

**TREATMENT OF PATELLAR LUXATION USING TROCHLEOPLASTY
TECHNIQUE IN 10 DOGS**

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Summary:

This study was carried out on 10 dogs which diagnosed patellar luxation in Ankara University Faculty of Veterinary Medicine Small Animal Hospital Surgery Clinic between May 2016 – March 2017. As a result of the clinical and radiographic evaluations, patellar luxation was detected bilaterally in 2 dogs and one dog was operated bilaterally and 9 dogs were operated unilaterally. Trochleoplasty operation was performed with the aim of treatment. Following this procedure, tuberositas tibia transposition in 4 cases which had medial patellar luxation was performed and capsuloraphy were carried out in all cases.

Key words: Dog, Luxation, Patella, Trochleoplasty.

Introduction:

Patellar Luxation is a lateral, medial or dorsal displacement of the patella from the anatomical region of the knee joint. The condition has traditionally been recognized in toy and miniature breeds but appears to be increasing in prevalence in large-breed dogs. Medial luxation is more frequently recognized than lateral luxation (McKee and Cook, 2006; Yavru, 2012).

Patellar luxation characterized by pain, lameness and osteoarthritis, except for traumatic causes; Mostly due to the angular and rotational deformities of the femoral and tibial bones (McKee and Cook, 2006; Yavru, 2012).

Patellar luxation has been classified in clinically at four grades;

- Grade I: The patella can be manually luxated when the stifle is extended; however, when released it returns to the trochlea. Internal rotation of the tibia and displacement of the tibial tuberosity are minimal.
- Grade II: The patella is frequently located medially with flexion of the stifle joint; however, it is easily reduced when the stifle is extended and the tibia externally rotated. The tibial tuberosity is displaced 30 degrees medially. Mild angular deformity of the femur and tibia may be present
- Grade III: The patella is permanently luxated. It may be reduced, but luxation recurs immediately. Angular and rotational deformities of the femur and tibia are common. The trochlea is usually shallow or flat
- Grade IV : The patella is permanently luxated and it is not possible manually to reposition it in the trochlea. Muscle contracture reduces the range of stifle extension. Angular and rotational deformity of the femur and tibia are generally marked and the tibial tuberosity is displaced 60-90 degrees medially (McKee and Cook, 2006; Yavru, 2012).

Even if the pain is removed for a certain period of time by medical treatment, operative treatment is required in the majority of cases with second, third and fourth grade luxations. As an operative treatment methods; Trochleoplasty, tibial tuberosity transposition, medial soft tissue release, lateral soft tissue tightening, patellectomy, Patellar Groove Replacement, Ridge Stop Implant can be performed (McKee and Cook, 2006; Yavru, 2012).

This study aimed to share the clinical results of treatment with trochleoplasty operation in dogs with patellar luxation.

Material and Method:

This study was carried out on 10 dogs of different breed, age and gender brought to Ankara University Faculty of Veterinary Medicine Small Animal Hospital Surgery Clinic between May 2016 – March 2017.

The patients who brought to the clinic had different ages from 9 to 84 (mean 34) months old. As a result of the clinical and radiographic evaluations of 8 miniature breeds and 2 medium breeds, 4 male, 6 female total 10 dogs, patellar luxation was detected bilaterally in 2 dogs and one dog was operated bilaterally and 9 dogs were operated unilaterally. 8 limbs had lateral and 3 limbs had medial patellar luxation.

The grades of the patellar luxations was determined first grade in 1 extremity, second grade in 4 extremities, third grade in 4 extremities and fourth grade in 2 extremities.

Anteroposterior, mediolateral and skyline radiographs were taken for examine the femoral and tibial deformities and the depth of the trochlear sulcus (Figure 1).

As preoperative antibiotic 25 mg/kg cephalosporin (single dose, IV) and for analgesia 1 mg/kg Morfin HCL applied half an hour before the operation. After receiving anesthesia with 6 mg/kg propofol and 1% isoflurane, Trochleoplasty operation was performed with the aim of treatment. For the trochleoplasty operation longitudinal craniolateral parapatellar incision were done, the patella was medially overturned and a rectangle-like osteotomy line was marked (Figure 2). Osteotomy was performed, the cartilaginous tissue was removed and cancellous bone tissue was cured until the desired sulcus depth was reached (Figure 3). The cartilaginous tissue was placed again (Figure 4). Following this procedure, tuberositas tibia transposition in 4 cases which had medial patellar luxation was performed (Figure 5) and capsuloraphy were carried out in all cases. In 4 patients who undergoing tibial tuberosity transposition operation underwent 25 days bandage. All of the patients were treated with antibiotic (12.5 mg/kg Amoxicillin - BID) and analgesic (2 mg/kg Carprofen) for 10 days with post operative movement restraint.

