

Elbow Trauma

Patient History

45-year-old woman presented with elbow trauma. Standard 2D X-ray imaging was performed as the routine imaging choice. Imaging on the CARESTREAM OnSight 3D Extremity System was ordered due to inconclusive findings on the 2D radiographs.

Findings

The traditional X-ray shows obvious dislocation of the elbow. (See Figure 1 for pre- and post-reduction X-rays.)



Pre-reduction



Post-reduction

Figure 1
Standard 2D
X-ray of
elbow
trauma
patient with
obvious
dislocation
pre- and
post-
reduction.

With this type of trauma, the main concern for patient prognosis is for nervous and vascular lesions, and the dislocation should be reduced as quickly as possible. However, in addition to the dislocation, the 2D radiograph shows an additional bone fragment. The determination of the source of this fragment and whether there are any other consequences of the trauma is crucial in the successful reduction of the injury. It is not possible to identify the source of the fragment or to definitively rule out additional injury from the 2D radiographs.

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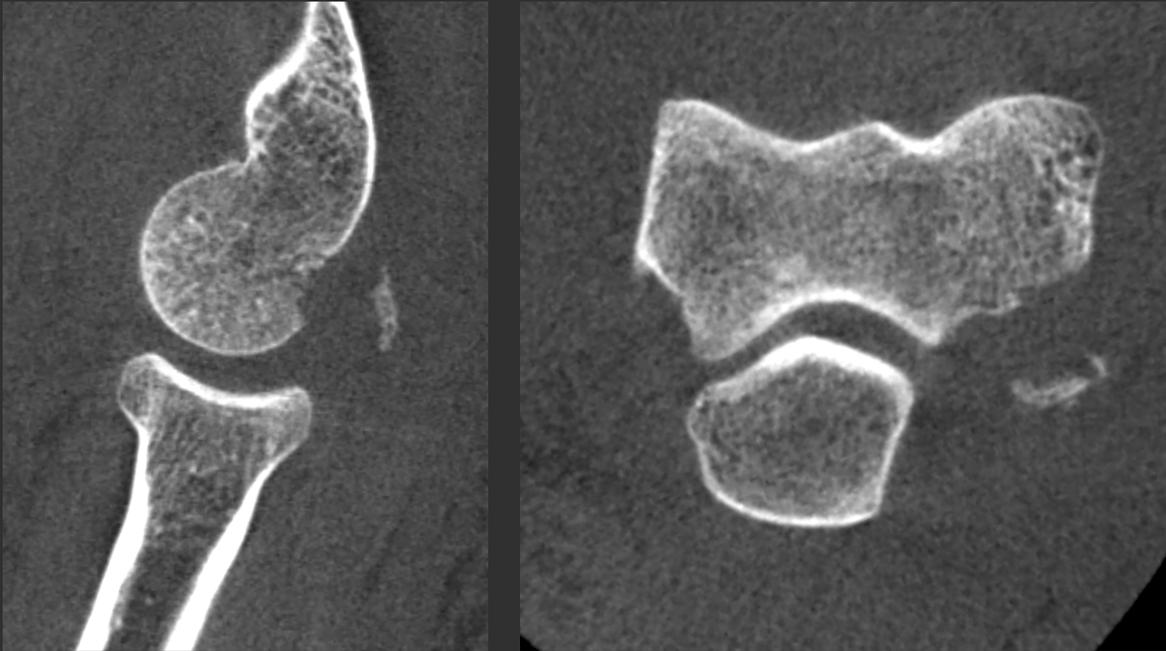


Figure 2 MPR slices from the patient in Figure 1, acquired with the OnSight extremity CT system, identifying the source of the bone fragment seen in the 2D radiographs as a lateral epicondyle avulsion.

In addition to this diagnosis, further inspection of the 3D data set revealed a small un-displaced radial head fracture resulting from impaction during the dislocation (see Figure 3). This injury would be impossible to identify on the traditional 2D radiographs.



Figure 3 Evidence of a small radial head fracture probably caused by impaction during the dislocation injury not readily appreciated on the 2D radiographs of this patient.

These types of additional findings can have a significant impact on the treatment plan for the patient and ultimately on their prognosis, and are an indication of the value of the high-resolution 3D data acquired using the OnSight extremity CT system.