TIBIO-TARSAL LUXATION AND ITS MANAGEMENT IN A DOG

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INTRODUCTION

Ligament rupture and joint instability have been reported in 50% of traumatic joint luxations (Schaeffer et al, 1999). Shearing injuries of the canine hock most commonly result in the loss of medial malleolus of the tibia and the rupture of the medial collateral ligament resulting in joint instability and disarticulation (Slocum, 2008). Most injuries to the ligamentous structures of the tibiotarsal joint are amenable to repair. The primary aim of treatment is to restore joint alignment and stability, while supporting structures and articular cartilage surfaces heal (Bruce et al, 2002). The present paper discusse the successful surgical management of tibiotarsal luxation in a dog.

History and Clinical Signs

A 3 year old male non-descript dog of weighing 14.5 kg was presented to the Small Animal Orthopedic Unit, Madras veterinary college teaching hospital with the history of traumatic shearing injury to the right tibiotarsal joint. There was a lacerated wound at the level of the hock and the tibiotarsal joint was exposed. The range of motion of the tarsal joint was increased indicating ligamentous injury. Radiography confirmed it as tibiotarsal luxation (Fig. 1). Surgical correction of the luxation was decided.

Treatment and Discussion

The dog was premedicated with atropine sulphate @ 0.04 mg/kg b.wt administered intramuscular followed by xylazine hydrochloride @ 1 mg/kg b.wt intramuscular. After ten minutes following Premedication, general anaesthesia was induced using ketamine hydrochloride @ 10 mg/kg b.wt administered intramuscular and diazepam @ 0.2 mg/kg b.wt intravenous. Anaesthesia was maintained with required concentration (2%-3%) of isoflurane using a Boyles anaesthetic apparatus. Cefotoxime and meloxicam were administered @ 20 mg/kg b.wt and 0.2 mg/kg b.wt intravenous preoperatively.

The surgery was performed using the hanging limb technique to promote easy reduction of luxation and cause adequate muscle relaxation. The wound was extended and the luxation was manually reduced with traction, countertraction and manipulation and retained at an approximate angle of 125 degree angulation. This was in accordance with Stoll and Sinibaldi, (1975). The authors opined that the fusion angle for tibiotarsal joint is approximately 125 - 135 degree for dogs. The tibiotarsus was stabilized with type II external fixator. Three 2.5mm steinmann pins were used for transfixation. One pin was transfixed through the distal tibia and the two pins were placed through the tarsus. Connecting bars were prepared by filling up of flexible corrugated PVC tubes with epoxy putty and applied to the lateral and medial pins (Fig. 2). 2.7mm three cortical screws were applied, one was inserted on distal tibia and the two were inserted on the talus. Two figure of '8' sutures were applied one from distal tibia to cranial talus with the limb in flexion and the other from distal tibia to caudal talus with

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the limb in extension to mimic the short and long collaterals respectively using prolene. As the skin loss was extensive walking sutures were placed to oppose the skin to the best extent possible. Radiographic evaluation confirmed joint stability (Fig. 3). The limb was placed in a modified Robert Jones bandage. The animal was kept under complete rest. Passive exercise, massage from distal to proximal limb and mild flexion and extension of tibiotarsal joint was advocated from second post operative week. The wound healed uneventfully. External fixation was removed at third week, However, a mild degree of limping was present at 4th week of evaluation.

The initial management of tibiotarsal luxation should be aimed at preventing further damage to stabilizing structures and articular surfaces, as well as debridement of any associated wound. Treatment goals should then focus on restoring joint congruity and stability while preserving range of motion (Anderson et al, 1993). Traditional treatment options involve open or closed reduction, joint immobilization and exercise restriction for a minimum of 2 weeks (Piermattei and DeCamb, 2006). During the immobilization period, external coaptation consisting of a bandage, splint, sling, or rigid fixator is typically used to fix the joint in a position that minimizes the risk of reluxation. In the present case, the external fixator was removed at 3rd post-operative week. Prolonged immobilization (?3 weeks) decreases synovial fluid production as well as stiffness and thickness of cartilage, loss of muscle mass and bone mineral content (Bruce, et al., 2002). Maintaining the range of motion of a traumatized joint helps to clear intraarticular hematomas, minimizes the formation of periarticular adhesions, and improves the alignment of newly formed collagen fibers in the joint capsule (Dassler and Vasseur, 2003).

In the present case, type II external fixation of the tarsus promoted healing of supportive structures, minimized the impact of immobilization, promoted articular homeostasis and stabilized the joint while maintaining its freedom of movement within the natural plane of flexion and extension of the joint. This was in accordance with the reports of Frank et al, (1999) and Anderson et al, (1993). Cortical screws were used for anchoring the prolene which functioned as medial collateral ligaments and promoted joint stability

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Fig. 1

Radiograph showing righ tibiotarsal luxation

Fig. 2

Type II external fixation in position

Fig. 3

Post operative radiograph showing tibiotarsal joint alignment and implant in position