

Endoscopic Versus Open Treatment of Carpal Tunnel Syndrome in Rheumatoid Arthritis Patients

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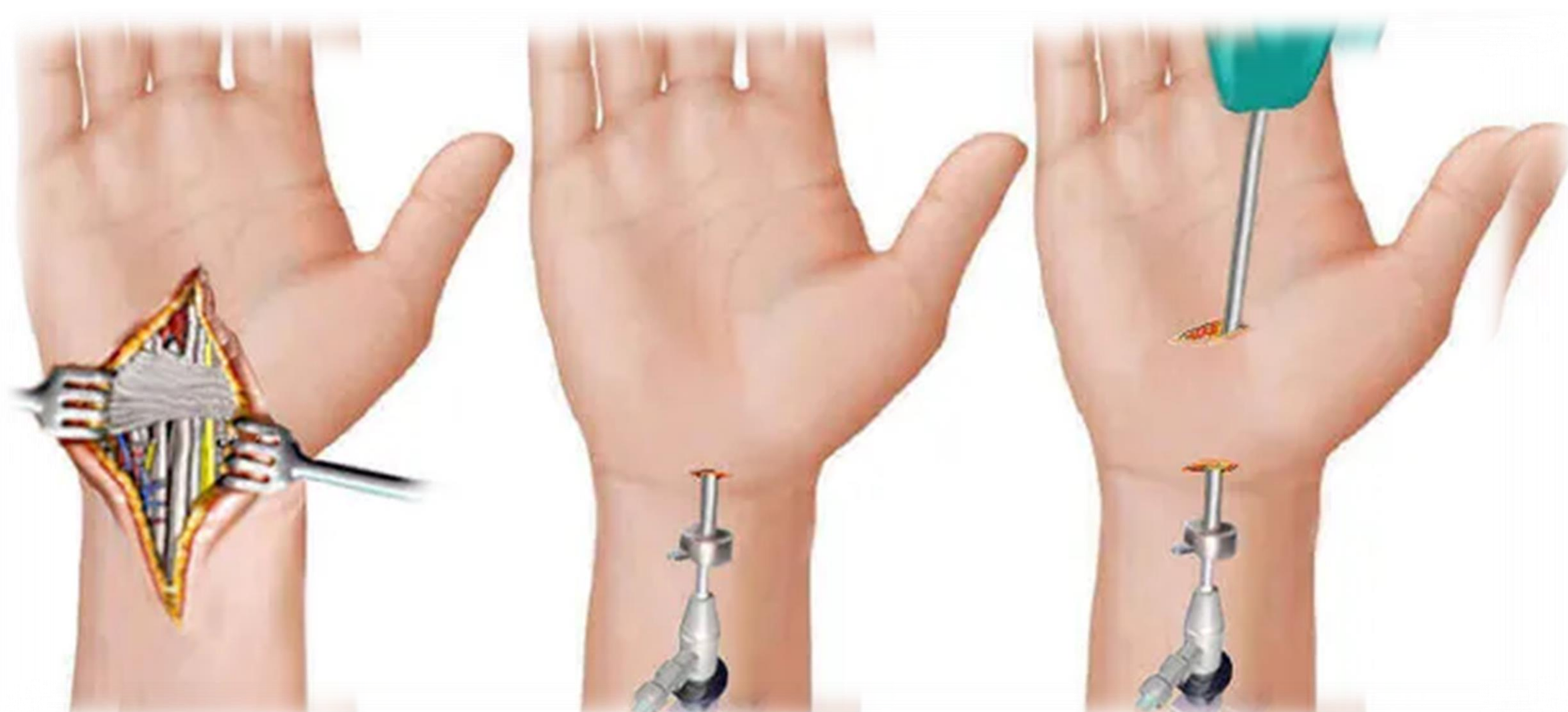
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Introduction

- **Rheumatoid arthritis (RA)** is a known risk factor for carpal tunnel syndrome, possibly because the inflammation causes compression of the median nerve.
- Endoscopic and open carpal tunnel release (ECTR and OCTR) have been studied extensively in the general population but less so in patients with RA.
- The **purpose** of our study was to analyze outcomes and patient-specific comorbidities associated with ECTR and OCTR in patients with RA.

Methods

- The **PearlDiver** database was utilized to retrospectively identify patients who underwent OCTR or ECTR while concurrently diagnosed with RA.
- Demographic data, comorbidities, and complication rates were analyzed.
- We used univariate and multivariable analysis to assess differences between the treatment methods.
- The **primary outcome** of the study was repeat operation, defined as an additional ECTR or OCTR procedure within 90 days of the index procedure.



