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Patellar ligament repair with ultra-high-molecular-weight polyethylene implant results in successful outcome in 9 dogs

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Objective
To describe the outcomes of patellar ligament (PL) reconstruction with an ultra-high-molecular-weight polyethylene (UHMWPE) implant secured with an interference screw in dogs.

Animals
Medical records from 7 referral centers were reviewed for dogs treated for PL rupture between 2021 and 2025. Cases treated exclusively with UHMWPE implants with a minimum follow-up of 6 months were included.

Clinical Presentation
Dogs presented with lameness and examination findings consistent with PL rupture, confirmed by radiography in all cases. The data collected included diagnostic test findings, surgical technique, complications, follow-up, and outcomes. Canine Brief Pain Inventory scores were obtained at the final follow-up. Radiographic measurements were used to assess the patellar ligament length-to-patellar length ratio in operated and contralateral limbs over time.

Results
10 stifles from 9 dogs met the inclusion criteria. Median follow-up was 18 months (range, 1.5 to 3.8 years). No major complications were recorded. The patellar ligament length-to-patellar length ratio decreased after surgery. Return to activity was reported between 2 and 6 months postoperatively. Full function was recovered in 7 dogs; 2 dogs showed mild lameness beyond mid term. Canine Brief Pain Inventory scores in 8 dogs had a median of 4/100 (range, 0 to 26).

Clinical Relevance
The UHMWPE implant provided effective repair without major complications in all 10 cases and resulted in acceptable to full functional outcomes in 9 dogs. The observed outcomes suggested that this technique could minimize the need for postoperative immobilization and may be associated with a low complication rate.

Keywords: patellar ligament, tendon repair, stifle joint, UHMWPE, dogs

The patellar ligament (PL) is the portion of the quadriceps muscle tendon located between the patella and the tibial tuberosity.[1] Patellar ligament rupture (PLR) leads to an inability to extend the stifle and major functional impairment.[2] Patellar ligament rupture is uncommon in small animals and consequently underreported in the veterinary literature.[1–5] The largest study[1] published in dogs included 43 cases from 12 referral centers over a 13-year period. Although most cases of PLR in dogs result from direct trauma,[1,3,4,6] iatrogenic causes have also been reported, with 33% of iatrogenic cases associated with prior patellar luxation correction.[1]

Surgical management is recommended to treat PLR. Although previous studies[1,3,5–8] report a fair-to-good prognosis with conventional suture techniques, these techniques have been associated with moderate-to-high complication rates. Conventional suture techniques consist in primary tenorrhaphy, which can be performed in the event of acute rupture or laceration when healthy tendon ends can be apposed.[1,4–8]

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Autografts (such as an ipsilateral PL graft[7] or tensor fascia lata graft[4,8]) can be used in chronic injuries or severe ligament defects, but also to reinforce tenorrhaphy. Since these grafts and tenorrhaphy sutures alone cannot withstand the tensile forces generated by quadriceps contraction,[5,8] augmentation techniques are recommended.[1,5,8] Transpatellar or circumpatellar loops of stainless-steel wire or nylon suture passing through a bone tunnel in the tibial tuberosity have been reported.[1,2,4,5] Furthermore, postoperative immobilization of the stifle is also recommended to protect the tenorrhaphy.[1,5,8] External coaptation or strict immobilization of the stifle using temporary transarticular external skeletal fixation has been described[5,6] and associated with frequent complications and irreversible cartilage damage.[1,7] Despite good-to-acceptable limb function in 78% of dogs after conventional repair, 22% had an unacceptable outcome, with 11% of cases requiring surgical revision.[1]

A braided ultra-high-molecular-weight polyethylene (UHMWPE) implant sutured to the cranial surface of the PL and secured distally within tibial bone tunnels with an interference screw (IS) was recently tested in an ex vivo canine PLR model. Tendinous repair with Bunnell sutures augmented with the UHMWPE implant secured with IS demonstrated significantly greater yield, peak, and failure loads, resulting in better resistance to gap formation and failure of the repair compared to Bunnell sutures augmented with circumpatellar sutures.[9] This UHMWPE implant has also been used clinically as a reconstructive option without primary tendinous repair or further osteosynthesis material with good outcomes in a cat[10] with chronic PLR and in a dog with a patellar fracture, combined with a fascia lata graft.[11] To our knowledge, no clinical series describing its use for PL repair in dogs has been reported to date. The aims of this study were to describe the use of a UHMWPE implant secured with an IS to treat PLR in dogs and document the clinical outcomes.