Post operative controls of the cases were evaluated clinically and radiologically (Figure 6) at 10th and 25th days.

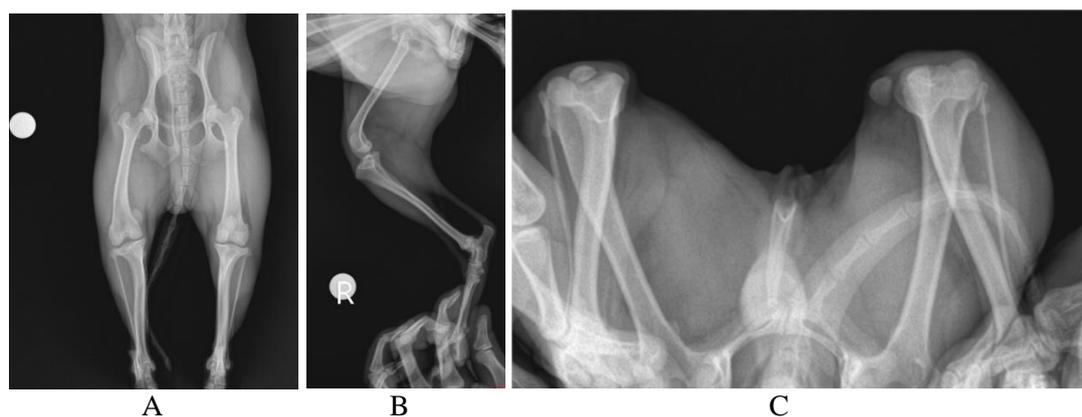


Figure 1. (A) Anteroposterior, (B) mediolateral and (C) skyline radiographs

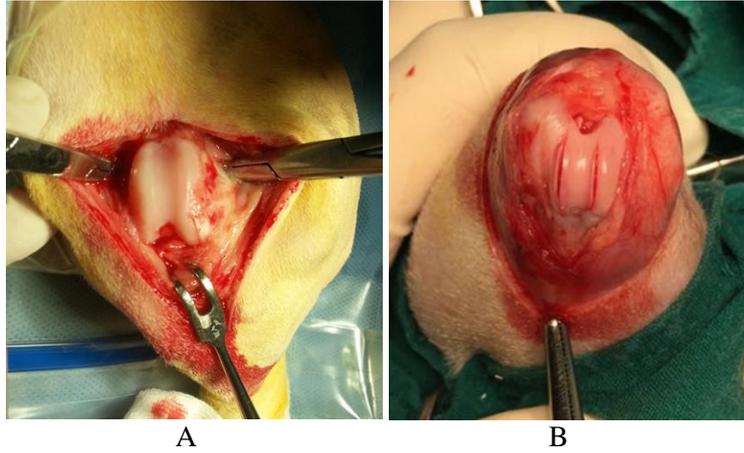


Figure 2. (A) Longitudinal craniolateral parapatellar incision and medially overturned of the patella, (B) a rectangle-like osteotomy line.

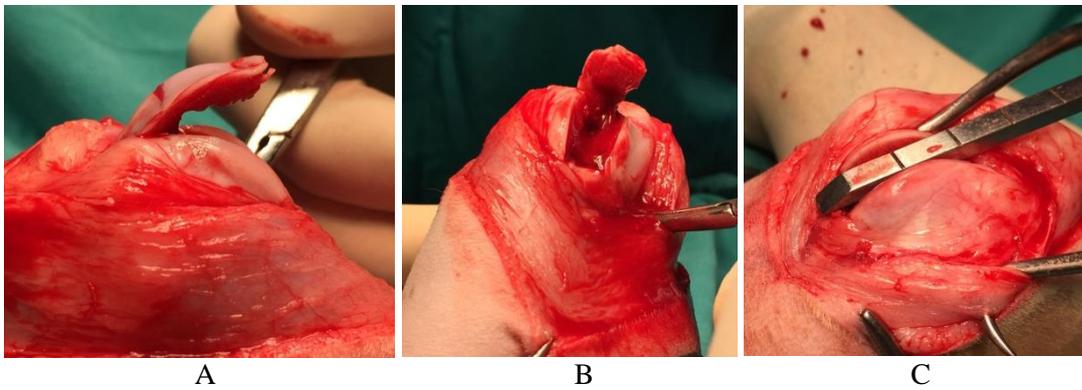


Figure 3. (A) The cartilaginous tissue was removed, (B) cancellous bone tissue was cured, (C) trochlear sulcus has deepened.

