

# Lunate Dislocation: A Rare Lesion

## Luxação Semilunar: Uma Lesão Rara

Felipe Nunes Figueiras <sup>1</sup>; Lucas Ribeiro dos Santos <sup>2</sup>; Márcio Luís Duarte <sup>3\*</sup>; Mayara Oliveira da Silva <sup>4</sup>

### \*Corresponding Author/Autor Correspondente

Márcio Luís Duarte [marcioluisduarte@gmail.com]

UNAERP – Campus Guarujá. Av. D. Pedro I, 3.300, Enseada, Guarujá-SP, Brazil, ZIP CODE: 11440-003.

ORCID: <https://orcid.org/0000-0002-7874-9332>

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A 57-year-old man reports left wrist excruciating pain after motorcycle accident 20 minutes ago. He denies previous surgeries, previous illnesses and the use of medications. On physical examination, he presents excruciating pain on palpation, making dynamic tests impossible. The left wrist X-ray demonstrates lunate volar dislocation with the head of the capitate dislocated dorsally about the lunate and disruption of the carpal arcs with overlapping of the carpal bones, compatible with lunate dislocation (grade IV in Mayfield classification) (Figs. 1 and 2). He was forwarded to orthopedist for surgical open reduction with the repair of the ligaments and stabilization of the carpal bones.

The first arch consists of the proximal row of the carpal bones, and its rupture indicates lunate dislocation. The second arch consists of the distal row, and its rupture displays a perilunate dislocation. The third arc runs along the proximal aspect of the distal carpal row. Disruption of any one of these arcs illustrates a carpal dislocation or fracture.<sup>1</sup>

A volar lunate dislocation happens mostly from a high-energy trauma to the wrist, such as motor vehicle accidents, sports accidents, and falls from a height on an outstretched hand.<sup>2</sup> It constitutes 10%-23% of all carpal dislocations and is associated with disruption of the perilunate ligaments.<sup>2</sup> Acute lunate

dislocations are uncommon but devastating carpal injuries with severe disruptions of the carpal anatomy.<sup>1</sup> The lunate vascular supply runs predominantly through the palmar and dorsal ligaments – anatomical reduction of the lunate may relieve this vascular problem, and the avascular changes may be transient. However, even after the reduction of the dislocation, avascular necrosis may occur, leading to lunate deformation and collapse.<sup>2</sup>

In patients with multiple traumas or inadequate X-rays, these lesions may be easily overlooked or misdiagnosed, resulting in poor long-term outcomes.<sup>2,3</sup> Patients usually present with swelling, pain and tenderness to palpation over the dorsum of the wrist with a marked limitation of range of movement, just distal to the Lister tubercle in the region of the scapholunate ligament.<sup>4</sup>

Plain radiographs of the wrist (posteroanterior - PA – and lateral views) are usually adequate to make the diagnosis. Stress radiographs with radial and ulnar deviation of the hand may be necessary to diagnose scapholunate dislocation.<sup>1</sup> In lateral view, the dislocated head of the capitate is usually displaced dorsal to the lunate, and the PA view shows disruption of the carpal arcs with overlapping of the carpal bones in the lunate dislocation.<sup>3</sup> Computed tomography scan is helpful if there are complex associated fractures, such as a scaphoid or triquetral

1. Instituto de Análises Clínicas de Santos, Santos (SP), Brazil. 2. Universidade de Ribeirão Preto – Campus Guarujá, Guarujá (SP), Brazil.

