

# Medial Patellar Ligament Splitting for the Treatment of Upward Fixation of the Patella in the Horse

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Ultrasound-guided percutaneous splitting of the proximal third of the medial patellar ligament was considered successful in the treatment of upward fixation of the patella in 4 horses and 3 ponies. No complication of this surgery was observed and activity can be rapidly resumed. Author's Address: Clinique Equine, Ecole Nationale Vétérinaire d'Alfort, 7, Avenue du Général de Gaulle, 94704, Maisons-Alfort, France. © 2001 AAEP.

## 1. Introduction

Upward fixation of the patella (UFP) occurs when the medial patellar ligament (MPL), with its parapatellar fibrocartilage, fails to disengage the notch of the medial ridge of the femoral trochlea at the commencement of limb flexion. This condition is more common in young horses and ponies, and Shetland ponies are most commonly affected.<sup>1</sup>

Clinical signs of UFP are variable both in severity and frequency. The severe form is when the catching of the patella is complete so the leg cannot extend and does this repeatedly. The mild form is when there is a partial and intermittent locking of the patella and a palpable and sometimes audible click as the patella is released. The mildest form manifests as a subtle delayed release of the patella, which appears to move in a jerky fashion, especially as the horse decelerates. UFP is often bilateral and may affect one limb more than the other.

Medial patellar desmotomy (MPD) is advocated as the treatment of choice for surgical correction of UFP in cases unresponsive to conservative manage-

ment and in severe cases.<sup>1</sup> MPD was found to have detrimental effects on the femoropatellar joint of normal horses.<sup>2</sup> Therefore it is no longer recommended as the treatment of choice for UFP.<sup>2</sup>

The purpose of this article is to describe MPL splitting for the treatment of UFP in the horse. The results and postoperative course of treating 7 cases are given.

## 2. Materials and Methods

Four horses and three ponies were admitted for surgery because of UFP. There were one Frieser (case 1), one Portuguese (case 2), 3 Shetland ponies (cases 3, 4, 5), one Hispano-Arabian (case 6) and one Anglo-Arabian (case 7). The ages ranged from 18 months to 10 years. A history was taken and a lameness examination performed and recorded on videotape before surgery and at each postoperative control. Lateromedial and caudocranial radiographs of both stifles were made before surgery and at every postoperative control.

The author in each case performed ultrasonography of the MPL with a real-time B-mode scanner

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## NOTES

**SURGERY II**

using a 7.5 MHz transducer. Prior to surgery and at every postoperative control, the craniocaudal diameter of the proximal part of the MPL and its ultrasonographic appearance were evaluated. For surgery, the horses and ponies were placed under general anesthesia in dorsal recumbency and both hindlimbs were suspended under complete extension.

Each case underwent an ultrasound-guided percutaneous splitting of the proximal third of both MPL using a surgical knife with a No. 15 blade. The ultrasonographic transducer was placed transversally over the proximal part of the MPL and the blade was introduced longitudinally into the ligament in a craniocaudal direction. The blade did not proceed through the femoropatellar synovial pouch, which lies immediately under the ligament, nor through the articular cartilage of the medial ridge of the femoral trochlea. The blade was then fanned 45° proximally, then distally, laterally, and medially. The procedure was repeated at approximately 5 mm increments until the entire length of the proximal third of the MPL, as determined by intraoperative ultrasonography, had been split. Splitting was not performed on the parapatellar fibrocartilage of the MPL.

Perioperative antibiotics were used for 5 days, but no anti-inflammatory drug was administered. Horses and ponies were put into exercise the day following surgery. Walking in hand for 15 minutes 3 times a day was continued for 2 weeks after surgery. Thereafter, horses and ponies were allowed to resume progressively their normal activity.

### **3. Results**

Prior to surgery, all cases showed bilateral UFP. These ranged from subtle delayed release of the patella to mild or severe form. Cases 1 and 2 had bilateral mild form, cases 3 and 4 had a mild form on a limb and a severe form on the opposite limb, and cases 5 and 6 showed bilateral severe form. Case 7 showed bilateral subtle delayed release of the patella. Cases 4 and 5 have evident straight hindlimbs conformation. No case showed radiographic femoropatellar abnormalities.

Clinical signs of localized desmitis of the proximal third of the MPL developed immediately after ligament splitting. Moderate local swelling and heat with variable pain on palpation were most evident over the splitting site. Cases 2, 4, and 7 showed a complete bilateral resolution of UFP within 24 h of surgery. Cases 1, 4, 5, and 6 were unilaterally sound the day after surgery and a progressive improvement until resolution was noticed in 4 to 12 days after surgery for the opposite limb. A symmetrical and moderate hindlimb discomfort was present at the walk following the onset of desmitis in all cases, but resolved within a few days. Periligamentous edema persisted for a few days because no anti-inflammatory drug was administered. All of the surgical sites healed without complication.

