



Prototype Design

Technology Summary

Researchers have developed an anatomically-inspired design of a total wrist arthroplasty (TWA), a total wrist replacement structure with a kinematic-inspired design that closely mimics a healthy human wrist. The device consists of a three-component system that utilizes existing fixation strategies and aligns rotation center in the kinematic center of the wrist. Torque transfer is supported from the forearm to the hand in all positions without compromising stability. It is semi-constrained, preventing dislocation while maintaining range of motion and reducing the incidence of component loosening and hardware failure.

Application & Market Utility

Wrist arthritis is a pervasive ailment that impacts one in seven Americans, including more than 75 percent of those 65 and older. It is usually degenerative and has a significant effect on the patient's quality of life, regardless of their age. Surgical treatments for wrist arthritis include fusion and wrist arthroplasty, both of which are imperfect. Fusion fixes the wrist in one position, limiting common personal functional activities in exchange for a strong fixation; despite these limitations, it is currently the most utilized solution. This innovation is a novel TWA solution with superior stability against dislocation to enable patients to maintain freedom of motion and have an alternative to total wrist fixation.

Next Steps

Seeking licensing opportunities. Patent pending.

TECHNOLOGY READINESS LEVEL

4-7

Seeking

Investment | Licensing | Research

Keywords

- wrist implant
- orthopaedic
- universal joint

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