Tension band wiring for avulsion fracture of Olecranon in a Dog

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Introduction

Olecranon fractures get distracted by the pull of triceps muscle. Intramedullary pinning for repair of olecranon fractures involves complications of bending and even breakage of pin due to the excessive bending forces. Failure to treat the fracture by internal fixation generally leads to non union or fibrous union (Denny, 1990).

History and Clinical Examination

A Three year old female Labrador Retriever dog weighing about 18 kgs was presented to Department of Surgery and Radiology, Veterinary college, Hebbal with a history of accident and lameness on right forelimb. Physical examination revealed crepitation and pain on palpation of right elbow. Medio-lateral view radiograph of right elbow revealed avulsion fracture of olecranon. The fractured chip of olecranon had got rotated and displaced in relation to ulna (Fig-1). It was decided to perform tension band wiring and internal fixation for the fracture.

Surgical Treatment

The dog was pre-medicated with atropine sulphate @ 0.04 mg/kg body wt. s/c (Tropine, Neon Labs) and Triflupromazine hydrochloride @ 1mg/kg body wt. i/v (Siquil, Zydus AHL). Anesthesia was induced and maintained with Thiopentone sodium 2.5% i/v @ a dose rate of 25mg/kg body wt (Thiosol, Neon labs). Approach to the fractured site was done by skin incision on caudal aspect of olecranon. The fractured fragments were brought into apposition. Two Krishner wires of 2mm diameter were inserted through the olecranon into the ulna. The ends of the wires protruding were bent caudally close to the olecranon. The K wires were cut ½ cm behind leaving a small bent forming a hook and rotated anteriorly. This hook was used to fix tension band wire on the tendon of insertion of triceps muscle over the olecranon. For tension band wiring, a hole was drilled in transverse direction distal to the fractured end of the ulna. A 20 guage stainless steel wire was used as a tension band and passed through hole created into the ulna and its free ends were brought across each other in the form of figure of - 8 pattern over the caudal aspect of olecranon. The ends of wire were fixed over hooks of K wire and tightened (Fig.2). Muscles and skin were apposed routinely using chromic catgut no.1-0 and Polyamide no.2-0 respectively. Robert Jones bandage was

Figure - 1. Survey radiograph showing avulsion fracture of olecranon with rotation

Figure-2. Immediate post operative radiograph.

applied and movement was restricted for three weeks.

Post-operatively Cephalexin @ 20mg/kg body wt. p.o. for 7 days with alternate day dressing. The animal started bearing weight after 12 days and recovered uneventfully.

Discussion

Olecranon fractures are classified into extra-articular (proximal to the trochlear knotch) or intra articular (through the trochlear knotch). In each case the bone fragment is displaced by the pull of triceps muscle. Simple extra-articular fractures are stabilized by tension band wires and two pins placed parallel to each other and directed distally and slightly cranially to penetrate the cranial cortex of proximal ulnar shaft just distal to the radial head.

The bone of the olecranon is dense and pin insertion is facilitated by predrilling pilot holes of a slightly smaller diameter than that of the pins (Boudrieau ,1993). Approach to the olecranon fracture is done by skin incision on caudal aspect of the olecranon and by separating extensor and flexor carpi ulnaris muscles from the proximal part of the ulna (Piermattei and Greeley,1979).

Tension band wiring in olecranon fractures provide rigid fixation resulting in good clinical outcome even in heavy breed dogs (Raghunath et al.2008).

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