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RETROSPECTIVE STUDY OF UPWARD FIXATION OF PATELLA AND ITS SURGICAL ALLEVIATION IN CATTLE AND BUFFALOES BY CLOSED MEDIAL PATELLAR DESMOTOMY

Sujit Mathew Kolangath, Dube Yogesh Subhash, Chavan Nitin Bhaskar, Khatke Prashant Abaji and Palve Ganesh Amrutrao

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ABSTRACT

Upward Fixation of Patella is a common malady of cattle and buffaloes throughout the world. The anatomical location and physiological role of the three ligaments that support the stifle joint in cattle and buffalo is critical in the incidences of upward fixation of patella. Several predisposing causes have been identified including genetics, malnutrition, mineral deficiency, excessive use, hilly terrain etc. In the present study, 82 cases of cattle and buffaloes presented with symptoms like flexion of hind limb, lameness after rest which gradually wanes off and dragging of hoof were clinically examined and selected for medial patellar desmotomy. Considering the vicious and aggressive nature of the breed all the cases were treated in lateral recumbency. Out of the 82 cases presented for treatment 78 cases recovered uneventfully by closed medial patellar desmotomy in lateral recumbency. The cases were followed up for complications if any, all the complications were rationally treated. The study highlights the utility of closed medial patellar desmotomy in treating upward fixation of patella at field level especially in vicious and aggressive Indian breeds.

Keywords: *Bubalus bubalis*, buffaloes, surgery, medial patellar, upward fixation of patella, stringhault, medial patellar desmotomy, lateral recumbency

INTRODUCTION

Upward fixation of patella or stringhault is a common malady of cattle and buffaloes. It is characterized by an episode of brief lameness immediately after rest, phalangeal flexion and typical hoof dragging. Many reports have identified the causes for this malady, heredity (Shokrey and Barakat, 1987), marginal mineral supplementation (Salisha *et al*., 2015), nature of work (Shivaprakash, 2004), terrain (Dass *et al*., 1983), etc have been considered important drivers. In many parts of the world, studies on the breed susceptibility, sex, severity, physiological status etc have been studied in great depth. Medial Patellar Desmotomy (MPD) is considered to alleviate the symptoms of stringhault in many species of animals. In cattle and buffaloes, different approaches to execute MPD have been advocated, of which standing and lateral recumbency are equally competitive (Naveen *et al*., 2013; Mondol *et al*., 2013; Rao, 1966). Considering the factors like nature and temperament of the animal, ease of handling and skill of veterinarian

Taluka Veterinary Minipolyclinic, Nandurbar, India, *E-mail: brosujit@gmail.com

a best suited method is picked for the desmotomy (Chandrapuria *et al*., 2012). In the current study, the outcome of surgical treatment of 82 cases of cattle and buffaloes have been studied. The MPD was performed in lateral recumbency, and recovery and associated complications were studied.

MATERIAL AND METHODS

The study was carried out from 2014 to 2017 in Akkalkuwa block of Maharashtra State of India. A total of 82 cases were treated including 44 cattle (33 Male and 11 Female) and 38 buffaloes (9 Male and 29 Females). Among the cattle 4 animals were pregnant at the time of surgery while among the buffalo Group 3 were pregnant. The anamnesis included information on the housing system, feeding management and terrain of the animal owner. The information so collected was maintained on records. All cases were treated at the farmers doorstep away from hospital settings. Animals showing signs of lameness, phalangeal flexion and hoof dragging were clinically examined and selected for Medial Petallar Desmotomy (MPD). The surgery was carried out in lateral recumbency after casting the animal by Reuff's Method. It was ensured that the animal is casted in such a way that the affected leg is in contact with the ground. The forelimbs and one hindlimb was tied together and restrained by fastening to a firm support like a tree trunk. The affected leg was tied to an eight feet long wooden log in such a way that the leg is perpendicular to the log, the leg was then flexed. After the animal was restrained, the surgical site was prepared, and 5 ml 2% lignocaine was infiltrated at the site. After 5 minutes, using the forefinger of the left hand the medial ligament was palpated and fixed. A No. 11 curved Baird Parker blade and handle was inserted under the ligament and the ligament was severed. The leg was aggressively flexed, and 5 ml povidone iodine was infused and using nylon the wound was closed using mattress suture. The suture line was sprayed with fly repellent spray. The animal was compelled to trot for a short distance. The owner was advised to provide dry bedding during the post-operative period.

