On physical examination revealed moderately contracted tendon in both forelimbs and severely contracted tendon with toe-out condition in hindlimbs and inability to keep the limb flat on the ground (Fig 1). On neurological examination proprioception reflex was absent, pedal reflex was present, and panniculus reflex was present. Based on history and clinical signs the cases were diagnosed as contracted flexor tendon deformity and decided for surgical correction.

The calf was restrained in lateral recumbency and surgical site was prepared aseptically. Local infiltration of 2% lignocaine was carried out along the length of SDF and DDF tendon. Longitudinal skin incision was made on the lateral side of the contracted tendon at mid meta-tarsal region. Blunt dissection was made on the tendon sheath and exposed both SDF and DDF tendon (Fig 2). Then Z Plasty was done to extend the length of both SDF and DDF tendon by making a longitudinal incision in the centre of the exposed tendon, then transverse incision made at the end of the incision in opposite direction. Then both free ends of DDF tendon were sutured in a Bunnell mayer suture pattern and SDF were sutured in locking loop pattern with poly amide no 2-0.

Then tendon sheath was closed in a simple continuous pattern with poly amide 2-0. Skin was sutured in horizontal mattress pattern. After that, ointment povidone iodine is applied and wooden splints has been placed. Same procedure was followed on the other hindlimb. For both forelimbs partial tenotomy was done, then limbs were manually extended to place the splints.

Post operatively, calf was administered with injection ceftriaxone (10 mg/kg BW) for five days, inj meloxicam (0.3 mg/kg BW) for three days, syrup ostovet 10 mL/day and syrup vimeral 1 mL/day for 20 days. The splints were changed once in 3 days.



Fig 1: Animal with flexed fetlock joint of both hindlimbs and unable to stand on all limbs.

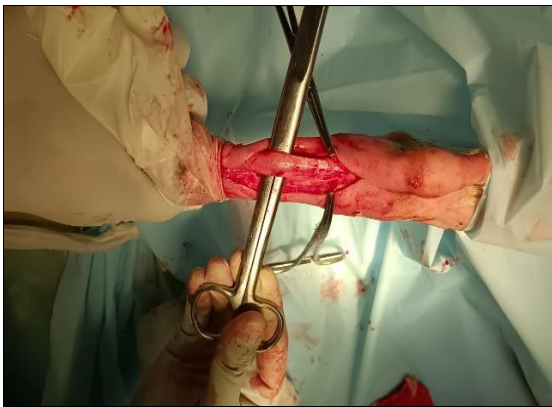


Fig 2: Exposed both superficial and deep digital flexor tendon.



Fig 3: Animal started walking immediately on post operative day.



Fig 4: On 14th post operative day animal started walking without slant.

Results and Discussion

The calf was able to stand and started walking with splints on post operative day (Fig. 3). On 14th post operative day calf started bearing weight and walking on all limbs without support (Fig. 4). Contracted tendons were successfully corrected with surgery but unable to reduce the outward rotated digits.

In new born calves, contracture or shortening of flexor tendon results knuckling of fetlock joints frequently and rarely carpal joints. 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 [7]. Chronic cases animals may be recumbent and unable to nurse the colostrum which lead to arthritis. Most flexural deformity of limbs could be corrected with non-surgical treatment, but in this case non surgical treatment was not possible due to severity of the condition and failure of manual extension of limbs so surgical interference was the best choice to correct the condition.

Conclusion

Early presentation of case along with no any other congenital anomalies were successfully managed with surgical correction along with proper application of splint.

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