Open Carpal Tunnel Release Surgery

Single Portal Endoscopic Carpal Tunnel Release Surgery

Double Portal Endoscopic Carpal Tunnel Release Surgery

Table 1. Demographic characteristics and comorbidities of Patients Undergoing ECTR and OCTR

	ECTR n = 683	OCTR n = 4234	P-value
Demographics			
Age, mean (SD)	59 (11.7)	59 (11.5)	0.08
Sex			
Male	137 (20%)	977 (23%)	0.09
Female	546 (80%)	3257 (77%)	
Comorbidities			
Alcohol abuse	45 (6.6%)	260 (6.1%)	0.72
Arrhythmias	223 (32.7%)	1427 (33.7%)	0.62
Blood loss anemia	57 (8.3%)	308 (7.3%)	0.36
Chronic kidney disease	89 (13.0%)	610 (14.4%)	0.37
Chronic pulmonary disease	340 (49.8%)	2270 (53.6%)	0.07
Coagulopathy	114 (16.7%)	608 (14.4%)	0.12
Congestive heart failure	94 (13.8%)	632 (14.9%)	0.46
Deficiency anemia	172 (25.2%)	1146 (27.1%)	0.33
Depression	374 (54.8%)	2255 (53.3%)	0.49
Diabetes mellitus	330 (48.3%)	2084 (49.2%)	0.69
Drug abuse	108 (15.8%)	573 (13.5%)	0.12
Fluid and electrolyte disorders	311 (45.5%)	1949 (46.0%)	0.84
Hypertension	563 (82.4%)	3572 (84.4%)	0.22
Hypothyroidism	267 (39.1%)	1604 (37.9%)	0.58
Liver disease	173 (25.3%)	1031 (24.4%)	0.61
Lymphoma	21 (3.1%)	106 (2.5%)	0.46
Metastatic cancer	44 (6.4%)	206 (4.9%)	0.1
Non-metastatic cancer	130 (19.0%)	818 (19.3%)	0.9
Obesity	339 (49.6%)	1937 (45.7)	0.07
Other neuro disorders	74 (10.8%)	520 (12.3%)	0.31
Paralysis	21 (3.1%)	188 (4.4%)	0.12
Peptic ulcer disease	69 (10.1%)	424 (10.0%)	>.99
Peripheral vascular disease	197 (28.8%)	1310 (30.9%)	0.29
Psychoses	25 (3.7%)	209 (4.9%)	0.18
Pulmonary circulatory disorders	98 (14.3%)	592 (14.0%)	0.84
Smoking	371 (54.3%)	2172 (51.3%)	0.15
Valvular disease	191 (28.0%)	1239 (29.3%)	0.52

CI, confidence interval; ECTR, endoscopic carpal tunnel release; OCTR, open carpal tunnel release; VTE, venous thromboembolism

Results

- We identified **4,917** CTS patients on anticoagulation therapy (OCTR, 4,234; ECTR, 683).
- Comparing patients who underwent OCTR to patients who underwent ECTR, we found no significant differences in medical comorbidities such as hypertension, obesity, chronic kidney disease, hypothyroidism, diabetes mellitus and tobacco use.
- Patients who underwent ECTR were significantly more likely to require a **repeat procedure** within 90 days of the initial procedure on univariate analysis in comparison to the OCTR group, 8.6% versus 6.0%, respectively (P=.01)
- However, this difference was **not significant** in multivariate analysis controlling for comorbidities.

Table 2. Univariate analysis of Outcomes of Patients Undergoing ECTR Versus

	ECTR n = 683	OCTR n = 4234	P-value
Surgical Outcomes			
Median nerve injury	0 (0.0%)	6 (0.1%)	0.8
Repeat operation	59 (8.6%)	254 (6.0%)	0.01
Surgical site infection	6 (0.9%)	56 (1.3%)	0.44
Wound dehiscence	3 (0.4%)	16 (0.4%)	>.99
Medical Outcomes			
Anemia	3 (0.4%)	21 (0.5%)	>.99
Arrhythmia (without afib)	15 (2.2%)	90 (2.1%)	>.99
Atrial fibrillation	25 (3.7%)	162 (3.8%)	0.92
Blood transfusion	2 (0.3%)	24 (0.6%)	0.53
Cerebrovascular accident	7 (1.0%)	36 (0.9%)	0.82
Deep vein thrombosis	1 (0.1%)	3 (0.1%)	>.99
Heart failure	10 (1.5%)	86 (2.0%)	0.4
Pneumonia	9 (1.3%)	54 (1.3%)	>.99
Renal failure	4 (0.6%)	32 (0.8%)	0.81
Respiratory complications	2 (0.3%)	17 (0.4%)	0.93
Pulmonary embolism	0 (0.0%)	18 (0.4%)	0.17
Sepsis	2 (0.3%)	29 (0.7%)	0.35
Urinary tract infection	26 (3.8%)	124 (2.9%)	0.26

Conclusion

- Our study found that RA and ECTR were identified as independent risk factors for revision release, with ECTR showing a higher likelihood of repeat procedures within 90 days compared to OCTR.
- Despite similar demographics and comorbidities in the two study cohorts, use of OCTR **outpaced** ECTR use in the study period.
- Future research should explore further characterization of repeat procedures in this higher-risk patient subset.