

PROXIMAL ROW CARPECTOMY IN A 23 YEAR OLD FEMALE WITH KIENBÖCK'S DISEASE: A CASE REPORT

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ABSTRACT

Kienböck's disease is a rare disorder of the lunate bone resulting from vascular compromise to the bone. We describe a 23 year old female with a 6 year history of non traumatic left wrist pain and swelling. Radiography and Computerized Tomography (CT) scan were in keeping with late Kienböck's disease. The patient underwent a proximal row carpectomy and had good outcome at 2 years follow up. There is no previous documented case or such treatment in this region. This case highlights the clinical presentation of this rare disorder and suggests its consideration as a differential diagnosis when dealing with non traumatic persistent wrist pain and swelling.

CASE REPORT

A 23 year old female presented at PCEA Kikuyu Hospital with pain in the left wrist of 6 years duration, mostly felt while doing manual work. There was no history of trauma. She reported no relief of the pain with use of analgesics or a wrist support. Systemic and general enquiries of the patient were not contributory. Her past medical and family history were unremarkable. General examination of the patient was normal. Local physical examination revealed mild left wrist swelling and tenderness especially over the dorsal aspect. Her wrist range of motion was reduced with flexion maximum at 30° and extension at 40°. Plain radiographs (Figure 1a and b) and CT scan of left wrist (Figure 2) revealed features of necrosis of the lunate (Kienböck's disease). Her complete blood cell count was normal. The patient was advised on the available options. She consented to a proximal row carpectomy through a transverse dorsal wrist incision.

The patient was discharged on analgesics and a volar wrist splint for two weeks. The post operative course was uneventful. At two years follow up the patient had no wrist pain and had a wrist flexion of 70° and extension of 60°.

Figure 1a (AP view) and 1b (Lateral view)

Preoperative plain radiographs of the wrist joint showing stage IIIB Kienböck's disease. Note the collapsed lunate (arrow head) and the sclerotic features.

Figure 1a

Figure 1b



Figure 2

Pre-operative CT scan showing fragmentation of the lunate (Arrow)



DISCUSSION

Kienböck's disease (lunatomalacia) is the eponym for avascular necrosis of the lunate (1). In 1843, Peste presented the initial description of lunate collapse in the French literature (2). Nearly 70 years later, a Viennese radiologist named Robert Kienböck introduced the term "lunatomalacia" (3). The exact aetiology is poorly understood particularly as it occurs most often in the absence of obvious trauma (2). Most patients are men in their third to fourth decade (3). It is usually unilateral. Patients present with complaints of activity-related dorsal wrist pain, decreased wrist motion in the flexion-extension arc, and poor grip strength (4, 5).

Examination usually reveals dorsal wrist swelling and tenderness over the radio carpal joint. There is often a weakened grip (5). Differential diagnosis of Kienböck's disease includes wrist sprains, arthritis, scaphoid fracture as well as idiopathic osteonecrosis of the scaphoid (Preiser's disease). Our female patient had a more or less classical presentation of Kienböck's disease.

Plain films and Magnetic Resonance Imaging (MRI) are the most useful modalities for diagnosis, staging and planning treatment. CT scan also has a role. In Kienböck's disease, CT scan will demonstrate a coronal fracture of the lunate or the existence of lunate fragmentation not always clearly seen on plain radiographs (6). In our patient, CT scan was chosen as the patient could not afford the more expensive MRI. The classification of Kienböck's disease by Lichtman *et al* (7) has good reliability and reproducibility (8, 9).

Treatment of Kienböck's disease is not well-defined, because the natural history is not well known (10).

There is little evidence to support any particular form of operative treatment or to indicate its superiority over conservative measures (11). Although there is no cure, in early disease, the aim is to reduce compressive loading of the lunate. This may be aided by splinting and anti-inflammatory agents or performing surgery. The surgery for this early disease may involve radial shortening or ulnar lengthening or fusion of the capitate and hamate or by scaphotrapeziotrapezoid (STT) joint fusion (up to stage 3). In late disease, surgical options include wrist arthrodesis or proximal row carpectomy (6, 12).

