

Short-term outcomes in patients with carpometacarpal arthroplasty and metacarpophalangeal fusion compared with carpometacarpal arthroplasty

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INTRODUCTION:

The indication for a metacarpophalangeal (MP) procedure at the time of carpometacarpal (CMC) arthroplasty has been 30° of hyperextension defined by Eaton. This study expanded the criteria to include those patients with moderate to severe thenar atrophy. The hypothesis for this study is that an MP fusion done at the same time as CMC arthroplasty for patients with MP hyperextension or moderate to severe thenar atrophy pre-operatively will have a stronger pinch strength when compared with their pre-operative value.

METHODS:

Retrospective review of patients who had undergone either a CMC arthroplasty or a CMC arthroplasty and MP fusion done by the senior author were recorded. The Quick Disabilities of the Arm, Shoulder, and Hand Score (QuickDASH), Visual Analog Scale (VAS), and an average of three pinch readings from each thumb were measured on the Baseline pinch gauge [30-pound (lbs) capacity] and recorded preoperatively, and at 3 and 6 months post-operatively. Statistical analysis included sample t-tests to determine significant differences between groups. Significance was set at $p < 0.05$.

RESULTS:

Sixty-four patients (44 females) had operated thumbs: 29 CMC arthroplasties and 35 CMC/MP fusions. Average age was 68.9 years. Pre-operatively, CMC patients had a pinch of 9.9lbs, while those with MP hyperextension or thenar atrophy had a pinch of 7.2lbs ($p=0.047$). The CMC group had no significant difference between pre-op and 3-month pinch 9.9lbs. vs. 8.4lbs ($p=0.17$) or between pre-op and 6 months [9.9lbs vs. 9.5lbs ($p=0.42$)]. The CMC/MP group had a significant difference between pre-operative and 3-month pinch (7.2lbs vs. 9.2lbs, respectively $p=0.007$) and also at 6 months (7.2lbs vs. 11.1lbs, $p < 0.001$). Both CMC and CMC/MP groups had a significant decrease in QuickDASH scores from pre-op to 3-month ($p=0.003$ and $p < 0.001$ respectively). However, CMC had no significant change from 3-months to 6-months ($p=0.16$), while CMC/MP did ($p=0.002$). Both CMC and CMC/MP thumbs had a significant decrease in VAS scores from pre-op to 3-month ($p=0.01$ and $p < 0.001$ respectively). However, CMC had no significant change from 3-month to 6-month ($p=0.22$), while CMC/MP did ($p=0.001$).

DISCUSSION AND CONCLUSION:

The short-term results of this study demonstrate that patients who started with an MP hyperextension deformity or moderate to severe thenar atrophy obtained a stronger key pinch with a CMC/MP as early as 3 months. The MP fusion adds strength to thumbs by restoring balance and functional mechanics to thumb pinch and the strength was regained quickly for patients with a weaker pre-operative pinch.