CLINICAL EXPERIENCES WITH THE MICHELANGELO HAND, A FOUR-YEAR REVIEW

John M. Miguelez, CP, FAAOP
Advanced Arm Dynamics, Inc.
Mailing Address: 123 W. Torrance Blvd., Suite 203, Redondo Beach, CA 90277

ABSTRACT

With the integration of multiple grasp patterns, compliant hands have advanced the functionality of upper extremity prosthetic patients while also retaining the natural appearance of a human hand. The latest and most promising evolution in compliant hand technology is the Michelangelo hand by Otto Bock. A powered, opposable thumb is positioned electronically, smoothly transferring the hand into multiple grip patterns: lateral power grip, pinch grip, opposition power grip, tripod grip, finger abduction/adduction, full open palm and half open palm. Michelangelo operates significantly faster than previous compliant hands and includes a compliant flexion wrist that patients report has improved reliability and responsiveness. Enhanced software and EMG signal processing utilize an intuitive graphic user interface, promoting control predictability. In order to maximize the functional advantages of this technology, traditional occupational therapy training protocols should be modified to address multiple grasp function.

This presentation will examine the specific functional advantages of the Michelangelo hand based on four years of in-depth clinical involvement by this practitioner. The direct observations of 10 transradial level patients will be included, as will an overview of suggested modifications to occupational therapy training protocols.