Methods

Inclusion criteria

The medical records of dogs with PLR from 7 referral centers in France from February 2021 to February 2025 were reviewed. The PLR diagnosis was made following consistent orthopedic examination findings (lameness with inability of the dog to maintain active extension, proximal patellar displacement, limited patellar movement during flexion, PL swelling) and confirmed with radiographic findings; ultrasonographic and/or CT were used when available to further characterize the lesion. Dogs treated with the original surgical technique by use of a UHMWPE implant (Novaten; Novetech Surgery) with a minimum 6-month follow-up were included. Dogs presenting a concomitant disease process of the affected limb were excluded. Dogs requiring additional internal osteosynthesis material beside the UHMWPE implant and ISs were excluded. Informed client consent was obtained.

Surgical procedure

Implants—The Novaten implant is made of medical-grade UHMWPE braided fibers[12,13] with a flat section and a corded section **(Figure 1)**. Two models of the implants were used: 4000 and 8000, the latter being wider with greater resistance. The flat section is designed to be sutured within the ligament and secured within a bone tunnel with a titanium IS; the corded section facilitates its passage through bone tunnels. The choice of the implant was made based on manufacturer recommendations, bone stock, and availability of the implant.

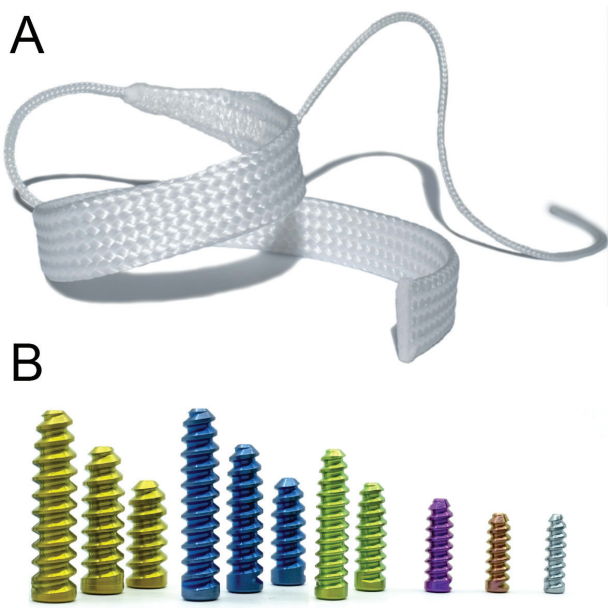

Figure 1—A—Novaten implant composed of 2 sections: a large flat working section that is tapered in a corded section. B—Interference screws. Each color corresponds to a specific diameter. Various screw lengths are available.

Surgical technique—The surgical technique was adapted from the one described in a cat[10] and from the manufacturer's instructional video.[14] A medial parapatellar skin incision was performed, extending from proximal to the patella to distal to the tibial tuberosity. Bilateral parapatellar fascia incisions were made, followed by a medial arthrotomy to release adhesions and evaluate final patellar positioning. The sartorius muscle was medially incised and elevated to allow visualization of the medial and caudal aspects of the proximal tibia. The lesion was debrided and fibrous scar tissue resected when required. An incision along the midline of the lateral side of the quadriceps femoris musculotendinous junction was made proximal to the patella and extended through the PL proximal to the rupture site **(Figure 2)**. Distally to the rupture site, the incision was made on the caudal aspect of the PL. The depth of the incision was about half of the thickness of the PL. Both bone tunnels were drilled with a Kirschner wire as a guide and then enlarged by a cannulated drill bit. The first oblique bone tunnel was drilled through the tibial tu-

