

Management of a Grade II open mid-diaphyseal radius and ulna fracture in a 7-month-old mixed-breed dog using reconstruction plate fixation

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A 7-month-old, 12 kg mixed-breed male dog was presented with a history of road traffic accident occurring approximately 2 hours prior. On presentation, the animal was alert but showed non-weight-bearing lameness of the right forelimb. A mid-forelimb open wound with exposed bone fragments was observed, consistent with a Grade II open fracture. A thorough physical examination revealed no evidence of additional musculoskeletal injuries or internal trauma.

Radiographic evaluation of the right forelimb confirmed a complete transverse mid-diaphyseal fracture of both the radius and ulna, with cranio-medial displacement of the fracture fragments (Fig. 1A). Haematological and biochemical parameters were within normal limits, indicating that the patient was suitable for anaesthesia and surgical intervention.

The dog was stabilized with intravenous Ringer's lactate (50 mL/kg), and a prophylactic broad-spectrum antibiotic, ceftriaxone (25 mg/kg, i.v., b.i.d.), was administered. General anaesthesia was induced using butorphanol (0.2 mg/kg), xylazine (1 mg/kg), and propofol (4 mg/kg), and maintained with isoflurane (1-2%). The wound was thoroughly debrided and lavaged with sterile normal saline under aseptic conditions. Viable bone fragments were preserved, and fracture stabilization was achieved using a 2.7 mm reconstruction plate secured to the cranial aspect of radius with six screws. The ulna was additionally stabilized by retrograde intramedullary pinning using a 1.5 mm pin.



Fig. 1: (A) Preoperative radiograph showing mid-diaphyseal fracture of radius-ulna; and (B and C) Postoperative radiograph showing proper reduction and alignment of bone fragments.

Postoperative radiographs confirmed satisfactory fracture reduction, alignment, apposition, and implant placement (Figs. 1B and 1C). Following confirmation of adequate wound decontamination, the surgical wound was closed routinely, and a sterile dressing was applied.

Postoperative management included analgesia with meloxicam (0.2 mg/kg, s.c.) and continuation of antibiotic therapy for 7 days. A modified Robert Jones bandage was applied to provide additional limb support during the initial healing period. Partial weight-bearing was observed within 10 days postoperatively. Follow-up radiographs obtained at 2 weeks revealed progressive callus formation, satisfactory alignment and apposition of fracture fragments, and implants maintained *in situ*.

Open fractures carry a high risk of infection and complications if not treated promptly. Grade II fractures require aggressive wound debridement and stable internal fixation to achieve favourable outcomes (Pratesi *et al.*, 2019). In the present case, early surgical intervention, meticulous wound management, and rigid fixation contributed to progressive fracture healing and restoration of limb function. Reconstruction plates are particularly advantageous in canine radial fractures due to their malleability and ability to achieve precise anatomical contouring, thereby promoting stable fixation and bone healing (Johnson and Houlton, 1993). In canine antebrachial fractures, fixation of the ulna with intramedullary pinning alone provides biological stabilization with minimal soft tissue disruption, especially in young dogs (Harasen, 2003; Piermattei *et al.*, 2018).

This case highlights the importance of timely surgical intervention, appropriate internal fixation, and diligent postoperative care in the successful management of Grade II open radius and ulna fractures in dogs, resulting in satisfactory functional recovery over a 3-month follow-up period.

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