RESULTS AND DISCUSSION

Out of the 82 cases presented for treatment 78 cases recovered uneventfully by closed Medial Patellar Desmotomy in lateral recumbency. In the cattle group out of the 44 cases 3 cases failed to show uneventful recovery evident by persistence of lameness. Two of the unrecovered cases reoperated after 21 days by open method to alleviate the lameness. The complete severing of the medial ligament was noted in both the cases. However, both the animals failed to show any improvement in the lameness. Symptoms of phalangeal flexion and hoof dragging however were reduced considerably. One case in the cattle group could not be reoperated as it was sold by the animal owner. In the buffalo group out of 38 cases all the cases recovered uneventfully except one. The case was reoperated after 30 days by open method, however the animal showed signs of lameness with slight improvement in hoof dragging.

In the current study the prevalence of upward fixation of patella was found to be prevalent in bullocks (40.24%), cows (13.4%), buffalo bulls (10.97) and she buffaloes (35.36%), the findings are in confirmation with Shivaprakash and Usturge, 2004 who studied 350 cases from Karnataka state of India. Medial Patellar Desmotomy (MPD) was

performed by closed method in lateral recumbency in all the cases following the standard protocol. The method was chosen considering the animal husbandry practices and fierce nature of the animals of the region. There has been a considerable debate on the suitability and efficiency of Medial Patellar Desmotomy (MPD) in standing against lateral recumbency. In contradicting opinions expressed by Singh *et al*., 2015; Bharadwaj, 2017 who advocated MPD in lateral recumbency highlighting high success rate and suitability in vicious Indian bullocks and buffaloes. In another opinion expressed by Kalaiselvan and Desinguraja, 2020 who conducted the observations in Thalaivasal block of Salem Tamil Nadu in 15 cattle with MPD in standing position. However, in the present study lateral recumbency was opted considering the ease of application and vicious nature of animal.

Out of 82 cases treated for Upward Fixation of Patella, 78 cases recovered uneventfully. Three of the cases that failed to recover uneventfully were reoperated by open method; however, the cases failed to show uneventful recovery. It was clearly noted in all the cases that failed to respond to MPD, duration of illness was beyond one and a half year. Persistent abducted gait for a prolonged duration has impact on the hip joint resulting into fibrosis and limited movement of the head of femur in the acetabular cavity (Naveen *et al*., 2016). It was also evident that despite the complete dissection of the medial patellar ligament which was evident by open method, the animal failed to recover uneventfully (Kassab and Badawy, 2011). The observations could be attributed to the over-relaxation of the ligament which permits the patella to glide freely in the articular surfaces as reported by Krishnamurthy and Tyagi (1979).The study also highlights the attribution of Upward Fixation of Patella with the over usage and heavy workload. The difficult terrain of the block and prevalent animal husbandry practices wherein majority of the animals are free-range fed highlights the linkage with emergence of Upward Fixation of Patella. About 54% of the reported cases in the study belonged to hilly areas and the animals were free-range fed, in cattle group however 63.63% of the cases belonged to hilly areas. The observation could be accredited to the fact that these animals climb up the hills in search of forage leading to wear and tear of the ligaments. It was also noted that serum and blood profile indicate that all the animals in cattle and buffalo group had low Hemoglobin level and suboptimum levels of Calcium, Phosphorus and Magnesium. Similar observations have been reported by Dhillon *et al*., 2009; Choudhary *et al*., 2012. The low levels of minerals in the serum could be linked to low grade roughage, feeding principally on agricultural byproducts and lack of mineral supplementation. It was also found that the incidences of swelling and pyogenic changes at the site of surgery were found in few animals which could be attributed to poor sanitation and unhygienic conditions of housing.

The utility of various methods of MPD has been under critical review, considering the ease of implementation, expertise and skill of the veterinarian and nature of the animal a method is selected. In the current study, due to the aggressive and vicious nature of cattle and buffalo breeds of the block, lateral recumbency was advocated (Singh *et al*., 2015). The method ensures recovery of the treated animal at the same time ensures safety of the veterinarian engaged in the surgery. From the animal point of view, restraining and casting of the animals requires skill and manpower. In the current study, pregnant animals were cast and treated by MPD in lateral recumbency without any complications. The method can be implemented for

many ferocious breeds of cattle and buffalo from India. In all the above cases, the complications were rationally treated, and the recovery was uneventful. The study highlights the utility of the Medial Patellar Desmotomy in lateral recumbency in aggressive and vicious breeds of cattle and buffalo of the region.

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