

**Review Article****Distal Humeral Epiphyseal Separation In Newborn: A Case Report and Review of The Literature**

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**Abstract**

Distal humeral epiphysiolysis at birth is a rare injury and difficult to diagnose. This injury in newborns may be described as a variant of the supracondylar humerus fracture. Distal humeral epiphysis separation in a newborn usually occurs during a difficult birth but we report a term infant who was born by uncomplicated spontaneous vaginal delivery. She had a normal birth weight. Treatment of distal humeral epiphysis separation in newborns is usually conservative. Closed reduction and application of a posterior splint is usually sufficient.

**Keywords:** Distal Humeral Epiphysiolysis, Newborn

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**Introduction**

Distal humeral epiphysiolysis at birth is a rare injury and difficult to diagnose[1]. It is usually due to obstetrical trauma. Upper limb traction applied for any reason during birth can cause distal humeral epiphysis separation. It can mimic posterior elbow dislocation, however treatment and prognosis of these two conditions are different[2]. Guidelines for the management of this injury in the neonate are not well established[3]. We report a rare case on a newborn with distal humeral epiphysis separation.

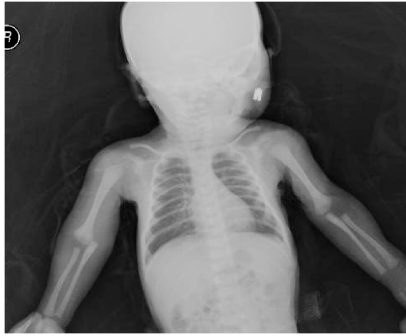
**Case**

60 hours after the normal delivery of a term newborn, it was noted that she was not moving

her right upper extremity. The right elbow was swollen and passive movement caused some Discomfort. X-rays of the right elbow (Fig. 1a and Fig.1b) suggested an elbow dislocation.



**Figure 1a:** X-ray, Lateral view of the injured elbow.



**Figure 1b.** X-ray, A-P view of the injured elbow.

However it was thought to be a distal humeral epiphysis separation. Closed reduction was performed and control radiographs were obtained. X-rays revealed that the reduction was sufficient. Then a long arm splint in 90 degrees of elbow flexion was applied. Splint was removed after 30 days. Physical and radiological examination was performed. Presence of callus formation was detected. Gentle physiotherapy started and continued for two weeks. She had full elbow range of motion, humeral length was symmetrical, and no X-ray evidence of epiphyseal arrest or deformity at the 10th month follow-up examination (Fig. 2).



**Figure 2b:** X-ray, AP view after 10 months.



**Figure 2b:** X-ray, Lateral view after 10 months.

### Discussion

Humerus distal epiphysis separation in newborns is a rare injury, and first described by Camera in 1926[4]. This injury in newborns may be described as a variant of the supracondylar humerus fracture. This kind of injury in the newborn may be difficult to diagnose. Distal humeral epiphysis separation in a newborn usually occurs during a difficult birth but it has also been reported that during caesarean section. We report a term infant who was born by uncomplicated spontaneous vaginal delivery. She had a normal birth weight. The clinical findings of distal humeral epiphysis separation are swelling around the elbow joint, focal tenderness, limitation of elbow joint motion, and crepitus. Traumatic dislocation of the elbow joint, infectious conditions such as septic arthritis and osteomyelitis should be considered in the differential diagnosis. Lack of ossification of the epiphyseal centers of the humerus, radius, and ulna in the newborn may complicate x-ray diagnosis. Thus distal humeral epiphysis separation can mimic posterior elbow dislocation.

Ultrasound can be used for differentiating distal humeral epiphysis separation from elbow dislocation[5,6]. This imaging modality does not provide high quality images of the bone or the epiphysis. Furthermore, ultrasound examination can be painful and uncomfortable in the presence of a fracture [7]. Magnetic resonance imaging can help to make an accurate diagnosis. But the disadvantage of this technique is that it usually requires general anesthesia. Elbow arthrography can be used for diagnosis, but it is an invasive procedure and there is a risk of infection [8,9]. Treatment of distal humeral

epiphysis separation in newborns is usually conservative. Closed reduction and application of a posterior splint is usually sufficient. X-rays of the right elbow revealed a loss of humero-ulnar alignment similar to an elbow dislocation in this case. However it was thought to be a distal humeral epiphysis separation. Gentle closed reduction was performed and control radiographs revealed that the reduction was sufficient. The range of motion was full and no deformity was noted at the 10th month follow-up examination. In summary humerus distal epiphysis separation in newborns is a rare birth trauma and can be easily missed on physical examination. Thus humerus distal epiphysis separation should be suspected in newborns those who can not move their upper extremity. Further examinations such as ultrasound and magnetic resonance imaging may be required if physical examination and X-ray are insufficient for accurate diagnosis.

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