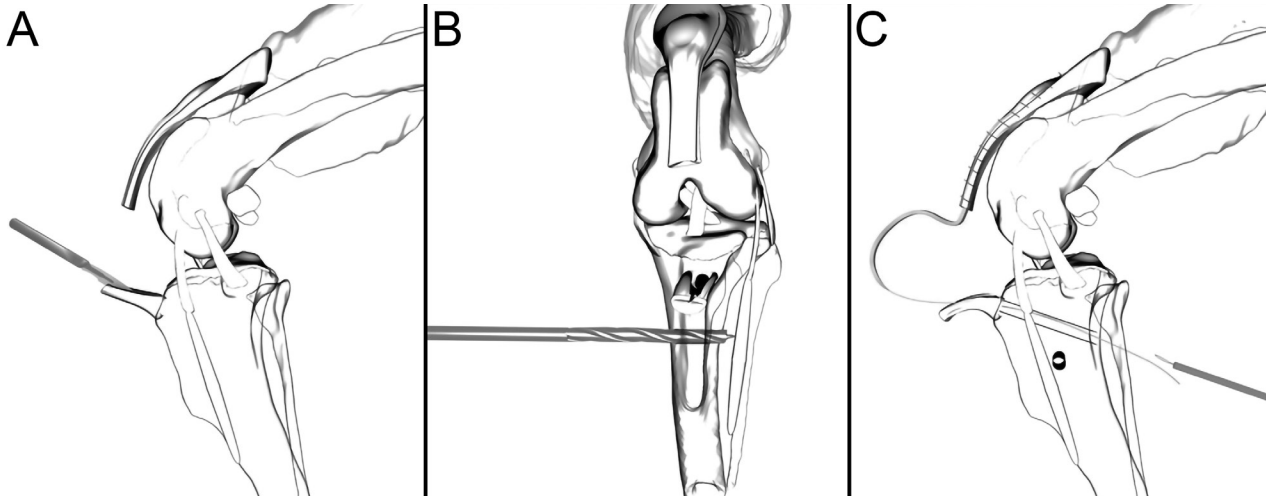

Figure 2—A—Partial thickness midline incision performed in the patellar ligament. B—Drilling of second perpendicular bone tunnel. C—Implant secured with simple interrupted sutures in the patellar ligament and passed through bone tunnels.

berosity at the insertion of the PL in a caudodistomedial direction, forming an angle of approximately 45° from the longitudinal axis of the tibia. The exit point was positioned slightly medial to the caudal aspect of the tibia. A perpendicular bone tunnel was drilled 5 mm distally from the end of the first bone tunnel, from medial to lateral, at mid-distance between cranial and caudal cortices of the tibia and compacted with the IS. The diameter of the bone tunnels depended on the size of the implants and the manufacturer's recommendations. Bone fragments around the tunnel exits were removed with a scalpel blade to avoid damaging the implant during placement and after surgery, and the tunnels were flushed to evacuate any remaining fragments. The UHMWPE implant was secured inside the quadriceps tendon and the PL with UHMWPE suture material by use of a modified tendinous pattern, interrupted sutures, or a double continuous pattern. When possible, the ligament ends were reapposed with tendinous and epitendinous suture patterns (with, respectively, polydioxanone 3-0 USP or UHMWPE suture 2-0 USP).[15] The corded section of the UHMWPE implant was passed through the first bone tunnel cranioproximally to caudodistally, and then mediolaterally through the second tunnel. With the stifle in full extension, the implant was tensioned with a Kocher clamp at the exit point of the bone tunnel on the lateral aspect of the tibia and secured with an IS placed mediolaterally in the distal bone tunnel. A smooth pin inserted as a guide and a cannulated ratchet screwdriver were used to insert the IS in the right direction to avoid damage to the UHMWPE implant and prevent bone fissure. In most cases, the correct proximodistal position of the patella was assessed perioperatively by comparing the PL length (PLL) with measurements taken from contralateral limb radiographs obtained preoperatively. Closure was conventional.

Data collection—The case log of each referral center was searched with the keywords *patellar ligament rupture* or *patellar tendon rupture* to identify relevant cases from the veterinary practice management software. Surgical reports were reviewed to exclude cases not treated exclusively with the UHMWPE implant and IS or that presented with concurrent injuries. For cases treated with the UHMWPE implant, follow-up duration was checked and those with a follow-up shorter than 6 months were excluded. A case report form was used with predefined variables to ensure consistent data collection across centers. Signalment, affected limb, cause of injury, concurrent injuries, cutaneous wounds, initial orthopedic examination, imaging modalities, and time between injury and surgery were recorded.