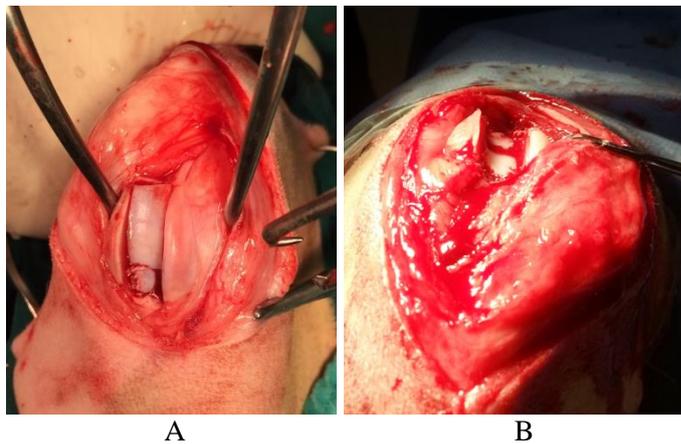


Figure 4. (A, B) The cartilaginous tissue was placed again.

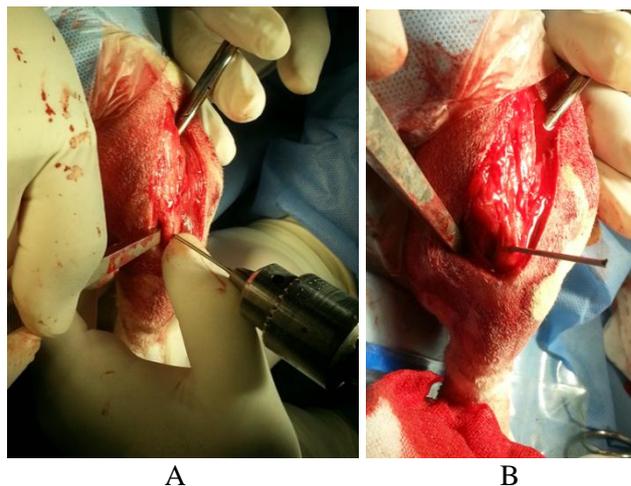


Figure 5. (A, B) Tuberositas tibia transposition.

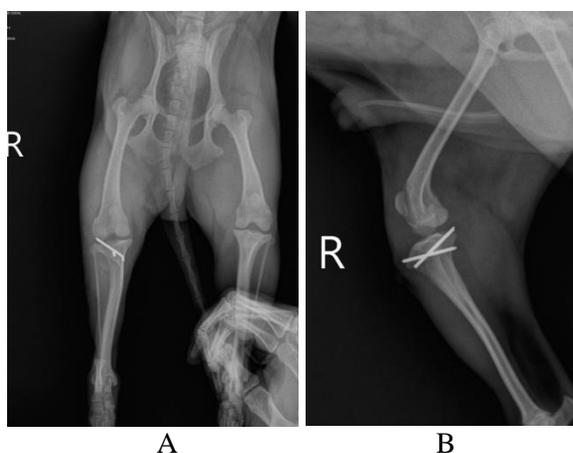


Figure 6. Post operative radiographic evaluation. (A) Antero-posterior, (B) medio-lateral radiographs.

Results:

Except one case, all cases were determined to start to give weight on the limb in 10th day control and in 25th day control, it was determined that they were actively using the extremities. In one case, narrowing of the joint range of motion due to the shortness of M. quadriceps, which was the result of chronic medial patellar luxation, was observed, and because of this reason it was observed that to suspend the leg. Physical therapy was applied and at the end of 2 months, this patient was enabled to use the extremity actively.

In all patients, with clinical and radiographic evaluations were showed no patellar relaxation and clinical improvement was observed.

Discussion:

According to literature review, similar to this study, patellar relaxation and major complications were prevented, lameness complaint decreased and in many cases clinical relief was observed with trochleoplasty and tuberositas tibia transposition operations (Arthurs and Langley-Hobbs, 2006; Hans et al. 2016; Dunlap et al. 2016; Di Dona et al. 2016).

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