

# Trends in Endoscopic versus Open Treatment of Carpal Tunnel Syndrome in Rheumatoid Arthritis Patients

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**INTRODUCTION:** Rheumatoid arthritis (RA) is a known risk factor for Carpal Tunnel Syndrome (CTS) and is believed to be related to compression of the median nerve secondary to inflammation. If conservative measures such as NSAIDs, splinting, physical therapy and corticosteroid injections fail, CTS can be managed surgically with carpal tunnel release (CTR). Endoscopic CTR (ECTR) and open CTR (OCTR) have been studied extensively in the general population, however we aim to analyze national trends, outcomes, and patient-specific comorbidities associated with ECTR and OCTR in patients with RA.

**METHODS:** A retrospective cohort study was conducted using the PearlDiver database to identify RA patients who underwent ECTR and OCTR between 2010 and 2014. Demographic data, comorbidities, and complication rates were analyzed. Univariate and multivariate analysis assessed differences in outcomes and patient-specific comorbidities between the treatment methods.

**RESULTS:** Patients with RA undergoing ECTR (n=683) in comparison to OCTR (n=4234) had no significant differences in medical comorbidities such as hypertension, obesity, chronic kidney disease, hypothyroidism and diabetes mellitus. Patients in the ECTR group reported a risk ratio of 1.44 (95% CI: 1.10-1.89, p=0.01) of requiring repeat procedure within 90 days of initial procedure. Five-year trends in ECTR and OCTR procedures reported a combined annual growth rate of 5.6% and 13.2%, respectively.

**DISCUSSION:** Endoscopic and open approaches to CTR are important considerations in surgical planning. RA and ECTR have previously been identified as independent risk factors for revision CTR. Our study has identified the 90-day risk of repeat procedure to be elevated in the ECTR group in comparison to OCTR group. Additionally, growth in utilization of OCTR procedure has outpaced that of ECTR procedures in the same period, likely in response to the trend of ECTR leading to higher rates of repeat procedure. The need for revision following ECTR in patients with RA could be related to the concomitant tenosynovitis contributing to technical difficulties such as poor visualization leading to potential incomplete division of the transverse carpal ligament. Future directions could include further characterization of repeat procedures performed in this subset of patients.

**CLINICAL RELEVANCE:** Despite improved recovery times and earlier return to work following ECTR, the underlying pathophysiology of RA increases the risk of complications of this procedure. Our study indicates that RA patients undergoing OCTR are at lower risk of reoperation within 90 days of initial procedure when compared to those who undergo ECTR.

**Figure 1.** Trends in ECTR and OCTR Procedure