Any information regarding the surgical procedure was collected. The PL was considered "avulsed" when it was not visibly attached to the patella or tibial tuberosity or "ruptured in the mid-substance." The extent of the lesion (partial or complete rupture) was recorded. Postoperative instructions were similar in all cases, with advice for confinement to a restricted area, short leash walks only, and no unleashed activities (eg, running and jumping). The postoperative immobilization method or external coaptation and available follow-up information were collected, including orthopedic examinations, complications, outcomes, and time to resume preinjury level of activity. Regarding orthopedic examination, assessment of range of motion and lameness grading were reported. Lameness grading was reported with the DeCamp lameness scoring scale.[16] Available radiographs were collected. *Time frames*, *final outcomes*, and *complications* were defined as described by Cook et al[17] for orthopedic studies in veterinary medicine. Time frames were categorized as follows: *perioperative* (up to 3 months postoperatively), *short term* (3 to 6 months), *mid term* (6 months to a year), and *long term* (beyond 1 year). Outcomes were classified as follows: *full function* referred to resumption of full intended level and duration of activities and performance from preinjury status without the need for medication; *acceptable*

function indicated resumption of intended activities and performance that were either limited in duration and/or required medication to be achieved; and *unacceptable outcome* included all other cases. A final phone follow-up was performed, and a Canine Brief Pain Inventory (CBPI) score was obtained.

Radiographic assessment over time—Postoperative radiographs were reviewed for signs of complications and osteoarthrosis. Evolution of PL swelling was assessed by measuring the maximal thickness of the PL, perpendicular to its axis on all mediolateral postoperative radiographs. Enlargement of the first bone tunnel over time was assessed by measuring its width on the cranial and caudal tibial cortices on the immediate postoperative radiographs and at the longest available follow-up.

Regarding PL length assessment, proximodistal patellar alignment was assessed with the method described by Mostafa et al.[18] The following ratio has already been used to assess postoperative changes in PLL over time following PLR.[19,20] Briefly, stifle angle, PL length (PLL), and patellar length (PLe) were measured on blinded mediolateral radiographs by 2 European College of Veterinary Surgeons diplomates and 1 European College of Veterinary Surgeons resident, following the methods of Mostafa et al.[18] Each operator measured the stifle angle, the PLL, and the PLe in triplicate on each radiograph, with a 1-week interval between repeated measurements. In case of avulsion rupture of the PL, extrapolation of the normal contour of the patella was performed, based on superimposition of the normal patella of contralateral radiographs. The PLL:PLe ratios were compared preoperatively, postoperatively, and at mid- to long-term follow-up with the ratios of the contralateral limb. Patellar length measurements were used to compare radiographs with different levels of magnification. Only mediolateral radiographs with a mean stifle angle between 70° and 110° were used to compare ratios, as the PLL:PLe ratio proved constant within this stifle angle range for dogs of the weight range studied.[18]

Statistical analysis

Intraobserver repeatability was evaluated by calculating the coefficient of variation (CV) for each parameter (PLe, PLL, and stifle angle) obtained by 3 measurements. Interobserver repeatability was evaluated by calculating the CV for the means obtained by the 3 observers for each parameter. Median values and range were displayed for time frames, PLL:PLe, lameness scores, and CBPI scores. Descriptive statistical analyses were performed with RStudio, version 2024.09.1 (Posit Software PBC).

