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Studies on evaluation of close method patellar desmotomy in standing method versus lateral recumbency in cattle: A review of 84 cases

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Abstract

A total of 84 cattle's presented with clinical sign of upward fixation of patella in last 5 years were surgically treated in two major groups standing method and lateral recumbency method comprised of 12 cows, 12 bullocks, 12 buffaloes and 6 buffalo bulls in each group. Close method medial patellar desmotomy was performed by using infiltration of 2% lignocaine at surgical site in all affected animals (n=84). The higher recovery rate 95.23% was observed in standing technique of patellar desmotomy as compared to 83.33% in lateral recumbency technique. Calm and docile animals were more suitable for standing method of medial patellar desmotomy. Standing technique proved better in better palpation, less complications and requires less manpower, but highly furious cattle's, those were failed to restrain even after sedative effect requires lateral recumbency to perform desmotomy.

Keywords: Patellar desmotomy and lateral recumbency

Introduction

Cattles were commonly affected with upward fixation of patella. It has been also reported in equines, camel, sheep, goat, dog, and cat. In bovines incidence is quite higher in buffaloes compared to cattle and common in draft bullocks (Chandrapuria *et al.*, 2012) [2]. The femoropatellar joint is formed between trochlea of the femur and articular surface of the patella. Patella is connected to the cranial tibial tuberosity by patellar ligaments. The patellar ligaments are medial, middle and lateral. In bovines, most common, best and only successful treatment to correct upward fixation of the patella is the medial patellar desmotomy (Tyagi *et al.* 1972) [7]. Krishnamurthy and Tyagi (1979) [3] reported that closed method of medial patellar desmotomy requires more experience to cut the ligament blindly (closed method). Medial patellar desmotomy was easy to perform and in most cases, the results were immediate (Martins *et al.*, 2009) [4].

Naveen *et al.* (2013) [6] reported evaluation of different methods for closed method medial patellar desmotomy in 24 clinical case; 12 buffaloes, 6 cows and 6 bullocks, where they found standing restraining were more suitable for docile animals and required less human assistance as compared to lateral recumbency method. Mohandas (1972) [5] preferred the standing position for operation of upward fixation of patella.

Materials and Methods

A total of 84 clinical cases of cattle affected with upward fixation of patella were presented in the clinical camps organized at various districts of Gujarat and Surgery Department, Veterinary College, Anand were selected for the present study during last five years. A total of 84 animals comprised of 24 cows, 24 bullocks, 24 buffaloes and 12 buffalo bulls, where all animals were presented with history of abnormal jerky movement during progression immediately after a period of rest, while in chronic cases showed constantly locked stifle joint and animal can progressed only after round movement of entire limb.

Diagnosis was carried out based on palpation of patellar ligaments and detail clinical examination; it was diagnosed as upward fixation of patella.

Palpation was carried out in standing position by placing thumb on medial femoral condyle, last figure on cranial tuberal tuberosity and pressing first finger from caudal tuberal tuberosity to cranial and slippery medial ligament was identified by fore finger; chronic cases showed hard fibrous medial patellar ligament.

Surgical procedure

A total of 42 animals affected with upward fixation of patella were randomly selected to performed medial patellar desmotomy in lateral recumbency using rope squeeze technique (Fig.1), whereas remaining 42 animals were restrained in standing position by using rope. Cows and bullocks were squeezed by rope by covering both hind limbs to avoid kick, while buffaloes and buffalo bulls were restrained by tying rope just above fetlock joint in forelimbs to tie with each other (Fig.3). Xylazine hydrochloride @0.02mg/kg i/m was administered only in furious indigenus cows and bullocks, whereas buffaloes and crossbred cows were calm enough to restrained with rope squeeze.

The surgical site was aseptically prepared and the surgical intervention was carried out under lignocaine hydrochloride infiltration (7ml) at the site of incision in all animals (n=84) in either standing or in lateral recumbency by using BP. Blade no.15/24/desmotomy bistury. Lateral recumbency (Fig.1) was preferred in 42 cattle (12 Buffalo, 12 Cows, 12 Bullocks and 6 Buffalo bull), whereas standing restraining technique was preferred in 42 cattle (12 Buffalo, 12 Cows, 12 Bullocks and 6 Buffalo bull).

