Correction of Patellar Luxation by Recession Sulcoplasty in Three Foals

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Lateral luxation of the patella in four femoropatellar joints of three foals was repaired by recession sulcoplasty and medial imbrication of the joint. One foal was euthanatized because of septic arthritis caused by incisional dehiscence, and the other two foals were normal 2 years after surgery. Recession sulcoplasty combined with medial imbrication of the joint capsule resulted in a functional femoropatellar joint and should be considered in foals affected with lateral patellar luxation.

Patellar luxation has been recognized as a rare, probably inherited, syndrome in foals. Patellar luxation can also occur from trauma. Medial imbrication of the joint capsule combined with release of the lateral aspect of the femoropatellar joint capsule has been reported in foals and Shetland ponies. A trochleoplasty technique that involves elevation of a cartilage flap within the trochlear groove removal of subchondral bone and repositioning of the flap with suture stabilization, has been used when there was hypoplasia of the lateral trochlear ridge or the stability of the patella within trochlear groove was questionable. The present report describes the use of recession sulcoplasty and medial imbrication of the femoropatellar joint for correction of lateral luxation of the patella in three foals.

Clinical Findings

Foal 1, a 2-day-old Standardbred filly, was lame and had swelling of the left femoropatellar joint with minor abrasions of the stifle region. Palpation of the stifle and radiographs confirmed a diagnosis of left lateral patellar luxation that appeared to be traumatic in origin. Foal 2 was a 3-month-old American Miniature horse filly referred for evaluation of a bilaterally stiff hindlimb gait. Palpation of both femoropatellar joints revealed moderate swelling, and radiographs confirmed bilateral lateral patellar luxation. Foal 3, a 1-month-old Arabian filly had a left rear limb lameness and swelling of the left femoropatellar joint.

Surgical Technique

The foals were positioned in dorsal recumbency under general anesthesia. After aseptic preparation, a medial femoropatellar arthrotomy was performed. The skin incision was curved and extended from the distal one third of the femur along the medial trochlear ridge of the femur to the proximal one third of the tibia. Sharp dissection was continued through the fascial layers to the joint capsule. The femoropatellar joint was entered and the arthrotomy extended through the medial femoropatellar ligament, if intact, to allow exposure of the distal femur (Fig. 1). An oscillating saw was used to cut a wedge of bone from the trochlear groove (Fig. 2). This defect was then enlarged by removing approximately 5 mm of bone from its medial and lateral margins. A curette was used to remodel the defect and the wedge to ensure a stable fit that did not require internal fixation (Fig. 3). The articular cartilage was trimmed as necessary to ensure a smooth trochlear groove. Then the patella was repositioned by extending the limb and forcing the patella into the trochlear groove. Although this was difficult, a lateral release...
procedure was not necessary to accomplish the reduction. The medial joint capsule and the medial femoropatellar ligament were reconstructed and imbricated using a simple continuous pattern with a nonabsorbable suture. The subcutaneous layer was closed with a simple continuous pattern using an absorbable suture and skin closure was accomplished with either monofilament nonabsorbable suture or stainless steel staples. A stent bandage was placed over the incision. Recovery was assisted and when the foals were stable, they were returned to their stalls.

Results

The initial surgery on foal 1 revealed rupture of the medial femoropatellar ligament, tearing of the medial joint capsule, and lateral luxation of the patella. Repair was accomplished with 2 monofilament polybutester† suture and knitted polypropylene mesh‡ threaded through three holes drilled in the medial distal femur and one in the medial patella. The holes in the femur were drilled one centimeter apart starting 1.5 cm from the medial trochlear ridge and continuing distally. The medial joint capsule was closed with 2-0 monofilament polydioxanone§ sutures in a simple interrupted pattern. This repair was not successful at 24 hours and a second surgical procedure using a recession sulcoplasty and reconstruction of the medial femoropatellar ligament with stainless steel wire and mesh was performed. The foal recovered and was treated with ampicillin (10 mg/kg, every 8 hr, intravenously) and flunixin meglumine (1.1 mg/kg, every 24 hr, intravenously). Incisional dehiscence occurred on day 4. Repeated joint lavage and systemic gentamycin (2 mg/kg, every 8 hr, intramuscularly) did not control the septic arthritis, and the foal was euthanatized on day 14. At necropsy, there was marked muscle wasting of the left hind limb with suppurative exudation, osteomyelitis, and ulceration of the subchondral bone in the femoropatellar joint. *Streptococcus zooepidemicus* was isolated from the synovial fluid. The wedge of bone was in place but not stable.

Foal 2 had lateral patellar luxation and hypoplasia of the lateral trochlear ridges of both distal femurs. Repair

† Novafil, Davis & Geck, American Cynamid, Wayne, New Jersey.

‡ Marlex Mesh, Bard, Billerica, Massachusetts.
CORRECTION OF PATELLAR LUXATION BY RECESSION SULCOPLASTY

ROPATELLAR joint in foals affected with lateral patellar luxation. Two separate causes for patellar luxation were evident in these foals. Foal 1 had normal anatomic configuration of the femoral trochlea and patella with luxation due to trauma and disruption of the medial femoropatellar ligament and joint capsule. Foals 2 and 3 had hypoplastic lateral trochlear ridges with shallow trochlear grooves when examined at the time of surgery. Tangential radiographic projections of the flexed stifle (skyline projections of the femoral trochlea) may have allowed preoperative evaluation of the lateral trochlear ridge, but these were not performed. Foal 1 ambulated well until incisional dehiscence resulted in septic arthritis and caused failure of the repair. The other foals recovered quickly after surgery, ambulated well and did not experience excessive postoperative pain. The author found that lateral release techniques were not necessary to replace the patella after recession sulcoplasty. This may offer the advantage of a more stable femoropatellar joint. It was difficult to replace the patellas in foal 2 and 3, but repeated attempts with the limb in extension facilitated the repositioning procedure. This technique offers the advantage of no form of internal fixation or sutures are necessary to stabilize the replaced wedge of bone. It also appears important to restructure and imbricate the medial joint capsule to ensure a stabilized femoropatellar joint. The previously reported technique requires suturing of the cartilage flap. Also, recession sulcoplasty leaves the subchondral bone just below the cartilage in the trochlear groove intact, possibly resulting in a more even surface. Further comparison for long term results of the two techniques will be necessary before a recommendation can be made.

These techniques may be used as the initial surgical procedure, especially if lateral trochlear ridge hypoplasia exists or if the repositioned patella is unstable at the time of surgery, but they are also useful as follow up procedures should medial imbrication of the femoropatellar joint capsule combined with a lateral release fail.

References


Discussion

Recession sulcoplasty combined with medial imbrication of the joint capsule resulted in a functional femo-