Results

Animals and PLR description

Twenty dogs were identified in the database search from 2021 to 2025. Six cases did not meet the inclusion criteria because conventional suture techniques were used (n = 3) or the follow-up period was insufficient (3). Five cases were excluded due to concurrent injury in 1 dog (complicated tibial plateau leveling osteotomy with tibial crest avulsion) and for the use of additional internal osteosynthesis material in 4 others. Nine dogs met the inclusion criteria, with 1 dog presenting with bilateral PLR. The median age and body weight at presentation were 4 years (range, 1 to 9 years) and 25 kg (range, 11 to 45 kg), respectively. Eight of the 10 PLRs were due to noniatrogenic trauma. The cause of the bilateral rupture was unknown. Concurrent injuries included scapular fracture (n = 1), penetrating skin wound near the stifle joint (4), superficial cutaneous wound over the stifle joint (1), and other superficial wounds distant from the stifle joint (1). Orthopedic examinations upon presentation showed a non–weight-bearing lameness in 5 dogs and a weight-bearing lameness in 4 dogs, with a median lameness score of 3.5/5 (range, 1 to 5). Examination findings included proximal patella displacement (n = 8), soft tissue thickening around the PL (6), nonpalpable PL (1), and inability to maintain stifle extension when standing (1). Patellar ligament rupture diagnosis was based on radiographic (n = 10), ultrasonographic (5), and/or CT scan (3) examinations. Preoperative radiographic findings included soft tissue opacity surrounding the PL and proximal patella displacement in all cases (n = 10), bony fragments avulsed from the distal patella (3), and metallic foreign body in the PL (1; **Figure 3**). Ultrasonographic findings included loss of continuity with fiber disruption in all cases (n = 5) and associated significant PL remodeling in 1 case (1). All cases that underwent CT showed PL discontinuity (n = 3).

Prior to surgery, wounds were managed with local wound care and antibiotherapy, either by the referring veterinarian or the referral center. Among the 4 cases with penetrating wounds, 2 underwent joint lavage after bacterial sampling. Negative bacterial culture results allowed surgical intervention after an appropriate delay to ensure resolution of the skin wounds.

Perioperative period

Median time between the occurrence of clinical signs and surgery was 25 days (range, 6 to 59 days), including 4 dogs for which surgery was voluntarily delayed because of penetrating wounds near the surgical site (median time, 35 days). The Novaten implants were secured within the ligament with UHMWPE suture material and either modified tendinous patterns (n = 4), simple interrupted sutures (3), cruciate mattress sutures (2), or a double continuous suture pattern (1; **Supplementary Table S1**). Epitendinous and tendinous sutures were added in 3 cases: epitendinous simple interrupted sutures (n = 1), Bunnell suture pattern (1), and Kessler suture pattern (1). No primary tendinous repair was performed in the 7 other cases (avulsion with minimal size of the bony fragment [n = 4] and important tendinous gap [3]). In all cases, postoperative radiographs documented the correct location of the patella within the trochlear groove (n = 10; Figure 3). Most cases (7 of 10) had no postoperative external coaptation or immobilization. Three cases had external coaptation. A soft modified Robert Jones bandage was

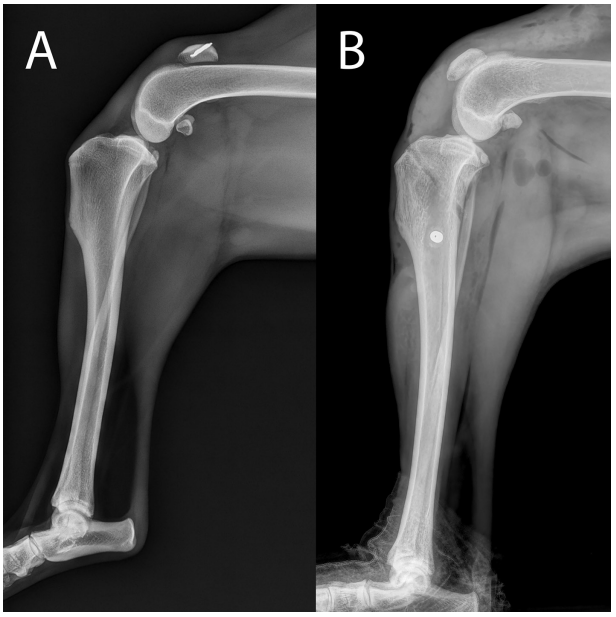

Figure 3—A—Preoperative mediolateral radiographic view of a patellar ligament rupture: the patella is displaced proximally to the trochlear groove, the patellar ligament is thickened, and a metallic linear foreign body is visible. B—Postoperative mediolateral radiographic view: severe soft tissue opacity at the level of the quadriceps tendon and patellar ligament, the oblique bone tunnel, and the interference screw are visible. The patella is within the trochlea.

placed, respectively, for 5 days and 3 weeks for the first and second cases. The last case had a modified Robert Jones bandage with a splint maintaining the stifle joint in mild extension for 3 weeks, followed by 3 weeks with a soft bandage. Postoperative treatments included NSAIDs (n = 10; range, 4 to 15 days), antibiotics (10; range, 5 days to 6 weeks; cefalexin [2] or amoxicillin–clavulanic acid [8]), analgesics (tramadol [3; range, 5 to 10 days] and/or gabapentin for 2 weeks [1]). The 6-week antibiotic treatment was continued by the referring veterinarian without bacterial culture or signs of infection. Periods of reduced activity ranged from 6 to 12 weeks, with a median duration of 11 weeks.

