Atypical Essex-Lopresti injury of the forearm: a case report

Hwee Weng Hey,1 Alphonsus Khin Sze Chong,2 Li Lee Peng3
1 Department of Orthopaedic Surgery, National University Health System, Singapore
2 Department of Hand and Reconstructive Microsurgery, National University Health System, Singapore
3 Department of Emergency Medicine, National University Health System, Singapore

Address correspondence and reprint requests to: Dr Hwee Weng Hey, Department of Orthopaedic Surgery, National University Health System, 5 Lower Kent Ridge Road, Singapore, 119074. E-mail: heysadvg@singnet.com.sg

ABSTRACT

The Essex-Lopresti injury of the forearm is difficult to diagnose. A missed diagnosis can lead to persistent pain and instability of the wrist. We report a 33-year-old man with a pre-existing cubital varus deformity who sustained an atypical Essex-Lopresti injury after a fall on his elbow. Accurate diagnosis requires understanding of force transmission and anatomy of the radius and ulna, as well as the proximal and distal radioulnar joints as a unit.

Key words: dislocations; elbow joint; wrist injuries

INTRODUCTION

The Essex-Lopresti injury of the forearm consists of a radial head fracture, an interosseous membrane rupture, and a distal radioulnar joint disruption.1–7 It can occur in combination with dislocation of the elbow and wrist joints.8–10 We report a 33-year-old man with a pre-existing cubital varus deformity who sustained an atypical Essex-Lopresti injury after a fall on his elbow.

CASE REPORT

In May 2009, a 33-year-old man with a pre-existing left cubital varus deformity presented with left elbow pain and abrasions after a fall on his left elbow while cycling. There was no tenderness along the forearm and mild tenderness over the left wrist. Neurovascular examination of the left arm was unremarkable. Radiographs showed a dislocated left elbow and a widened wrist joint with positive ulnar variance (Fig. 1). The elbow was reduced under sedation. Repeat radiographs showed a persistent dorsal subluxation of the radial head. The arm was immobilised in an above-elbow back-slab with the elbow at 90º, the forearm in a midprone position, and the wrist in a neutral position.

On day 3, the elbow joint was enlocated in flexion, but the radial head was dorsally dislocated on extension. The ulna head was dorsally subluxed...
upon pronation. Elbow flexion was limited (0°–100°) with minimal pain. Forearm supination was 70° and pronation was 60°. The patient underwent manipulation of the elbow under anaesthesia to improve his range of motion. A muenster split was applied with the elbow at 90°, the forearm in a mid-prone position, and the wrist in a neutral position.

On week 3, the elbow range of motion had improved, but there was persistent wrist joint instability while carrying heavy loads. Computed tomography showed a dorsal subluxation of the ulnar head that became worse with pronation and a positive ulnar variance (Fig. 2). A muenster splint was reapplied for immobilisation of the wrist joint for further 3 weeks.

At months 6 and 12, the patient had regained full strength of elbow flexion and extension (range of motion, 0°–140°). His wrist was stable with no subluxation, and the range of forearm motion was good (flexion, 0°–90°; extension, 0°–80°; ulna deviation, 0°–40°; radial deviation, 0°–20°; supination, 0°–90°; and pronation, 0°–90°) [Fig. 3]. The patient had returned to his usual work without any difficulties.

DISCUSSION

Diagnosis of the Essex-Lopresti injury of the forearm is often missed.6,7,11,12 Patients with this injury often present with predominant elbow pain from the radial head fracture and minimal (if any) wrist symptoms.6 A missed diagnosis can lead to persistent pain and instability of the wrist. Accurate diagnosis requires an understanding of force transmission and the anatomy of the radius and ulna, as well as the proximal and distal radioulnar joints as a unit. The radius and ulna are closely related anatomically and biomechanically. They have bony articulation with each other.
proximally and distally and are held together by ligaments and interosseous membranes. These bones in turn have bony articulations proximally with the humerus at the humeroulnar joint and distally between the radius and the proximal carpi at the radiocarpal joint. Any form of axial loading transmits a force along the longitudinal axis of these bones causing fractures, dislocations or ligamentous disruption.

The mechanism of combined elbow and wrist joint injuries has been reported.\textsuperscript{3,6,13} In a combined radiocapitellar and wrist joint dislocation, the criss-crossing concept has been proposed.\textsuperscript{8,10,13} In our patient, the injury mechanism is unique because the force transmission began from the elbow joint and the typical pattern of proximal radial fractures in a classic Essex-Lopresti injury was not seen. The force was probably transmitted distally from the elbow joint, as the patient had a pre-existing cubital varus deformity with a more prominent radial head, resulting in an anteriorly dislocated ulnoulnar joint. Disruption of the wrist joint caused by a complete tear of the interosseous membranes was not likely, as there was no tenderness along the interosseous membranes.

For forearm injuries, clinicians should examine the ulna, radius, elbow and wrist joints as a unit to prevent missing a wrist joint injury from a seemingly isolated elbow injury. In patients with pre-existing elbow deformities, an elbow dislocation may be part of a more complicated injury.

REFERENCES