

# Trans-scaphoid perilunate fracture dislocation: 'not just a scaphoid fracture'

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## DESCRIPTION

Perilunate dislocations are uncommon high-energy injuries which are missed in approximately 25% of cases on initial presentation.<sup>1</sup> We present the X-rays of a 25-year-old man who fell from a height of approximately 2 metres onto an extended wrist. Plain radiographs (figure 1) show classical signs of a trans-scaphoid perilunate fracture dislocation. Pre-reduction, he had median nerve symptoms which settled with reduction and elevation. Reduction was performed in the emergency department with analgesia/sedation.

The sequence of events in this injury is well described: (1) the force begins radially and passes through the scaphoid causing it to fracture; (2) the force is transmitted ulnarly through the luno-capitate interval, and the lunate projects through the space of Poirier (between the intercarpal ligaments volar to the bones); (3) the distal portion of the scaphoid and remaining carpal bones dislocate

around the lunate and (4) the lunotriquetral joint is disrupted.<sup>2</sup>

Key radiological signs demonstrated (figure 2) include:

1. Disruption of the normal carpal arcs (Gilula's arcs) on the posteroanterior (PA) radiograph
2. Loss of colinearity between the radius, lunate and capitate on the lateral radiograph
3. 'Crowding' of the carpal bones on the PA radiograph
4. 'Piece of pie' sign on the PA radiograph representing the lunate
5. Displaced waist of scaphoid fracture
6. An abnormal scapholunate angle (normal range 30°–60°).

Knowledge and understanding of the pattern of injury and the radiological signs (figure 2) will reduce the risk of focusing on the scaphoid fracture and overlooking the significant and disabling perilunate dislocation.<sup>3</sup>



Figure 1 Posteroanterior and lateral pre-reduction radiographs of the wrist.



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**Figure 2** Annotated PA and lateral radiographs of the wrist. On the PA radiograph note the interruption of Gilula's lines (in green and blue), the displaced scaphoid waist fracture (red), the 'piece of pie' triangular shape of the lunate (purple) and crowding/overlapping of the carpal bones. On the lateral radiograph note the loss of colinearity of the radius/lunate/capitate (blue), the loss of the normal SL angle (yellow), and the 'spilt tea cup' sign (purple) which indicates volar angulation of the lunate with respect to the radial articular surface. PA, posteroanterior.

### Learning points

- ▶ These are high-energy injuries frequently associated with other injuries and often missed on initial radiographs prompt diagnosis and treatment is important to prevent long-term disability, loss of wrist movement and pain.
- ▶ Recognising the classical radiographic signs including disruption of Gilula's arcs, loss of colinearity of the radius/lunate/capitate, the 'piece of pie' sign and overlapping of the carpal bones is imperative, this is not simply a scaphoid fracture.
- ▶ Immediate closed reduction should be attempted to reduce the pressure on the soft tissues and median nerve. Failure to achieve a closed reduction may indicate interposed volar capsule and necessitate open reduction.

**Contributors** CR: image collection and annotation; preparation of manuscript and MCQ. ND: supervising consultant.

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