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Surgical Correction of Congenital Bilateral Patellar Luxation in a Pup - A Case Report

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Luxation of patella may be congenital or traumatic origin, and can affect any breed. The congenital form is related to developmental abnormalities of the limb that create malalignment of quadriceps group of muscles. With underlying abnormalities of hip and stifle joint congenital lateral patellar luxation have skeletal abnormalities like retroversion of femoral head and neck, coxa vara (altered angle of inclination), genu valgum and shallow trochlear groove with poorly developed trochlear ridges (Denny and Butterworth, 2006). Luxation of patella is a common cause of lameness in dog which can be in medial or lateral displacement. The incidence of medial patellar luxation is 5 times more than lateral luxation and is seen more in large breeds of dogs. Lateral patellar luxation may predispose the dogs to knock knee (genu valgum) and cow hock (hock valgus) condition (Robins, 1990). The cause of lateral patellar luxation is unknown but is thought to be related to anteversion or coxa valga of the coxofemoral joint, which shifts the line of force produced by the pull of quadriceps lateral to the longitudinal axis of the trochlear groove. This abnormally directed lateral force pulls the patella from the trochlear sulcus causing skeletal abnormalities (Fossum, 2002).

History and Clinical Examination

A 4 month old non-descript male puppy was brought to Department of Surgery and Radiology, Veterinary College, Bangalore with the history of abducted stifle and difficulty in walking on both the hind limbs since birth with occasional skipping upon walking and running. On physical examination it was found to be a case of bilateral grade II lateral patellar luxation (Fig. 1) and it was decided to correct by surgery.

Surgical Procedure

The left limb was prepared aseptically for corrective surgery of patellar luxation. The dog was premedicated with atropine sulphate @ 0.04 mg/kg body wt. s/c and Triflupromazine hydrochloride @ 1 mg/kg body wt. i/v (Siquil, Zydus AHL). General anesthesia was induced and maintained with Thiopentone sodium 2.5% i/v at a dose rate of 12.5 mg/kg body wt (Thiosol, Neon Labs). Animal was positioned on right lateral recumbency with affected limb above. A cranio-lateral incision on left stifle joint was made extending from proximal tibia to the tibial tuberosity. Tibialis cranialis muscle was separated from lateral tibial tuberosity and extensor tendon from the tibial plateau. Laterally displaced patella with shallow trochlear groove was found. So it was decided to perform trochlear wedge resection and tibial tuberosity transposition. Deepening of the femoral trochlear groove was done to seat patella into its normal position. Trochlear chondroplasty was done by making an inverted U shaped incision on cartilage flap and undermining it with osteotome and a mallet and elevating



Fig. 1 : C-arm image of laterally displaced left patella (arrow)



Fig. 2 : C-arm image of transpositioned tibial tuberosity (left limb) immediate post



Fig. 3 : C-arm image of transpositioned tibial tuberosity of right limb (after 60 days second surgery) using two K wires.

it with a periosteal elevator to form a hinged flap. By reflecting the trochlear flap the subchondral bone was scraped using a curette and cartilage was positioned back to preserve its contact between the patella. For transposing the tibial crest, the bony prominence onto which the tendon of the patella attaches below the knee a giggly wire saw was passed beneath the patellar tendon and tibial tuberosity. Osteotomy was performed about 2 cm caudal to its cranial point. This helps in realignment of the quadriceps, the patella and its tendon. The tibial tuberosity was repositioned in alignment with the trochlea and was fixed over tibia with a cortical screw (Fig. 2). The joint capsule was closed by simple interrupted sutures using Vicryl No.1 (Polyglactin 910, Johnson & Johnson).

Post-operatively stifle joint was immobilized with adhesive crepe bandage for three weeks. Cefazolin sodium at the dose rate of 20 mg/kg bid for 7 days was given. The animal showed satisfactory weight bearing and joint movement by 40 days post-operatively. Similarly patellar luxation on right limb was also corrected 60 days after first surgery but instead of using a bone screw two K wires of 1.5 mm diameter were used for fixing of tibial tuberosity over the tibia for transposition (Fig. 3). Gait of the animal progressively improved and animal started walking normally.

Discussion

Lateral patellar luxation in small dogs is rare and usually congenital. In large dogs or giant breeds luxation is often lateral and causes a syndrome associated with severe manifestations of hip dysplasia including marked limb deformity. Lateral patellar luxation is a syndrome characterized by excessive anteversion of femoral neck, coxa valga, hypoplasia of vastus medialis, medial bowing of femur and tibia (genu valgum). Surgical correction of patellar luxation requires realignment of extensor mechanism of patella in the femoral trochlea. Extensor realignment is accomplished by tibial tuberosity transposition and patellofemoral joint is stabilized by deepening the femoral trochlea through various trochleoplasty or sulcoplasty procedures (Vasseur, 2002).

Patellar luxation can be treated by more than one technique for favorable outcome. Trochlear wedge resection is an effective procedure to stabilize patella within the trochlear groove with satisfactory weight bearing, limb usage after surgery and excellent functional usage of stifle joint. Trochlear sulcoplasty and tibial tuberosity transposition minimized the risk of post operative patellar relaxation and major complications and combination of these techniques is useful to restore the alignment of extensor mechanism (Vikas, 2015).

Rahman and Ahasan (2007) followed similar surgical technique but instead used copper wire for tibial tuberosity transposition. Raidurg *et al.* (2015) reported management of lateral luxation of patella in a dog by trochlear wedge resection sulcoplasty and retinacular imbrication suture technique. Rathod *et al.* (2015) reported lateral patellar luxation in a dog by modified trochlear wedge resection technique.

Conflict of Interest: All authors express no conflict of interest.

References:

Denny H.R. and Butterworth H.J. (2006). The Stifle. In: *A Guide to Canine and Feline Orthopaedic Surgery*. 4th edn. Blackwell science Ltd., Oxford, pp. 517.

Fossum, T.W. (2002). *Text Book of Small Animal Surgery*, 2nd edition, Mosby, Inc, An Elsevier Science Company, St. Louis, Missouri, pp.1140.

Rahman, M.M and Ahasan, A.S.M.L. (2007). Congenital lateral patellar luxation in a Shorail dog: A case report. *Bangl. J. Vet. Med.*, **5**: 121-124.

Raidurg, R., Dhana Lashmi, N., Phaneendra, M.S.S.V., Vinay, B.A., Saibaba, M. and Ch Mallikarjuna Rao (2015). Management of Lateral Luxation of patella in a dog. *Indian J. Vet. Surg.*, **36**: 64-64.

Rathod, R., Tharasingh, D.L., Sangeeta Jadhav, Patil, A.S. and Ranganath, L. (2015). Lateral patellar luxation and its surgical treatment in dog. *Indian J. Canine Pract.*, **7**(1): 47-49

Robins, G.M. (1990). The Canine Stifle Joint. In: *Canine Orthopedics* by Whittick. 2nd edn. Lea & Febiger, Philadelphia. pp. 707.

Vasseur, B.P. (2002). Stifle Joint. In: *Textbook of Small Animal Surgery*. Slatter (Edr). 3rd edn. Saunders, Philadelphia. pp. 2122-2133.

Vikas, R.N. (2015). *A Clinical study on the Surgical Treatment of Patellar Luxation in Dogs*. M.V.Sc. thesis, Sri venkateshara Veterinary University, Tirupati, India.

