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.1

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

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.
using a 7.5 MHz transducer. Prior to surgery and at every postoperative control, the craniocaudal di-
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 per-
cutaneous splitting of the proximal third of both
MPL using a surgical knife with a No. 15 blade.
The ultrasonographic transducer was placed trans-
versally over the proximal part of the MPL and the
blade was introduced longitudinally into the liga-
ment 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 sur-
gery. 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 pa-
tella. Cases 4 and 5 have evident straight hind-
limbs conformation. No case showed radiographic
femoropatellar abnormalities.

Clinical signs of localized desmitis of the proximal
third of the MPL developed immediately after liga-
ment 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 im-
provement until resolution was noticed in 4 to 12
days after surgery for the opposite limb. A sym-
metrical and moderate hindlimb discomfort was
present at the walk following the onset of desmitis in
all cases, but resolved within a few days. Periliga-
mentous 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 signifi-
cant and progressive increase in the MPL size dur-
ing 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 desmi-
itis 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 sur-
gery, the other dressage horse (case 7) had no sign of
UFP. Case 6 was sound for riding, and the har-
nessing horse (case 1) was sound at work 2 years
after surgery. Of the Shetland ponies, all were
used for riding without lameness or gait abnormal-
ity. 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.1 This surgical tech-
nique is considered to be somewhat benign and with-
out serious complications; however, recent studies,
both retrospective3 and experimental,2 along with
clinical cases studies4,5 suggest that MPD predis-
poses the patella to fragmentation.

Following MPD, healing of the MPL occurs, and
the ligament becomes thickened throughput its en-
tire length. The thickened MPL is therefore al-
lowed 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 fibro-
cartilage of the MPL.

All the cases were available for long-term clinical,
radiographic, and ultrasonographic follow-up. No
radiographic abnormalities were seen during the fol-
low-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 tech-
nique 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, 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 advantage 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