Proximal row carpectomy was first performed by Stamm in 1949 for scaphoid nonunion and later Kienböck's disease (13). The first large, well-documented series in the literature on proximal row carpectomy was in 1964 in 24 patients with a variety of wrist disorders (14). In 2001, Calandruccio noted that subjective and objective outcomes have compared favorably with more complex procedures and this makes proximal row carpectomy, rather than a salvage operation, the preferred procedure in a variety of wrist disorders (15, 16). We opted for a proximal row carpectomy in our patient as it is a straight forward procedure, less disabling with fewer complications as opposed to radial shortening or wrist fusion.

CONCLUSION

While Kienböck's disease is a rare condition, it should be considered as a differential in non traumatic persistent wrist pain and swelling. In our patient proximal row carpectomy was performed with good outcome at two years follow up.

REFERENCES

1. Alexander, A.H. and Lichtman D.M. Kienböck disease. *Orthop. Clin. North. Am.* 1986; **17**(3): 461-472.
2. Peltier, L.F. The classic. Concerning traumatic malacia of the lunate and its consequences: degeneration and compression fractures. *Clin. Orthop.* 1980; **149**: 4-8.
3. Saunders, B. M. and Lichtman, D.M. A classification-based treatment algorithm for Kienböck disease: current and future considerations. *Tech. Hand Surg.* 2011; **15**:38 - 40.
4. Bochud, R.C. and Büchler, U. Kienböck's disease, early stage 3: height reconstruction and core revascularization of the lunate. *J. Hand Surg. [Br]* 1994; **19**:466-478.

5. Beckenbaugh, R.D., Shives, T.C., Dobyns, J.H. and Linscheid, R.L. Kienböck's disease: the natural history of Kienböck's disease and considerations of lunate fractures. *Clin Orthop.* 1980; **149**: 98-106.
6. Schuind, F., Eslami, S. and Ledoux, P. Aspects of current management Kienböck's disease. *J. Bone Joint Surg. [Br]* 2008; **90-B**:133-139.
7. Lichtman, D.M., Mack, G.R., MacDonald, R.I., Gunther, S.F. and Wilson, J.N. Kienböck's disease: the role of silicone replacement arthroplasty. *J. Bone Joint Surg. (Am)*. 1977; **59-A**:899-908.
8. Goldfarb, C.A., Hsu, J., Gelberman, R.H. and Boyer, M.I. The Lichtman classification for Kienböck's disease: an assessment of reliability. *J. Hand Surg. (Am)* 2003; **28**:74-80.
9. Jafarnia, K., Collins, E.D., Kohl, H.W., Bennett, J.B. and Ilahi, O.A. Reliability of the Lichtman classification of Kienböck's disease. *J. Hand Surg. (Am)*. 2000; **25**: 529-534.
10. Yazaki, N., Nakamura, R., Nakao, E. *et al.* Bilateral Kienböck's disease. *J. Hand Surg. (Br)*. 2005; **30**(20):133-136.
11. Kienböck's Disease, Richard A. Bernstein, MD. The Orthopaedic Group, LLC. <http://www.togct.com/downloads/bernstein/Kienbocks-Disease.pdf>. Accessed February 2012.
12. Delaere, O., Dury, M., Molderez, A. and Foucher, G. Conservative versus operative treatment for Kienböck's disease: a retrospective study. *J. Hand Surg. (Br)*. 1998; **23**:33-336.
13. Kienböck's Disease. American Academy of Orthopaedic Surgeons. October 2007 Available at: <http://orthoinfo.aaos.org/topic.cfm?topic=a00017>. Accessed February 2012.
14. Stamm, T.T. Excision of proximal row of carpus. *Proc. Roy. Soc. Med.* 1944; **38**:74-75.
15. Crabbe, W.A. Excision of the proximal row of the carpus. *J. Bone Joint Surg. (Br)*. 1964; **46B**:708-711.
16. Calandruccio, J.H. Proximal row carpectomy. *J. Am. Soc. Surg. Hand*. 2001; **2**(1):112-122.