

## **Introduction:**

Lunate morphology, local osseous anatomy and negative ulna variance increased the risk of Kienböck disease, however many studies failed to prove this relation. <sup>[1-4]</sup>

Although there is no general agreement regarding radiocarpal anatomy and the development of Kienböck's disease, it seems to be a relationship between unequal load distribution through the radiocarpal joint whereby the lunate loads an abnormal distribution of the force and the development of lunate osteonecrosis and collapse. <sup>[5]</sup> This may explain the beneficial effect of joint leveling and decompression procedures such as radial shortening; capitate shortening either isolated <sup>[6]</sup> or accompanied by capito-hamate fusion in management of early stages of the disease. <sup>[7]</sup> Capitate shortening osteotomy accompanied with capito-hamate fusion technique was done <sup>[8]</sup>; however it was noted that a progressive carpal collapse occurred in 6 patients. They explained that scaphoid palmar flexion will lead to proximal migration of the distal carpal row, leading to a progressive carpal collapse. A reversed L-shape osteotomy was done to relieve the lunate facet of the capitate and to resist the potential progression of carpal collapse, and concluded that isolated capitate shortening without capito-hamate fusion may be enough to achieve satisfactory results in the early stages of disease with normal ulnar variance. <sup>[9]</sup> All these procedures are accepted for management of Kienböck's disease associated with negative or positive ulnar variance, however in cases of neutral ulnar variance, these methods of treatment can modify the distal radio-ulnar joint biomechanics and lead to eventually chronic ulnar-sided wrist pain. <sup>[10]</sup>

Capitate shortening osteotomy accompanied by 3<sup>rd</sup> metacarpal base fusion arises as a solution and seems to be a logical procedure that reduces the load on the intermediate column preventing collapse, allowing revascularization and preventing proximal migration of the capitate due to progression of carpal collapse. <sup>[11]</sup>

The objective of this study is to evaluate the results of combining distal capitate shortening with capito- third metacarpal base fusion for treatment of Kienböck disease (Lichtman stage II "lunate sclerosis" or stage IIIA "lunate collapse" without scaphoid deformity) in neutral ulnar variance patients.

## **Patients and methods:**

This is an interventional study done after approval of medical ethical committee of Benha faculty of medicine (RC 3.10.2020). Twenty patients, all of them were consecutive with Kienböck's disease Lichtman stage II in 12 patients and stage IIIA in 8 patients were operated on between December 2015 and May 2018 in hand surgery unit at Benha university hospitals in orthopedics and traumatology department. Patients were diagnosed by postero-anterior and lateral X-ray views of the wrist joint, and then MRI was done. As regarded to gender; 14 (70%) patients were female whereever 6 (30%) patients were male. Patients' age (ranged 20-37y) with a mean 26.1 (SD 5.6) y. Dominant hand was affected in 16 patients (80%). Average duration of the symptoms was 24 months (range: 8-30m.). Sixteen patients were heavy manual labors, while 4 patients had an office based work. There were 6 patients who had a history of trauma on the affected wrist, while the other 14 had a repetitive minor trauma due to the nature of their work. Table [1]