A small skin incision was made over the upper 1/3rd part of the medial patellar ligament and incised the medial patellar ligament with the help of BP blade no.15/BP blade no.24 by stretching skin fold cranially and released with the BP blade to minimize skin incision, where as desmotomy bistury was used to cut remaining deeply situated uncut ligament threads, Incised wound flushed with the 5% povidone iodine. Post operatively animal was under antibiotic and anti inflammatory drugs of next three days along with antiseptic dressing of skin

till wound heals (Average 3-5 days).

Result and Discussion

Medial patellar desmotomy surgery was performed in lateral recumbency restraining technique in total 42 clinical cases; which comprised of cows (n=12), Bullock (n=12), Buffalo (n=12) and Buffalo bull (n=6), while similar number of cases were enrolled in the standing method of restraining for medial patellar desotomy. Lateral recumbency method showed highest recovery rate 91.67% in the Buffalo, followed by 83.33% in buffalo bulls, 80.33% in cows and lowest recovery 75% was recorded in bullocks (Table 1).

Group II animals were restrained in standing position (Fig.2) for medial patellar desmotomy surgery and found less difficulty in palpation and identification of affected ligament especially when affected limb bears weight, success rate was also recorded higher (95.23%) in group II, where highest recovery rate was observed in the cow & buffalo bulls (100%), followed by 91.67% in bullock and buffaloes respectively (Table 1). Similar success rate was recorded by Baird *et al.* (1993)^[1], where they reported 89% (25/28).

Standing method was found better to performed medial patellar desmotomy surgeries in the docile animals, whereas furious bulls, bullocks and indigenus cows required sedative (Xylazine hydrochloride 0.025 mg/kg) along with circle squeeze method of rope application to avoid kick. Similar observations were reported by Naveen *et al.* (2013)^[6]. Medial patellar desmotomy in chronic cases were required second or third attempt of surgery to restore normal stifle joint movement, even though many chronic cases showed partial recovery.

Table 1: Medial patellar desmotomy in lateral recumbency, recovery and complications

Species	Cases enrolled	Restraining technique	Recovery	Complications
Cow	N=12	Lateral recumbency (Group no I)	10 (80.33%)	Second attempt required in 2 (16.67%) cases, while 2 (16.67%) cases showed partial recovery
Bullock	N=12		9 (75%)	Chronic affected 3 (25%) bullocks didn't show complete recovery (mild recovery).
Buffalo	N=12		11 (91.67%)	Second attempt required in 4 (33.33%) buffalo, whereas 1 (8.33%) Buffalo showed partial recovery.
Buffalo bull	N=6		5 (83.33%)	1 chronic affected buffalo bull showed only partial recovery (16.67%).
Total	N=42		35 (83.33%)	7(16.66%) cases showed mild/partial recovery
Cow	N=12	Standing method of restraining (Group no II)	12 (100%)	Second attempt required in 5(40.66%) furious cows
Bullock	N=12		11 (91.67%)	4 (33.33%) bullocks required second attempt and all animals required Xylazine sedation with squeeze rope method of restraining to avoid kicking.
Buffalo	N=12		11 (91.67%)	1 (8.33%) Furious bullock not allowed to operate, despite of mild sedation of Xylazine
Buffalo bull	N=6		6 (100%)	Second attempt required in 1(8.33%) buffaloes and 1 (8.33%) showed partial recovery in chronic case.
Total	N=42		40 (95.23%)	1 (2.38%) had partial recovery and 1 (2.38%) not allowed to performed surgery in standing method.

Conclusions

- Medial patellar desmotomy surgery helped to restored quick recovery in cattle, but delayed presented cases (> year) resulted in to partial recovery immediately after surgery, may be due to fibrotic hard changes in middle and lateral patellar ligament after long lasted stifle affection.
- Recovery rate was recorded higher 95.23% in standing technique of patellar desmotomy as compared to 83.33%

in lateral recumbency technique of close method patellar desmotomy.

- Calm and docile animals (buffaloes and crossbred cows) were more suitable for standing method of medial patellar desmotomy, whereas furious animals required sedation and additional rope squeeze method to control animal in standing position for surgery.
- Standing technique provides better palpation for identification of affected ligament and more space

between middle and medial patellar ligament, which reduces complications of faulty middle patellar desmotomy and requires fewer handlers to control animal for surgery as compared to lateral recumbency.

- Standing technique proved better in many aspects, but highly furious cattle's, those were failed to restrain even after sedative effect requires lateral recumbency to perform desmotomy.



Fig 1: Lateral recumbency method of MPD



Fig 2: Standing method MPD in bullock



Fig 3: Standing method of MPD in buffalo

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