Ultrasonographic evaluation revealed a significant and progressive increase in the MPL size during the first 4 postoperative weeks with a stabilization thereafter. Desmitis, accompanied by both anechoic and hypoechoic lesions, was induced in all split ligaments. Thickening of the MPL was two to three times the initial diameter. Hypoechoic lesions were still present within the induced desmitis one year after ligament splitting (cases 1 and 2) without any associated sign of lameness. No case showed radiographic femoropatellar abnormalities after surgery.

One of the dressage horses (case 2) was sound one year after surgery. Three months following surgery, the other dressage horse (case 7) had no sign of UFP. Case 6 was sound for riding, and the harnessing horse (case 1) was sound at work 2 years after surgery. Of the Shetland ponies, all were used for riding without lameness or gait abnormality. In summary, of the 7 patients that had medial patellar ligaments splitting, all became sound after surgery.

### **4. Discussion**

MPD is advocated as the treatment of choice for surgical correction of UFP in cases unresponsive to conservative management.<sup>1</sup> This surgical technique is considered to be somewhat benign and without serious complications; however, recent studies, both retrospective<sup>3</sup> and experimental,<sup>2</sup> along with clinical cases studies<sup>4,5</sup> suggest that MPD predisposes the patella to fragmentation.

Following MPD, healing of the MPL occurs, and the ligament becomes thickened throughout its entire length. The thickened MPL is therefore allowed to disengage easily the notch of the medial ridge of the femoral trochlea at the commencement of limb flexion and UFP is prevented.

The rationale for percutaneous splitting of the proximal third of the MPL is to induce a localized desmitis, which subsequently leads to a localized thickening of this ligament. This will disable the proximal part of this ligament to hook easily over the notch of the medial ridge of the femoral trochlea preventing UFP.

Under ultrasound guidance, the surgical blade is visualized during its entry into the ligament. The blade did not proceed through the femoropatellar synovial pouch, which lies immediately under the ligament, neither through the articular cartilage of the medial ridge of the femoral trochlea. Care should be taken not to split the parapatellar fibrocartilage of the MPL.

All the cases were available for long-term clinical, radiographic, and ultrasonographic follow-up. No radiographic abnormalities were seen during the follow-up investigations. Of the 7 cases that had MPL splitting, all became sound after surgery. No short-term or long-term complications of this surgery were observed. The clinical effects of this surgical technique were attributed to the increase in size of the

proximal third of the MPL resulting from the induced surgical desmitis. Ultrasonographic follow-up revealed a significant increase in the ligament size during the first 4 postoperative weeks with a stabilization thereafter. The severity and extension of the lesions were variable between the cases. Thickening of the MPL was two to three times the initial diameter. It is therefore strongly recommended that splitting of the MPL be accurately achieved to induce a strong localized desmitis.

The lack of muscle conditioning is often a predisposing factor for UFP,<sup>1</sup> therefore continued exercise after surgery is important for a successful outcome. Exercise without anti-inflammatory drug should also enhance the induced surgical desmitis of the proximal third of the MPL during the first postoperative weeks. Daily mild exercise was recommended during 2 weeks after surgery then normal activity could be progressively resumed.

This surgery was performed with the horses and ponies under general anesthesia. This has the ad-

vantage of allowing a good asepsis and a precise and accurate ultrasound-guided percutaneous splitting of the ligament.

Based on the findings presented in this article, this surgical technique was successful; in each case all evidence of UFP has disappeared and the horse, or the pony, has regained its normal activity.

#### References

1. Stashak TS. Upward patellar fixation. In: Stashak TS, ed. *Adam's lameness in horses*, 4th ed. Philadelphia: Lea and Febiger, 1987;737-741.
2. Gibson KT, McIlwraith CW, Park RD, et al. Production of patellar lesions by medial patellar desmotomy in normal horses. *Vet Surg* 1989;18:466-471.
3. McIlwraith CW. Osteochondral fragmentation of the distal aspect of the patella in horses. *Equine Vet J* 1990;22:157-163.
4. Riley CB, Yovich JV. Fracture of the patella after medial patellar desmotomy in a horse. *Aust Vet J* 1991;68:37-39.
5. Grosenbaugh DA, Honnas CM. Arthroscopic treatment of patellar lesions resulting from medial desmotomy in a horse. *Equine Pract* 1995;17:23-25.