Functional Outcomes After Sauve-Kapandji Arthrodesis

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Functional Outcomes After Sauve-Kapandji Arthrodesis

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Abstract
PURPOSE: The Sauve-Kapandji procedure (SK) combines a distal radioulnar joint (DRUJ) arthrodesis with the creation of an ulnar pseudoarthrosis for the salvage of DRUJ instability or arthritis. Despite several published case series, there is limited data on postoperative functional outcomes. This study evaluates patient-reported outcomes of SK using a validated functional outcomes scale.

METHODS: An IRB-approved retrospective review of patients who underwent SK in two healthcare systems over 10 years (2008-2018) was performed. Pre- and post-operative ranges of motion, Quick Disabilities of the Arm, Shoulder, and Hand (QDASH) Scores, and wrist plain film radiographic measurements were recorded. Pre- and post-operative outcomes analyses and subgroup comparisons were performed.

RESULTS: Fifty-seven patients were included in the study. Surgical indications included post-traumatic DRUJ arthritis (n=35), rheumatoid arthritis (n=10), degenerative DRUJ arthritis (n=7), Madelung’s deformity (n=3), psoriatic arthritis (n=1), and giant cell tumor of bone (n=1). During the first post-operative year, QDASH scores decreased from a mean of 52 preoperatively to 28 at 12 months. QDASH scores at final follow-up demonstrated significant improvement in patients with osteoarthritis and inflammatory arthritis. Supination significantly improved post-operatively from 48° to 74°, while wrist flexion, wrist extension, and pronation remained unchanged. Radiographically, significant post-operative decreases were seen in ulnar variance and McMurtry’s translation index. The post-operative complication rate was 21%, including revision osteotomy in 4 (7.0%) patients and hardware removal in 4 (7.0%) patients. No DRUJ non-unions were seen.

CONCLUSIONS: SK for DRUJ salvage significantly improved patient-reported outcomes after one year and significantly improved supination. Similar functional improvements after SK are seen in both osteoarthritis and inflammatory arthritis.
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Glossary of Abbreviations
CDG: Clavien-Dindo grade
DRUJ: distal radioulnar joint
ECU: extensor carpi ulnaris
IA: inflammatory arthritis
JHS: The Journal of Hand Surgery
OA: osteoarthritis
PQ: pronator quadratus
QuickDASH: Quick-Disabilities of the Arm, Shoulder, and Hand
RA: rheumatoid arthritis
ROM: range of motion
SD: standard deviation
SK: Sauve-Kapandji
Description of Contribution

Scholarly Project Question

The Sauve-Kapandji procedure is used for salvage of a severely arthritic wrist/DRUJ. The pre-existing literature was lacking in studies examining longitudinal functional outcomes of the Sauve-Kapandji procedure. As such, this scholarly project sought to answer the primary question: At what post-operative time point does the Sauve-Kapandji procedure result in improved functional outcomes relative to pre-operative function? The QuickDASH survey was used to quantify these functional outcomes. Additional secondary study questions included the following: How does the Sauve-Kapandji procedure affect range of motion at the wrist? How does the Sauve-Kapandji procedure affect standardized radiographic measurements?

Design

Drs. Rozental and Leland were responsible for the initial conception of the project, as well as the variables for data collection. The three of us collaborated to determine inclusion/exclusion criteria and post-operative time points for collection of QuickDASH scores.

Execution/Data Collection

Drs. Rozental, Leland, and Harper identified qualified patients at Beth Israel Deaconess Medical Center, and Dr. Earp and Ms. Benavent identified qualified patients at Brigham and Women’s Hospital. I was the primary data collector—I performed chart reviews on patients at both institutions to collect demographic data, pre-operative QuickDASH scores and ranges of motion, peri-operative data, and post-operative QuickDASH scores and ranges of motion. I also performed measurements on pre- and post-operative radiographs for patients from both institutions.

Analysis

Data analysis was performed in Microsoft Excel by myself and Dr. Leland.

Writing

I wrote the initial draft of the manuscript. Drs. Rozental, Leland, Harper, and Earp provided feedback over several iterations of edits. When we all agreed that the manuscript was ready, we submitted it to The Journal of Hand Surgery. I revised the manuscript in response to multiple rounds of reviewer comments, with guidance from Drs. Rozental and Leland. The paper was accepted by JHS in November 2019 and published online in January 2020.
Citation of Published Work
Appendix:
The published work as it appears in *The Journal of Hand Surgery* can be found at:
