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Report of a pregnant lady with bilateral elbow dislocation caused by acute fall injury

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ABSTRACT

Simultaneous bilateral posterior elbow dislocations occur rarely with only 14 cases being reported in the literature so far. Of these cases, none occurred in a patient who was pregnant. No cases of bilateral elbow dislocation with a distal radial fracture–dislocation have also been described. A case of a pregnant patient presenting with bilateral elbow dislocation, right wrist fracture–dislocation is reported here and the issues involved in managing such a case are discussed.

1. Introduction

In adults, elbow dislocations are the second most common dislocation after that of the shoulder, with an estimated incidence of 5.21 dislocations per 100 000 person–years^[1]. Simultaneous elbow dislocations are rare, however, with only a handful of cases described in the literature so far. Of these, none were pregnant or had an associated fracture–dislocation of the distal radius.

2. Case report

A 23–year–old lady who was four months pregnant presented at the emergency department following an accidental fall from a height of 10 m onto her palms. She complained of pain over her bilateral elbows, right wrist,

back of her scalp and lower back following the fall.

Her vital signs were normal. She was noted to be alert but grimacing in pain. There was a 2.5 cm laceration over her occipital scalp. Examination of her cardiovascular, respiratory and abdominal systems did not reveal any abnormalities. Bilateral deformed elbows with loss of posterior triangular relationships of the olecranon and epicondyles and a right wrist deformity were noted. There was marked tenderness over the deformities. The patient's neurovascular status over bilateral upper limbs was intact. There was slight tenderness over the right lower paravertebral region but no deformity or midline spinal tenderness. Neurovascular status over her bilateral lower limbs was intact. No bony injuries were noted elsewhere apart from the upper limb injuries.

A bedside focused abdominal sonographic scan revealed a viable fetus with no evidence of intra–abdominal bleeding. In view of her partum state, care was taken to minimize radiation exposure with upper limb and chest radiographs judiciously taken. The chest radiograph did not reveal any abnormality. Upper limb radiographs showed bilateral

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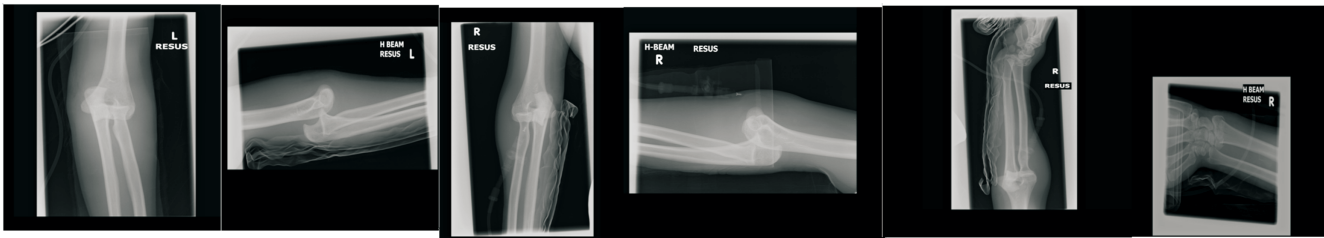


Figure 1. Bilateral posterior elbow dislocations and a right comminuted intra-articular distal radius fracture-dislocation.

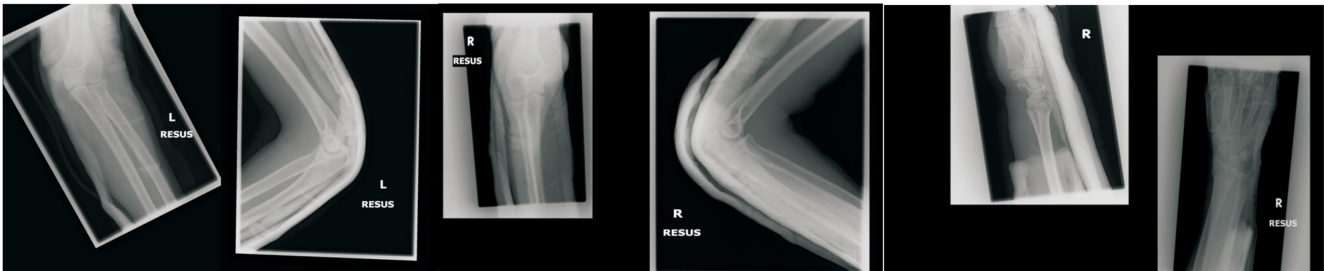


Figure 2. Adequate reduction of the dislocations and fractures.

posterior elbow dislocations and a right comminuted intra-articular distal radius fracture-dislocation (Figure 1).