Follow-up

All 9 dogs had available follow-up data. The time to the last clinical reevaluation ranged from 2 months to 2 years after surgery (median, 11 months; Supplementary Table S1). Six dogs had a long-term, 1 had a mid-term, and 1 had a short-term last clinical reevaluation, and 1 was finally assessed at 2 months. Time to final follow-up ranged from 1.5 years to 3.8 years after surgery (median, 2.5 years). One dog had gastrocnemius tendon rupture on the same limb 2.5 years after PL surgery.

Lameness scores decreased compared to preoperative values, both in the perioperative period (median, 1; range, 0 to 2; n = 9) and beyond the postoperative mid-term period (median, 0; range, 0 to 1; **Figure 4**; **Supplementary Table S2**; 7). Subjective range of motion was considered normal and

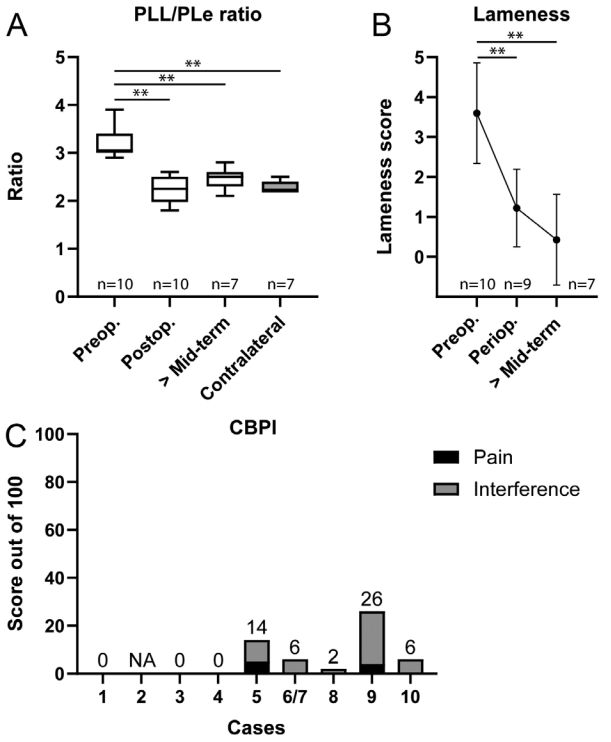

Figure 4—A—Boxplot showing distribution of data with median values and quantiles for patellar ligament length-to-patellar length (PLL/PLe) ratios across time and compared with contralateral ratio. Patellar ligaments of operated limbs were longer preoperatively than postoperatively and at > mid-term follow-up, as well as compared with the contralateral patellar ligament. All other comparisons showed no difference. B—Mean lameness scores with standard deviation over time. Significance of multiple paired pairwise Wilcoxon comparisons is reported as follows: $*P < 0.05$, $**P < 0.01$, $***P < 0.001$. Methods for statistical comparisons are described in **Supplementary Material S1**.. n = number of cases per time point. C—Mean long-term Canine Brief Pain Inventory (CBPI) scores for 8 dogs (9 cases).

comparable to the contralateral limb in all dogs after 2 months postoperatively, except for the dog with bilateral lesions, which presented with limited flexion on 1 side.

