



## KEINBOCK'S DISEASE: A CASE REPORT

**Dr. Aparna Gupta**

Assistant Professor, SGT University, Gurgaon, India-122001

**Dr. Gurpreet Singh**

Assistant Professor, SGT University, Gurgaon, India-122001

### ABSTRACT

**Aim:** To present diagnosis, clinical features and management of Kienbock's disease and create awareness of the differential diagnosis of the condition in patients presenting with insidious, progressive dorsal wrist pain.

**Methodology:** A 23 year old male presented with insidious, progressive dorsal wrist pain with reduced wrist movements. A diagnosis of Kienbock's disease was made based on radiographs and MRI. Carpal fusion surgery was done in February 2017, post surgery patient was given wrist mobilization (volar and dorsal, Ulnar and Radial glides).

**Results:** Range of motions and manual muscle testing of wrist showed remarkable improvement in 3 months. Blood supply to the bone improved thereby changing the End feel.

**Conclusion:** This case report demonstrates importance of radiographic findings, MRI, and clinical examination in accurate diagnosis and management of patients with wrist pain.

**KEYWORDS :** Kienbock's disease, Lunatomalacia avascular necrosis, Osteonecrosis, Lunate

### INTRODUCTION:

Kienbock's disease also known as lunatomalacia was first described in literature by Robert Kienbock in 1910 as ligamentous trauma to the lunate resulting in interruption of internal arterial supply to the bone<sup>1</sup>. Kienbock's is a condition marked by avascular necrosis of the lunate bone<sup>5</sup>. Kienbock's is a rare condition with an unknown etiology<sup>2,3</sup>. Due to unknown etiology the management is highly controversial with both conservative and operative management alleviating pain, improving function and limiting progression of the disease<sup>2,3,4</sup>. This report highlights a case of Kienbock's disease in a 23 year old male and reviews the relevant literature on the disease. The patient consented to release all information in regard to this case for publication.

### METHODOLOGY:

The case was a 23 year old male, who played cricket as his favorite sport. In December 2016, pain started in his left wrist. At Shri Guru Gobind Singh Tricentenary Hospital, orthopedic department he was given painkillers. In January 2017, X-ray was done which showed, necrosis of lunate. MRI was done to confirm the diagnosis. In February 2017, patient underwent carpal fusion surgery at Max Hospital, Saket. Patient came to physiotherapy OPD at Shri Guru Gobind Singh Tricentenary Hospital in May 2017. He received integrated physiotherapy treatment including mobilization, ultrasound, stretching and muscle energy techniques for 3 months regularly.

### RESULTS: (Pre treatment)

| Range of motion WRIST (left)        | Active         | Passive |
|-------------------------------------|----------------|---------|
| Ulnar deviation                     | 0°             | 0°      |
| Radial deviation                    | 5°             | 5°      |
| flexion                             | 5°             | 5°      |
| extension                           | 0°             | 0°      |
| Fingers: flexors                    | normal         | Normal  |
| extensors                           | Normal         | Normal  |
| <b>Manual muscle testing (left)</b> | Wrist          | Fingers |
| Flexion                             | 2+             | 5       |
| Extension                           | 2              | 5       |
| <b>End Feel</b>                     | Tissue Stretch | NA      |

### (Post treatment)

| Range of motion WRIST (left) | Active | Passive |
|------------------------------|--------|---------|
| Ulnar deviation              | 15°    | 20°     |
| Radial deviation             | 10°    | 15°     |
| flexion                      | 50°    | 60°     |

|                                     |               |         |
|-------------------------------------|---------------|---------|
| extension                           | 60°           | 70°     |
| Fingers: flexors                    | Normal        | Normal  |
| extensors                           | Normal        | Normal  |
| <b>Manual muscle testing (left)</b> | Wrist         | Fingers |
| Flexion                             | 4+            | 5       |
| Extension                           | 3+            | 5       |
| <b>End Feel</b>                     | Bony end feel | NA      |

### DISCUSSION:

Kienbock's disease is rare in children, only a few cases have been published<sup>5,6,7</sup>. It most commonly affects men between the ages of 20-40 years<sup>8</sup>. The disease commonly affects the dominant wrist<sup>5,9</sup>. Multiple theories on the cause of lunate bone ischemia have been proposed, including two major ones: injury related (isolated or repeated micro-injuries) or unrelated to injury. Lunate bone receives nutritional supply through the cartilage and supplying vessels. According to Gelberman, in about 80% of cases vascular supply to the lunate comes from both the dorsal and palmar surface<sup>10</sup>. In 20% of cases vascular supply may come from one side only either palmar or dorsal<sup>11</sup>. The risk of bone ischemia due to trauma is higher in case of single vascular supply<sup>2,11</sup>. Blood flow impairment may occur as a result of lunate overloading.

### CONCLUSION:

Early diagnosis and treatment can prevent progression of necrotic lesions and bone collapse. Integrated approach proved effective and can be incorporated in treatment of Kienbock's disease.

### REFERENCES

- Kienbock R. Concerning traumatic malacia of the lunate and its consequences degeneration and compression fractures. *Clin Orthop Relat Res* 1980; 149:4-8
- Lamas C, Carrera A, Proubasta I, Llusa M, Majo J, Mir X. The anatomy and vascularity of the lunate: considerations applied to Kienbock's disease. *Chir Main*. 2007;26:13-20
- Schuidt F, Eslami S, Ledoux P. Kienbock's disease. *J Bone Joint Surg(Br)*. 2008;90(2):133-9
- Michelle A. Laframboise, Robert Gringmuth and Christopher Greenwood. Kienbock's disease in a varsity football player: a case report and review of the literature. *J Can Chiropr Assoc*. 2012 Dec;56(4):275-282
- Youssef Omor, Ittimade Nassar, Ali Ajara and Nabil Moatassimillah. Kienbock's disease: a case report. *Pan Afr Med J*. 2015;22:246
- Guillaume Herzberg, Sylvie Mercier, Jean Pierre Charbonnier, Philippe Got. Kienbock's disease in a 14 year old gymnast: a case report. *J Hand Surg*. 2006 Feb;31(2):264-8
- Luc De Smet. Kienbock's disease in a 12 year old girl. *Acta Orthopaedica Belgica* 2003 Aug;69(4):361-2
- Danielle Cross, Kristofer Matullo S. Kienbock's disease. *Orthop Clin N Am*. 2014 Jan; 45(1):141-52
- Javier Arnaiz, Tatiana Piedra, Luis Cerezal, John Ward, Alex Thompson, Jorge Vidal A, Ana Canga. Imaging of Kienbock's disease. *AJR Am J Roentgenol*. 2014 July;203(1):131-9
- Dorota Kulhawik, Tomasz Szalaj and Monika Grabowska. Avascular necrosis of the lunate bone (Kienbock's disease) secondary to scapholunate ligament tear as a consequence of trauma - a case study. *Pol J Radiol* 2014;79:24-26
- Gelberman RH, Panagis J S, Teleisnik J. The arterial anatomy of humean carpus Part 1: The extraosseous vascularity. *J Hand Surg*. 1983;8:367