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Short Communication

Surgical Correction of Intermittent Unilateral Hind Limb Extension in Buffalo and Cattle

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Authors' Contributions

HAA, AA, AA and SAA collected the data and performed surgical correction. SU and AA (Asif Ali) designed the study, drafted the manuscript and critically revised the manuscript.

Key words

Hind limb extension, Upward fixation of patella, Surgery, Cattle, Buffalo

ABSTRACT

Three cases, including a buffalo and two cows were presented with complaint of persistent unilateral hind limb extension. The animals were unable to flex the limb during walk. Diagnosis was based on case history, clinical sign and clinical examination. Upward fixation of patella was diagnosed in all three animals. After careful palpation of the ligament, medial patellar desmotomy was performed in lateral recumbence, under local anesthesia achieved by 2% lignocaine hydrochloride. The skin was apposed with simple interrupted sutures using silk. Post-operative care was continued for five days. Clinical signs abated in all operated animals, proving that the technique employed was effective and of simple execution for the treatment of dorsal patellar fixation in bovine.

Upward fixation of patella is a syndrome most commonly reported in small animals than large animals. In large ruminants, there are only few publications regarding this problem and its treatment. Upward fixation of patella may be acquired or congenital. Congenital causes include; coxa-valgum, genuvalgum, coxa-varum lateral (Belge *et al.*, 2016). Acquired causes are direct, indirect or traumas (Kim *et al.*, 2005; Meunthong *et al.*, 2007). The disease is responsible for considerable economic loss as the lameness affects the working ability of bullocks and also movement of cows and buffaloes.

The surgical anatomy of the joint is very significant because of patellar ligaments involved in femoro-patellar articulation (Read, 1999). The patella is a large sesamoid bone which develops in the tendon of quadriceps femurs muscle. The patellar ligament, medial, middle and lateral are the continuations of fibrous bands of quadriceps muscle to the cranial tibia tuberoity. The patella is connected to the femur bone by collateral ligaments while it is connected to the tibial tuberosity of tibia bone by patellar ligaments which are the fibrous continuations of the quadriceps muscles (Mondal *et al.*, 2013; Belge *et al.*, 2016). There are three main patellar ligaments: lateral, middle and medial. The medial ligament is thin as compared to middle ligament, the middle is thick and strong and widely separated from the medial ligament. The lateral ligament is flat and present close to middle ligament (Kilic *et al.*, 2008; Read, 1999).

Displacement of the patella can be detected by clinical examination. While stifle joint is in extension position, patella is forced to luxation. Position of the patella can be determined by antero-posterior radiographic examination. Also, the trochlear groove and its shape can be assessed by a tangential view of the flexed stifle. Differential diagnosis of the patellar luxation includes avascular necrosis of the femoral head, coxofemoral luxation, and joint distortion (Belge *et al.*, 2016). Medial patellar ligament desmotomy (MPD) is frequently used in the treatment of dorsal patellar fixation (Ducharme, 2004; Kramer, 2006). The use of exercises and injection of low concentration iodine solution into the femuro-patellar articulation as an alternative treatment has also been reported (Kofler, 1999). This present study is aimed to establish the clinical diagnosis and to alleviate upward fixation of patella by surgical correction.

Materials and methods

On 2nd June 2015 two Sahiwal cows from the same herd were presented with the complaint of difficulty in walking. Both had previous history of treatment one week ago with inj. Loxicom[®] (meloxicam, Norbrook, UK) at the dose rate of 0.5mg/kg for 3 days, but no apparent recovery was observed. One of the cow was having 7 months pregnancy and the other one had recently perpetrated. On 10th July 2015, another case of a 5 year old Nili-Ravi buffalo was presented in the field with 4 months prior history of showing the signs of lameness of right hind leg.

All the three animals were in excellent body condition and appeared alert. Their appetite and bowel motility was normal,

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temperature, pulse and respiration (TPR) were in normal range, auscultation of heart and lung sounds were also normal. When the animals were made to move, all of them showed stiffness of hind leg with no or very little flexion of stifle joint along with dragging of toe. However, palpation revealed no pain over the stifle region. The buffalo (Fig. 1) and a cow had right unilateral hind limb affected while other cow had left hind limb affected.



Fig. 1. Prior to surgery. Animal showing sign of extended hind limbs and lameness.

The history, owner's description and clinical features of upward fixation of patella are almost pathognomonic (Baird *et al.*, 1993; Shivaprakash and Usturge, 2004). A diagnosis of intermittent upward fixation of patella was made based on the signs of hesitation of the stride, dragging of the toe along the ground, and subsequent hyperflexion of the stifle. MPD were suggested to alleviate the condition. MPD is a surgical technique that aims at disrupting the locking mechanism, and is well described in the literature (Naveen *et al.*, 2013). This procedure is usually performed under local anaesthetic, so that the medial patellar ligament is clearly defined.

In all three animals surgery was performed in lateral recumbency as previously described by Singh *et al.* (2015). The tibia-femoral-patellar articulation area was appropriately prepared, and antisepsis was done by a disinfectant solution containing iodophor, diluted in water as recommended. Local anesthesia was achieved in all animals by infiltrating approximately 10 ml of inj. lignocaine (xylocaine® Barrett Hodgson, Pakistan) along with xylazine hydrochloride (Alfazyne®, Egevet, Turkey @ 0.3mg per kg of body weight) into the gap located between tibia crest and the medial and intermediate patellar ligaments. All cases were operated by using the open method of medial patellar desmotomy (Naveen *et al.*, 2013; Belge *et al.*, 2016). By placing the thumb and the medium finger, respectively at the tibial tuberosity and at the upper spot of the femoral medial trochlear crest, the medium point between these two anatomic references was established using the index finger. This procedure facilitated the identification of the medial

patellar ligament. A small linear incision of 3cm was made 0.5cm lateral to medial patella ligament. The fascia was bluntly dissected to expose the medial patellar ligament. The ligament was exteriorized with the help of a curved scissor near the ligament's insertion point at the tibial tuberosity. The ligament was then sectioned using a scalpel. The operation site was further explored and undivided fibers were sectioned by using scissors. The skin edges were apposed with #2 monofilament nylon (Ethilon, Ethicon, Inc., Somerville, New Jersey 00876). The cow was released and walked with a normal stride.

The wound was dressed daily with a povidone iodine solution till complete healing. Post-operative care include administration of Procaine penicillin (Penbiotic®, PDH Pakistan, @ 20,000 IU/ Kg live weight, every 48 hours) and inj. meloxicam, (Loxicom® Norbrook, UK) (@ 0.5mg/ body weight) injected intramuscularly for 5 days.

Results

Following medial patellar desmotomy, all the animals showed immediate recovery signs with no evidence of jerky movement. Skin sutures were removed 15 days post operation. All animals completely recovered within 15 to 30 days (Fig. 2).



Fig. 2. Post-surgery. Photograph demonstrating normal stride immediately after medial patellar desmotomy.

Conclusion

We suggest medial patellar desmotomy as an efficient surgical technique for the treatment of persistent unilateral hind limb extension in dairy animals.

Conflict of interest statement

We declare that we have no conflict of interest.

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