Median time to resume preinjury activity was 3.5 months (range, 2 to 6 months). Seven dogs resumed full function, while 2 achieved acceptable function. One of the latter (the dog with bilateral PLR) was not clinically reevaluated after the short-term period and died 2.7 years after surgery of unrelated causes. Despite persistent mild lameness (1/5) on 1 limb, the dog resumed its preinjury activity level, although the duration of activity was reduced. The other dog with acceptable function was last evaluated at the long-term follow-up and showed persistent lameness (3/5) and muscle atrophy. However, no signs of pain or patellar luxation were present and the range of motion was normal. The other 7 dogs resumed their preinjury level of activity without any lameness or medication. No patellar luxation or signs of pain were observed when manipulating the stifle at their last clinical reevaluation (perioperative, n =

1; mid term, 1; long term, 5). When performed during follow-up, PL ultrasonography (n = 3) revealed a homogenous fibrillated appearance of the PL, except at the site of tenorrhaphy where sutures appeared as hyperechoic foci associated with distal acoustic shadowing. The implant had a linear hypoechoic aspect. No major complications were reported either perioperatively or during the follow-up in all cases.

Canine Brief Pain Inventory scores were obtained at the final follow-up at a median time of 2.6 years (range, 1.6 to 3.8 years) for all but 1 dog (Figure 4; Supplementary Table S1). Among the 8 assessed dogs, the median pain score was 0/40 (range, 0 to 5) and the activity interference score was 4/60 (range, 0 to 22). The median total score was 4, ranging from 0 to 26. The 2 dogs classified as having acceptable function had total scores of 6 and 26, the score of 6 corresponding to the dog with bilateral lesions. The dog with the highest CBPI score (26) was nonetheless considered to have acceptable comfort and function and returned to its preinjury activities. The third highest score (14) was reported for a dog classified as having a full functional outcome; however, the CBPI was completed 2 weeks after the dog underwent plate removal after gastrocnemius tendon rupture on the same limb and temporary arthrodesis, which may have negatively impacted the owner's scoring. Overall owner impression was rated as *very good* in 4 dogs and *excellent* in the other 4.

Radiographic assessment over time

No signs of complication were observed (no radiolucency around the implants or migration of IS) on any postoperative radiograph. Mild signs of osteoarthrosis were observed in some cases at the final radiographic follow-up, primarily characterized by cranial apical patellar enthesopathy, small osteophytes at the patellar apex and at the cranioproximal aspect of the tibia near the insertion of the first bone tunnel. Swelling of PL and quadriceps tendon was mostly visible until 3 months after surgery **(Supplementary Table S3)**. A mild enlargement of the first oblique bone tunnel was observed on the longest available follow-up radiographs (Supplementary Table S2).

Regarding measurements of the PLL:PLe ratios, the mean CVs were lower than 2% for each parameter (angle, PLL, PLe) and each observer (range, 0% to 6.9%), showing good intraobserver repeatability. The CV means between observers were lower than 3.5% for each parameter and varied between 0.6% and 8.4%, showing good interobserver repeatability **(Supplementary Table S4)**.

The preoperative PLL:PLe ratios of injured limbs were higher than those of the contralateral limbs (Figure 4; **Supplementary Table S5**). Postoperative PLL:PLe ratios were lower than the preoperative ratios and similar to those of the contralateral limbs (Supplementary Table S2). The ratios measured after the mid-term follow-up were lower than the preoperative ratios and comparable to immediate postoperative and contralateral ratios. The 2 cases that achieved only acceptable function were also the only dogs with a PLL:PLe ratio of 2.9 beyond perioperative period.

Discussion

This was the first clinical study describing the surgical management of PLR in dogs with a UHMWPE implant secured with an IS. Ten PLRs were successfully treated with the technique adapted from the one described in a cat.[10] Despite limited prior experience, its reproducibility and clinical effectiveness across multiple centers suggested a favorable learning curve, as the repairs were effective without major complications.

In the present study, 7 out of 9 dogs achieved full functional recovery (8 out of the 10 stifles), as confirmed by clinical evaluations (including normal subjective range of motion for 8 of the 9 dogs) and supported by low CBPI scores reflecting a high perceived quality of life by the owners. These results compare favorably to those of the largest retrospective study[1] to date, in which only 21 out of the 40 dogs regained full function and 20% experienced unacceptable outcomes despite treatment with various traditional techniques. Radiographic assessment of the PLL:PLe ratio confirmed successful repair, with postoperative ratios comparable to contralateral limbs and maintained over time, which likely explained the good clinical outcome. In this case series, 2 dogs recovered only acceptable function, owing to mild persistent lameness despite a "very good" overall impression of the owner and low total CBPI scores (6 and 26), showing mild interference with daily activity. Interestingly, these 2 cases also had the highest postoperative PLL:PLe ratios (2.9), raising the possibility that suboptimal patellar alignment may contribute to residual lameness. While causality cannot be established, this correlation is unlikely to be incidental and warrants further investigation in larger, prospective studies.

