

Outcomes Assessment of Lunate Replacement Arthroplasty with Intrinsic Ligament Reconstruction

Objective

To prospectively assess the clinical and radiographic outcomes of a consecutive series of patients undergoing intrinsic ligament reconstruction and prosthetic replacement of an unsalvageable lunate due to Kienböck's disease.

Methods

Thirteen patients (6 males and 7 females) with a mean age of 40 years and an unsalvageable lunate by CT scan (fragmentation / delamination) refused the standard options of PRC, STT fusion, or SC fusion and specifically requested to be offered an alternative solution. Pre-operative to post-operative measures were compared at a mean follow-up of 24.3 months using a paired, single-tailed, t-test with a p-value of 0.05 for statistical significance.

Treatment

Pyrocarbon lunate prosthetic replacement was combined with volar and dorsal scaphoid to triquetrum ligament reconstruction through coronal plane passages in the prosthesis, using a distally based FCR graft. Immobilization for 8 weeks was followed by progressive motion and strength rehabilitation.

Results

All preoperative / postoperative comparisons were statistically significant.

Wrist flexion (degrees):	29.2 / 43.3
Wrist extension (degrees):	24.2 / 53.3
Grip strength (kg):	12.3 / 31.5
Grip % of contralateral:	36.5 / 85.2
DASH score:	39.1 / 7.7

Mean capitoulunate angle: -5.1 degrees

Mean scapholunate angle: 48.3 degrees

Conclusion

Although these subjective and objective results reflect substantial improvement, there remain recognizable deficiencies in both prosthetic design and surgical strategy that require further change before incorporating this treatment into the Kienböck's armamentarium.

