The case:

An 18-year-old man presented with left elbow pain and limited range of motion after being struck by a motor vehicle while on a bicycle. On physical examination, the patient was noted to have full flexion but lacked approximately 10° of terminal extension and 5° of supination and pronation.

Figure: Anteroposterior (A) and lateral (B) radiographs of the left elbow.

Your diagnosis?

For answer see page 62
Diagnosis:
Congenital Posterior Dislocation of the Radial Head

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Answer to Radiologic Case Study
Case facts appear on page 11

An 18-year-old man presented with left elbow pain and limited range of motion after being struck by a motor vehicle while on a bicycle. On physical examination, the patient was noted to have full flexion but lacked approximately 10° of terminal extension and 5° of supination and pronation. Anteroposterior and lateral radiographs of the left elbow showed a posterior dislocation of a dysplastic-appearing radial head (Figure 1). Radiographs of the forearm and wrist were negative for fracture and dislocation distal to the elbow. Fluoroscopy was used to assess the dynamic stability of the left elbow (Figure 2) and also to evaluate the right elbow, which was found to have a reduced radiocapitellar joint with a benign-appearing radial head (Figure 3). Computed tomography (CT) confirmed the isolated posterior dislocation of the radial head. Computed tomography also better delineated the dysplastic appearance of the radial head, depicting a dome-shaped radial head with no central depression (Figure 4).

Etiology
Congenital radial head dislocation is the most common congenital anomaly of the elbow, with an estimated incidence rate of 0.06% to 0.16%.1-3 Dislocations are most commonly posterior, with anterior or lateral dislocations evident in one-third of cases. In approximately 60% of all cases, congenital dislocation of the radial head is seen in conjunction with various syndromes (eg, nail-patella syndrome, Silver’s syndrome, Ehlers-Danlos syndrome), congenital radioulnar synostosis, mental retardation, and scoliosis.4,5 Furthermore, posterior dislocations may have an autosomal-dominant or X-linked recessive inheritance. Although it is most often bilateral, unilateral congenital radial head dislocation has been described.6

Physical Examination
Congenital dislocation of the radial head is typically discovered incidentally because it is most frequently an asymptomatic phenomenon in which patients experience minimal functional limitations.7 It may

Figure 1: Anteroposterior (A) and lateral (B) radiographs of the left elbow showing a posterior dislocation of the radial head. Note the dome-shaped radial head lacking a central depression and the mild bowing of the proximal ulna.
become painful in adolescence or adulthood secondary to degenerative changes. On examination, a posterolateral elbow prominence may be appreciated, along with restricted elbow extension and forearm rotation.

**IMAGING**

Plain radiographs (antero-posterior, lateral, and oblique) are crucial in helping clinicians distinguish congenital dislocations from chronic, traumatic dislocations of the radial head. Radiographic findings consistent with congenital dislocation, particularly in the absence of a history of trauma to the involved elbow, include a dome-shaped radial head with no central depression, a flattened or hypoplastic capitellum, and/or mild bowing of the proximal ulna. Advanced imaging (eg, CT, magnetic resonance imaging) is not required to diagnose congenital dislocation of the radial head. However, it can be a useful diagnostic adjunct when concern exists for more subtle osseous injury in the setting of a recent trauma.

**TREATMENT**

Observation is indicated for the majority of patients with congenital dislocation of the radial head because functional impairment is usually minimal. However, in the setting of severe pain or restricted motion, radial head resection can be performed in skeletally mature patients. The procedure is contraindicated in children with open physes because the radial head will regrow following resection. Of note, radial head resection has been shown to provide effective pain relief but only modest functional improvements.

**CONCLUSION**

Congenital dislocation of the radial head is often bilateral and associated with various syndromes. However, it can also be found as an isolated, unilateral process; therefore, congenital dislocation of the radial head must always be considered in the differential diagnosis of isolated radial head dislocation. The presentation of the case described herein was in the setting of presumed elbow trauma. However, the dysplastic appearance of the radial head on plain radiographs and the patient’s minimal functional impairment favor the diagnosis of congenital dislocation. Observation is all that is required for most patients, with radial head resection reserved for only the most severe cases in the skeletally mature.

**REFERENCES**