

SURGICAL MANAGEMENT OF MEDIAL PATELLAR LUXATION BY TROCHLEOPLASTY AND TIBIAL TUBEROSITY TRANSPOSITION IN A DOG

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An eight year old male Pomeranian dog was presented to the Veterinary College Hospital, Bangalore with the history of left hind limb lameness and intermittent improper weight bearing. Clinical examination revealed frequent medial luxation of left patella and consistent pain during flexion of the limb. Based on the physical and Radiographic examination, it was diagnosed as a case of Grade III medial patellar luxation. The stifle joint was approached through cranio-medial incision. The cranial tibial tuberosity was separated from its attachment and placed slightly laterally from its existing position and fixed by using K-wire. The arthrotomy incision was closed with simple interrupted sutures using no. 1-0 polyglactin-910. Postoperatively the stifle joint was immobilized with crape bandage. Antibiotics and non-steroidal anti-inflammatory drugs were administered orally for seven days and skin sutures were removed after 12 days postoperatively. The dog had uneventful recovery.

Keywords: Medial luxation, Tibial tuberosity, Stifle joint, Arthrotomy incision.

The patella is the largest sesamoid bone in the body. It is ovate in shape and curved so as to articulate with the trochlea of the femur. The patella is an ossification in the tendon of insertion of the large extensor of the stifle, the muscle quadriceps femoris. That part of the tendon between its insertion on the tibial tuberosity and the patella is also known as the patellar ligament. The patella alters the direction of pull of the tendon of the quadriceps; it protects the tendon, and it provides a greater bearing surface for the tendon, to play on the trochlea of the femur than would be possible without it (Evans and Alexander, 2013). Medial patellar luxation is a displacement of the patella from the trochlear sulcus. Medial patellar luxation is a common cause of lameness in small-breed dogs, but it also occurs in large-breed dogs (Kurt *et al.*, 2013). Medial luxations account for 75% to 80% of cases in all breeds. The majority of patients are small breed dogs including miniature and toy poodles, Yorkshire terriers, Pomeranians, Chihuahuas, Boston terriers, Pekingese, and cavalier King Charles spaniels (Piermattei *et al.*, 2006).

Case History and Observations

An eight year old male Spitz dog was presented to the Veterinary College Hospital, Bangalore with the history of left hind limb

lameness and intermittent improper weight bearing. Clinical examination revealed frequent medial luxation of left patella and consistent pain during flexion of the limb. Based on the physical and Radiographic examination, it was diagnosed as a case of Grade III medial patellar luxation

Treatment and Discussion

The Dog was fasted for 12 hours and Premedicated with Atropine sulphate @ 0.04 mg/kg body weight subcutaneously and Xylazine hydrochloride @ 1 mg/kg body weight intramuscularly. After a 15 minute interval, the animal was anesthetized with 2.5% Thiopentone sodium at dose rate of 12.5 mg/kg body weight. The dog was placed in right lateral recumbency, elevating the affected limb. The stifle joint was approached through cranio-medial incision. The fascia, retinaculum and joint capsule were incised successively and retracted to visualize the femoral trochlea (Fig. 1).

A wedge shaped piece of bone was incised in the femoral trochlea more towards the lateral side using a sterilized hacksaw blade (Fig. 2). The sulcus was further deepened using mini bone nibbler and the dismantled pieces along with articular cartilage was put back at its original site by suturing the cartilage using Polyglactin No. 1-0 in interrupted manner. The cranial tibial

tuberosity was separated from its attachment (Fig. 3) and placed slightly laterally from its

existing position and fixed by using K-wire (Fig. 4).



Fig. 1 - Shallow Femoral Trochlea causing medial luxation of the patellar ligament



Fig. 2 - Wedge resection performed in the femoral trochlea



Fig. 3 - Cutting of the Cranial tibial Tuberosity using Hacksaw Blade



Fig. 4 - Lateral Fixation of the Cranial tibial Tuberosity using K wire

The stifle joint was flushed with normal saline and checked for patellar laxity by flexing and extending the limb. The arthrotomy incision was closed with simple interrupted sutures using no.1-0 polyglactin-910. The subcutaneous fascia and skin were sutured in routine manner. Postoperatively the stifle joint was immobilized with crape bandage. Antibiotics and non-steroidal anti-inflammatory drugs were administered orally for seven days and skin sutures were removed after 12 days postoperatively. The dog had uneventful recovery. Postoperatively, light passive exercise was performed, which was found effective in reducing seroma accumulation and stiffness due to pain.

Patellar luxation is a frequent occurrence in dogs and thus, represents a common finding in everyday veterinary trauma and orthopedic practice was also mentioned by Roush, 1993. In this case the parapatellar cartilages showed no abnormality

though contrary to it Remédios *et al.* 1992, reported that the cartilage erosion on the patellar articular surface. A Grade 0 patella luxation is normal and the patella will not luxate during the physical examination. A Grade 1 patellar luxation is one in which the patella will luxate when digital pressure is applied, usually with the stifle in extension, but will immediately return to its normal position when the pressure is removed. A Grade 2 patellar luxation is one in which the patella will readily luxate with digital pressure and tends to remain luxated. However, it can be returned to the trochlear groove and will remain in place most of the time. A Grade 3 patellar luxation is one where the patella is in the luxated position most of the time, although it can be returned temporarily to the trochlear groove with digital pressure. A Grade 4 patellar luxation is one where the patella is in the luxated position at all times and cannot be returned to

the trochlear groove, Numerous surgical techniques are aimed at restraining the patella within the trochlear groove. Tibial tuberosity transposition, medial restraint release, lateral restraint reinforcement, trochlear groove deepening, femoral osteotomy, tibial osteotomy, anti-rotational sutures, and transposition of the origin of the rectus femoris have all been advocated for correction of patellar luxation. Generally, a combination of techniques is required to achieve intraoperative stability of the patella. Surgeries that involve only deepening of the trochlear groove, capsule and fascial release, and imbrication are more prone to failure, as the patella and trochlear groove have not been permanently realigned as also reported by Dunlap *et al*, 2016.

In the present study, wedge recession trochleoplasty along with tibial tuberosity transposition was found effective in treating grade III medial patellar luxation.

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