

Wrist Arthritis Surgery Significantly Increases CTS/CTR Risk: Implications for Preoperative Screening

John A Alvarez ¹, Majd Mzeihem, Michael Patrick Foy, Wedam Nyaaba, Mark H Gonzalez

¹Orthopaedics

INTRODUCTION: The purpose of this study was to determine whether patients with wrist arthritis undergoing corrective surgeries, such as four-corner fusion (4CF), proximal row carpectomy (PRC), wrist fusion or total wrist arthroplasty (TWA), have a higher incidence of carpal tunnel syndrome (CTS) and subsequent carpal tunnel release (CTR) compared to those with less severe arthritis who did not require surgery.

METHODS: Methods: The PearlDiver database was used to identify two patient groups: the surgical group (wrist arthritis patients who underwent corrective surgery), the conservative group (wrist arthritis patients who did not have surgery). Exclusion criteria included prior CTS or CTR. The surgical group was matched to the conservative and control groups based on age, gender, diabetes, hypothyroidism, and the Elixhauser Comorbidity Index. CTS and CTR incidence were analyzed using the Chi-square test.

RESULTS: Of 2.5 million patients with wrist arthritis, those undergoing surgical intervention (n = 18,125) had significantly higher rates of CTS and CTR compared to the matched conservative cohort. At one year postoperatively, 26.4% of surgical patients developed CTS versus 7.0% in the conservative group (OR 4.06), with CTR rates of 17.7% versus 2.3% (OR 8.25; P < 0.001). These elevated risks persisted up to two years and were highest within the first six months post-surgery. Among surgical procedures, 4CF was associated with the highest incidence of CTS and CTR, though multivariate analysis revealed PRC had the greatest adjusted odds of both outcomes (CTS OR 3.33, CTR OR 6.04).

DISCUSSION AND CONCLUSION: Patients with wrist arthritis who undergo surgical intervention face significantly higher risks of developing CTS and requiring CTR compared to those managed conservatively. Among surgical techniques, 4CF had the highest observed incidence of CTS and CTR, while PRC demonstrated the highest adjusted odds after controlling for comorbidities. These findings highlight the importance of preoperative screening and consideration of prophylactic strategies to mitigate postoperative median nerve compression.