Under conscious sedation with propofol and fentanyl, the patient underwent closed manipulation and reduction of the right elbow dislocation, followed by the right wrist fracture-dislocation with the elbow held at 90 degrees. Closed manipulation and reduction of the left elbow was subsequently performed.

Post reduction, the patient's right wrist was immobilized with a plaster of paris sugar tong slab extending around the elbow to the metacarpal joints. Her bilateral elbows were then immobilized with above elbow plaster of paris back slabs. Post reduction radiographs showed adequate reduction of the dislocations and fractures (Figure 2).

She was admitted to the ward for monitoring and further imaging of her spine was carried out in view of her low back pain. Magnetic resonance imaging studies of her cervical, thoracic and lumbar spine revealed a strain of the right lumbar paraspinal muscles. She declined operative management of her right wrist fracture and was treated conservatively with a cast. She was discharged stable five days post admission with a follow-up appointment arranged at the outpatient orthopaedic clinic.

3. Discussion

The elbow is a fairly stable joint and considerable force is necessary to dislocate the elbow. Simultaneous bilateral posterior elbow dislocations occur rarely with only 14 cases being reported in the literature so far^[2–16]. Five of these cases were gymnasts with two belonging to the paediatric age group. Of these cases, none occurred in a patient who was pregnant. In all the cases, the primary mechanisms

of injury were falls onto outstretched hands with elbows extended. Concomitant fractures of the radial head or medial epicondyles were seen in half of the cases.

Joint hyperlaxity has previously been linked to simultaneous bilateral elbow dislocations^[4]. Multiple studies have described increased joint laxity in pregnant patients involving the pelvic joints (sacroiliac joints and pubic symphysis), metacarpophalangeal, subtalar, elbow, knee and first metatarsophalangeal joints^[17–19]. These changes were previously attributed to the increased level of the hormone relaxin during pregnancy^[20], but subsequent studies showed that there was no clear correlation between increase in joint laxity and maternal estradiol, progesterone, or relaxin levels^[21,22]. Despite the increased joint laxity in pregnancy, it remains unclear whether pregnant patients are more predisposed to joint injury compared to the general population. A literature search on Medline did not reveal any studies comparing the incidence of joint injury (fracture or dislocation) in the pregnant population to that of the general population.

Elbow dislocation with ipsilateral distal radial fracture is a rare injury pattern with only a handful of such cases having been reported in the literature^[23–26]. As far as I know, no cases of bilateral elbow dislocation with distal radial fracture-dislocation have been described.

The patient's injuries are consistent with a fall onto extended elbows from a height and may be partially contributed from the generally increased laxity of her joints in her pregnant state. The distal radial fracture-dislocation likely occurred due to direct contact of the wrist with the ground, with the force transmitted from the ground causing hyperextension of the elbow and a secondary posterior dislocation.

Three main considerations arise in managing this patient.

Firstly, the dose of radiation to the fetus needs to be kept as low as possible. In this case, this was achieved with the use of lead shields, proper positioning of the patient and close consultation between the radiologist, emergency physician and orthopaedic surgeon in deciding the radiographic views to order. Secondly, when reducing the fracture, the emergency physician has to ensure that the analgesia and sedative drugs given are safe for use in pregnancy. In this case, the patient was given propofol (an FDA category B drug) and fentanyl (an FDA category C drug). Benzodiazepines (an FDA category D drug) should not be used whilst ketamine (FDA category B drug) and morphine (FDA category C drug) can be used if clinically indicated. Finally, the reduction has to be sequentially planned with adequate manpower and equipment before it is carried out. In this case, the patient first underwent reduction of her right elbow dislocation, followed by the reduction of the ipsilateral wrist fracture–dislocation and the contralateral elbow dislocation. This was achieved with the close co-operation of four doctors in the emergency department.

In conclusion, this report illustrates an unusual case of a pregnant patient presenting with bilateral elbow dislocation and right wrist fracture–dislocation and the considerations one needs to have in managing such a case.

Conflict of interest statement

The author reports no conflict of interest.

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