No major complications or repair failures were reported, including in the 4 dogs presenting with preoperative penetrating wounds. Despite the known increased risk of infection associated with braided synthetic implants,[21] no postoperative infections were observed. This may be partly due to the decision to delay surgery in these cases until full cutaneous healing had occurred, thereby minimizing the risk of contamination. As the braided synthetic nature of the implant increases the risk of infection, particular care should be taken when considering its use in the presence of a wound or local infection despite our findings.[10] This potential risk may have raised concerns among surgeons and referring veterinarians, possibly explaining disparities in duration of antibiotic therapy and, in some cases, even prolonged and unnecessary antibiotic use. The absence of complication contrasts with previous studies[1,22] reporting relatively high complication rates. The largest retrospective study[1] of PLR included 43 dogs treated with conventional techniques: the largest retrospective study on PLR included 43 dogs treated with conventional techniques: sutured anastomosis or approximation of the rupture ends, with

or without augmentation methods (fascia lata graft, circumpatellar or transpatellar suture), and with or without external coaptation or temporary immobilization of the stifle joint with external skeletal fixation. Soft tissue injuries occurred in 6 out of 8 dogs that underwent external coaptation with a Robert Jones bandage, or a modified Robert Jones with a splint or a cast.[1] This high complication rate is consistent with previously reported risk associated with external coaptation including edema, skin injuries, pyodermatitis, or abnormal range of motion.[23]

Similarly, 7 out of 17 dogs immobilized with external skeletal fixation experienced fixation-related complications such as pin loosening, frame morbidity, and 1 femoral fracture,[1] consistent with literature reporting pin tract infection and implant failure as the most common complications.[24] However, 12 out of 18 cases without postoperative immobilization (66%) developed complications, of which half were major.[1] Notably, all 5 PL repair failures occurred without strict postoperative immobilization (1 dog had external coaptation), suggesting an association between lack of immobilization and repair failure when using conventional techniques. Therefore, strict postoperative immobilization of the stifle with external skeletal fixation remains recommended to avoid excessive stress on the repair with conventional techniques.[1,7,25]

In our study, external coaptation was used only for 3 stifle joints after surgery with no repair failure; soft bandages were used in all but 1 dog, which had a modified splint. Apart from preventing complications, avoiding complete joint immobilization may reduce fibrous adhesion formation and cartilage damage, improve the range of motion, and prevent muscle contracture.[6,7,10] Physiotherapy could be initiated early during the recovery process, potentially resulting in less severe muscle atrophy than with postoperative immobilization. Further comparative studies are needed to confirm the benefits of avoiding complete joint immobilization in this context.

The absence of complications and repair failures in this series was likely due to the biomechanical integrity of the UHMWPE construct. Its high tensile strength likely provided sufficient stabilization of the repair, even when anchored in the muscle and tendon tissue, thereby reducing reliance on external immobilization. This hypothesis is supported by recent biomechanical data, which showed that PL repairs augmented with UHMWPE implants had significantly higher tensile strength than conventional repairs reinforced with circumpatellar sutures.[9]

This study had several limitations. Its retrospective, multicenter design may have introduced variability in case documentation, follow-up quality, adherence to standardized imaging protocols, and current antimicrobial stewardship concepts. The current veterinary literature also lacks large-scale controlled studies of PLR. Further prospective investigations with standardized outcome measures, gait analysis, and larger sample sizes are needed to objectively compare this technique to conventional repair methods.

Patellar ligament repair was completed successfully in 10 stifles by use of a UHMWPE implant secured with an IS. A total of 80% of dogs resumed full function, 70% of cases did not have external coaptation, and none of the dogs had strict postoperative immobilization with external skeletal fixation. This technique appeared to be a safe and effective option for managing PLR in dogs, avoiding the need for postoperative immobilization, with a low complication rate and promising mid- to long-term functional outcomes, warranting further prospective validation.

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Supplementary Materials

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