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Surgical stabilisation of traumatic luxation of elbow joint in a dog: Case report

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Abstract

An eight month old female Bully kutta dog was presented to University Veterinary Hospital, Kokkalai with the history of non weight bearing lameness of right fore-limb since two weeks after jumping from a height. The limb was found hyper extended with dragging of paws. The right elbow was swollen on physical examination, painful on palpation, olecranon process was found deviated lateral to the lateral condyle of humerus and the limb was held in abducted position. Radiographic examination revealed luxation of humero-ulnar joint medially and radius luxated laterally with respect to humerus. Closed reduction of the luxation was attempted under general anaesthesia, without success. Hence, open reduction and stabilisation of luxation was resorted to under general anaesthesia and ligaments were retained in position with the help of two screws. The dog had an uneventfully recovery.

Keywords: trauma, elbow luxation, open reduction

Introduction

Elbow luxation is usually associated with blunt trauma of elbow joint causing lateral displacement of radius and ulna with respect to humerus. Luxation of elbow is uncommon in dogs as the elbow joint is very stable because of its anatomical configuration. The strong periarticular ligaments and thick muscles limits the lateral displacement of both the radius and ulna (Campbell, 1971) [1]. Elbow luxation in dogs are generally managed by closed reduction especially when they are acute luxations. When the condition has become chronic, open reduction is necessitated for reduction and stabilization of the joint.

Material and method

An eight month old female intact Bully kutta dog weighing 27 kg was referred to University Veterinary Hospital, Kokkalai with the history of having non-bearing lameness of right forelimb since two weeks, after jumping from a height. The right elbow was swollen and painful and was held in an extended and abducted position. The limb appeared elongated with all the joints below the shoulder were extended and toes dragging on the ground.

Pedal reflex was absent on the affected limb. The olecranon process was palpable lateral to the lateral condyle of humerus. All the clinical signs were suggestive of elbow luxation.



Fig 1: Hyper extended limb with swollen elbow and dragging of toes.

Cranio-caudal and medio-lateral radiographs of the right elbow were taken and compared with that of the normal contralateral limb.

The right humero-ulnar joint was found luxated with the radius and ulna displaced laterally with respect to humerus confirming the diagnosis.



Fig 2, 3: Cranio-caudal and mediolateral radiographs of the elbow

The dog was given pre-anesthetic medication with atropine sulphate (0.045mg/kg Body weight) and xylazine hydrochloride (1.5mg/kg Body weight) given intramuscularly. Anaesthesia was induced with ketamine hydrochloride (5mg/kg Body weight) and midazolam (0.1mg/kg Body weight) intramuscularly. General anaesthesia was maintained with 1- 2 per cent isoflurane inhalant anaesthesia. Efforts for closed reduction were in vain. Hence open reduction and stabilisation were resorted to.

The area between the right shoulder and knee joint was prepared for aseptic surgery and draped the rest of the area. Antibiotic prophylaxis was provided with intravenous administration of ceftriaxone sodium at the dose rate of 20mg/kg bodyweight. The animal was placed in left lateral recumbency. Skin incision was made over the lateral side of elbow joint immediately over the lateral epicondyle of the humerus upto proximal end of ulna. Blunt dissection was made between the extensor muscles. The dissection was extended along with bony plate of their insertion and kept the bony plate aside. Joint capsule was incised to approach the distal condyle of humerus and head of radius. By this process it provided enough space for insertion of a lever over the head of the radius and under the lateral epicondyle of the humerus.



Fig 4: Open reduction of the luxated elbow

The elbow was flexed to 100° while applying downward pressure on the lever. The joint surfaces were forced apart a little and digital pressure was applied latero-medially over the head of radius to reduce them to normal position. After reduction, collateral ligaments were tested by flexing and extending the elbow joint and all ligaments were found intact and they provided sufficient stability for medial and lateral

movements.

Joint capsule was sutured and extensor muscles were repositioned and the bony plate was anchored to lateral epicondyle with two orthopaedic screws. One screw was inserted perpendicular to the lateral epicondyle and the other oblique to the metaphysis of humerus. The bluntly dissected muscles were apposed in simple continuous pattern using polygalactin 910 (size 1) and skin was closed with nylon in horizontal mattress suture pattern.



Fig 5: Anchoring the bony plate of extensor muscle to lateral epicondyle

Post operative antibiotic prophylaxis was provided with cephalexin (30mg/kg body weight PO twice daily) for seven days and analgesic support with carprofen (4mg/kg bodyweight PO once daily) for a period of five days. The limb was immobilised with plaster of Paris cast from shoulder down to toes for ten days. On removal of the cast the dog was able to bear weight on the limb and walk with limping. Skin sutures were removed on tenth day. The limb was immobilised with Robert- Jones bandage for next 15 days. The dog was followed up for a period of six weeks. The dog returned to normal gait with mild lameness on trot by third week and by fourth week, it was not showing any sign of lameness.

Results and Discussion

Occurrence of traumatic elbow luxation in canines was rare and reports on surgical correction were scanty. The technique for reduction and stabilisation varied from closed reduction and fixation to open surgical procedures using screws, wires, primary suturing and pinning.

The current case was approached by open reduction as the attempts for closed reduction under general anaesthesia failed. Open reduction was indicated in those cases in which muscle spasms could not be relieved by prolonged traction and in cases of long standing dislocation where shortening of muscle and tendon prevented closed reduction (Pass and Fergusons, 1971) [4].



Fig 6: Post operative cranio-caudal radiograph.

The current approach to reduce and immobilise the dislocated elbow by dissection and displacing the extensors along with the bony plate of the lateral epicondyle was found effective in assessing the joint and passing the lever between the condyle of humerus and head of radius. Similarly, the reposition and retention of extensors along with the bony plate on the left condyle of the humerus using screws gave successful results. These findings were in concurrence with that of Ganesh *et al.*, 2004 [2] and McCartney *et al.*, 2010 [3]. Post-reduction bandaging type and duration varied greatly and the elbow was prone to decreased range of motion and development of periarticular fibrosis when immobilised for a longer duration (Piermattei *et al.*, 2006) [5]. Immobilisation of the limb with plaster of Paris cast from shoulder down to toe for ten days and with Robert-Jones bandage for next 15 days provided satisfactory result in the current case.



Fig 7, 8: Post operative views of the limb (Four weeks post-surgery).

Summary

A case of elbow joint luxation with the radius and ulna displaced laterally with respect to humerus was treated surgically in an eight month old dog and its successful clinical outcome has been placed on record.

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