3. Universidade de Ribeirão Preto – Campus Guarujá, Guarujá (SP), Brazil. 4. UNIFESP, Santos, São Paulo, Brazil.

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fracture. These higher-level imaging studies should be done after closed reduction.<sup>3</sup>

Open reduction with the repair of the ligaments and stabilization of the carpal bones is the “gold standard” of treatment.<sup>2</sup> Treatment should consist of realigning the disrupted carpal articulations and repairing or reconstructing the intercarpal and radiocarpal ligaments.<sup>3</sup> Open injuries, carpal bones extensive osteochondral fractures, and late operative treatment are associated with the poor final result.<sup>2</sup> Complications include median nerve entrapment, chronic carpal instability, loss of grip strength and motion, chronic wrist pain, and radiographic signs of arthritis and carpal collapse.<sup>4</sup>



Figure 1. Left wrist X-ray in the AP view (A) and lateral view (B) demonstrating lunate volar dislocation (white arrows) with the head of the capitate dislocated dorsally (gray arrow) and disruption of the carpal arcs with overlapping of the carpal bones.

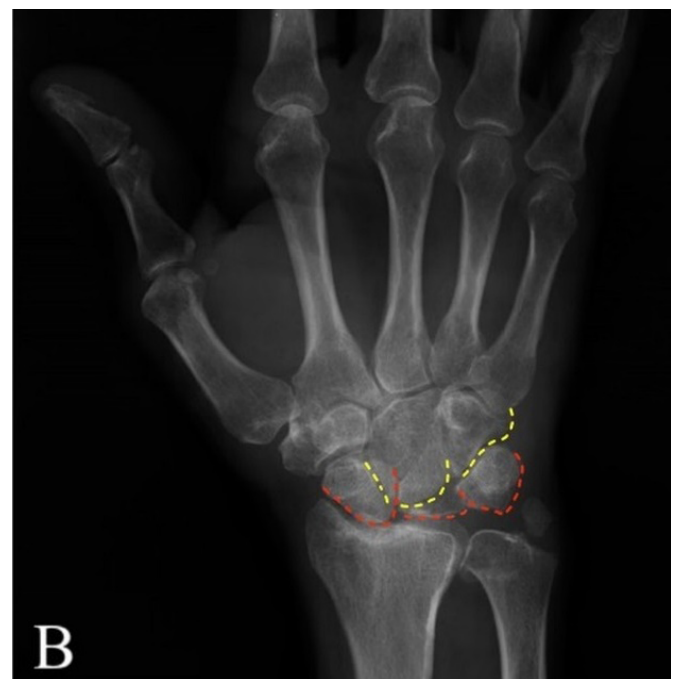
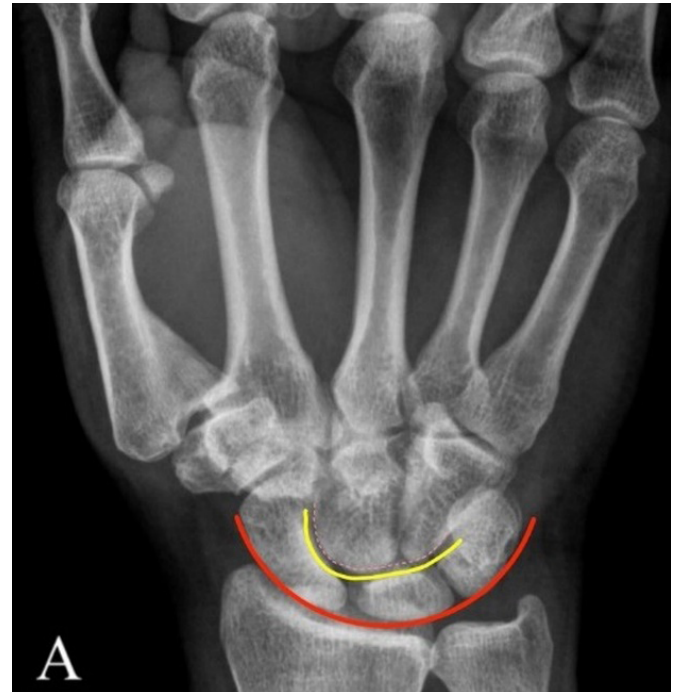


Figure 2. Demonstration of the line of the Gilula carpal arcs on AP view radiographs of the left wrist, normal (A) and lunate dislocation with broken arcs (B)

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