SCIENTIFIC ARTICLE

Outcomes Following Acute Metacarpophalangeal Joint Arthroplasty Dislocation: An Analysis of 37 Cases

Nathan Wanderman, MD,* Eric Wagner, MD,* Steven Moran, MD,* Marco Rizzo, MD*

Purpose There remains a paucity of information regarding the treatment outcomes of dislocation after metacarpophalangeal (MCP) joint arthroplasty. The purpose of this study was to assess the outcomes of surgical and nonsurgical treatment modalities of MCP arthroplasty dislocations.

Methods Of 816 MCP joint arthroplasties over a 14-year period, there were 37 (4%) acute MCP joint dislocations that required intervention by a health care professional. Implants involved included 28 nonconstrained implants including pyrocarbon (n = 17) and surface replacement arthroplasty (n = 11), and 9 silicone implants. The analysis included the treatment of dislocations after primary (n = 30) and revision (n = 7) MCP joint arthroplasty. Dislocation was defined as clinical and radiographic evidence of MCP joint prosthetic acute dislocation diagnosed and treated by a fellowship trained hand surgeon.

Results Etiologies underlying the dislocations included implant fracture (n = 6), component loosening (n = 2), and soft tissue deficiency (n = 29). Of the 37 dislocations, treatments included 14 nonsurgical (closed reduction, orthosis fabrication) all of which ultimately failed. Surgically, including some of the failed prior procedures, 18 soft tissue stabilization procedures and 21 revision arthroplasties were performed, with 6 that had failed soft tissue stabilization. The soft tissue stabilization procedures had a 28% success rate in achieving a stable MCP joint. Revision arthroplasty had a 71% success rate. Subgroup analysis showed an 86% success rate for silicone revisions and a 43% success rate with nonconstrained revisions, with 80% and 36% 5-year survival free of instability, for the 2 types of implants, respectively.

Conclusions The treatment of MCP joint arthroplasty dislocation with revision to silicone implant appears to hold the most promise in achieving a stable MCP joint after an acute prosthetic dislocation. *(J Hand Surg Am. 2018;43(3):289.e1-e6. Copyright © 2018 by the American Society for Surgery of the Hand. All rights reserved.)*

Type of study/level of evidence Therapeutic IV.

Key words Acute arthroplasty, dislocation, MCP, pyrocarbon, silicone.

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*From the *Department of Orthopedic Surgery, Mayo Clinic, Rochester, MN.*

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Corresponding author: Marco Rizzo, MD, Department of Orthopedic Surgery, Mayo Clinic, 200 First Street SW, Rochester, MN 55905; e-mail: rizzo.marco@mayo.edu.

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Metacarpophalangeal (MCP) arthroplasty is an established surgical treatment for MCP arthritis, with benefits including pain relief and preservation of range of motion.[1–5] However, a high postoperative complication rate relative to other joint replacement procedures has been described, including a higher rate of implant failure, recurrent finger deformities, and either traumatic or recurrent MCP joint instability.[4–6]

FIGURE 1: Right third digit MCP arthroplasty dislocation. **A** AP and **B** lateral radiograph of a 58-year-old showing a dislocated third digit MCP pyrocarbon component.

Acute dislocation has been described as a cause of MCP joint implant failure,[7] but little is known regarding the optimal treatment of these prosthetic dislocations. An MCP joint arthroplasty dislocation presents a unique problem, as intervention is often necessitated to restore function and stability, as well as minimize pain (Figs. 1, 2). MCP arthroplasty dislocations are often associated with soft tissue laxity or disruption, as well as implant fracture or loosening, resulting in a challenging and complex clinical problem. The options for management are wide ranging, including nonsurgical modalities, soft tissue procedures, and revision arthroplasty. Little has been reported on the optimal management of an acute MCP joint arthroplasty dislocation, particularly with regard to prognosis and clinical outcomes of the various treatment options. The objective of this study was to examine patients who sustained an acute MCP joint arthroplasty dislocation, assessing the outcomes of surgical and nonsurgical treatment modalities.

METHODS

After approval by the institutional review board, a retrospective review was performed using a combination of the institutional Joint Registry Database[8] and an electronic medical record review of all patients who sustained an acute MCP arthroplasty dislocation. The information analyzed from the registry and medical record review included patient demographics, surgical details, clinical and functional outcomes, complications, and revisions. Revision procedures performed at our institution or outside institutions are captured and included in the registry. The majority of the clinical data and outcomes were collected by the electronic medical record review.

Demographics

Over a 14-year period from January 1, 1998, to December 31, 2012, 816 primary MCP arthroplasties by 9 different surgeons were collected in our institution's total joints registry, of which 37 fingers in