

## PERILUNATE DISLOCATIONS

Are challenging

Carry a guarded prognosis.

Prompt recognition and treatment are imperative.

Treatment by closed methods results in unsatisfactory outcomes;

Standard is open reduction, ligamentous and bony repair, and protection of the repair with supplemental fixation.

### Relevant anatomy

Refer under anatomy of the hand and under carpal instability in Hand chapter

### PATHOMECHANICS

Result of a fall from a height, motor vehicle accident, or injury during sporting activities.

Dorsal perilunate dislocation Vs Volar dislocation of the lunate: Later is the final stage.

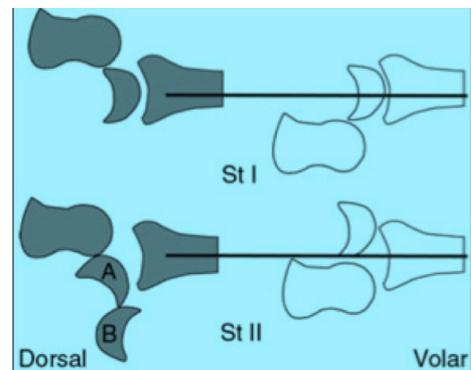
Herzberg Classification [as it occurs in stages]

- Stage I Dorsal Perilunate dislocation
- Stage II Volar Lunate dislocations
  - stage IIA Lunate has subluxated rotated  $<90^\circ$ ;
  - stage IIB Lunate rotation  $>90^\circ$ .

Volar perilunate and dorsal lunate dislocations have been reported but are not nearly as common.

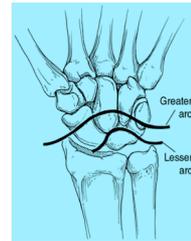
Stages of progressive perilunar instability.

- Stage I involves disruption of the S-L disruption [scapholunate ligamentous complex]
- Stage II The force propagates through the space of Poirier and interrupts the LCL [ lunocapitate ]
- Stage III The LTL disruption [lunotriquetral connection]
- Stage IV The lunate dislocates from its fossa into the carpal tunnel, the lunate rotates into the carpal tunnel, and the capitate becomes aligned with the radius [J Am Acad Orthop Surg 1998;6[2]:114]



The pathomechanical force [Mayfield] is that of extension, ulnar deviation, and intercarpal supination.

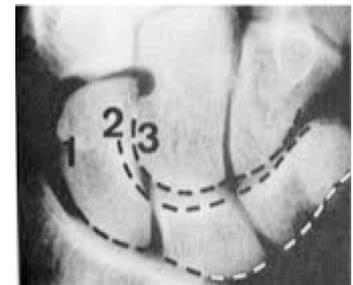
The high-energy force may disrupt ligaments sequential. Injuries that cross bone are greater arc injuries; those with purely ligamentous disruption are lesser arc injuries. The term translunate arc has been used to describe the rare, usually high-energy injury in which perilunate dislocation occurs in the setting of a fracture.



Reported rates of acute median nerve symptoms range from 24% to 45%. Median nerve symptoms, which present shortly after injury, are likely secondary to contusion from the trauma.



The PA radiograph should be scrutinized for uneven gapping in the carpal bones, and the three smooth carpal arcs of Gilula should be free of discontinuity. The first arc represents the proximal convexity of the triquetrum, lunate, and scaphoid. The second arc represents the concave distal surfaces of those bones. The third arc is produced by the proximal hamate and capitate. Any disruption or gapping of these arcs should raise the suspicion of ligamentous or bony injury.



### Radiological signs

Terry Thomas Sign > 3mm [S-L distance]

Cortical ring sign 7 mm from the distal pole

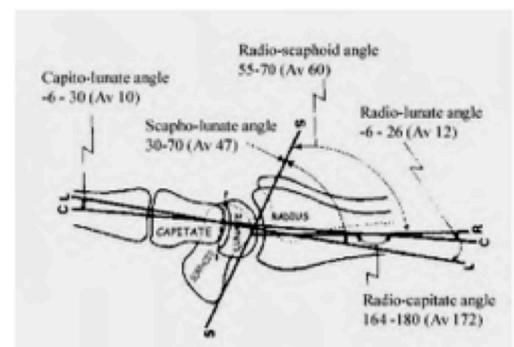
Scapholunate angle Normal 45°  
[DISI >70° and VISI <30°]

Lunocapitate angle Normal 0-10°  
>30° is DISI



Lateral radiographs, the hallmark signs of instability:

1. Loss of collinear alignment of the radius, lunate, and capitate.
2. In lunate dislocation, the spilled teacup sign
3. Scapholunate angle: 30 to 70 degrees



MRI without contrast is sensitive and specific for intercarpal ligamentous ruptures and occult fractures or bone bruises.

Preoperative high-resolution CT is helpful in assessing the position of fracture fragments and the degree of comminution as well as in identifying occult fracture.

### **Management**

50% of cases treated with closed reduction failed to maintain reduction despite immobilization. Presently surgical repair is now favored.

Day 1      Typically starts with immediate, gentle, closed reduction and held in a slab. Stable closed reduction is typically achieved, with reported maintenance of reduction in >90%.

Day 3-5    This is followed by open reduction, ligament and bone repair, and supplemental fixation performed within 3 to 5 days as swelling subsides.

How to manipulate?

Reduction is performed with the elbow flexed to 90° and the hand placed into finger traps. Ten to 15 pounds of longitudinal traction is applied for at least 10 minutes. Dorsal perilunate dislocations are reduced by initial wrist extension, applying traction, and then flexing the wrist.