



# Simple vs. Endoscopic Cubital Tunnel Release: a Systematic Review & Meta-Analysis

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## Purpose

- Ulnar nerve entrapment at the elbow represents the second most common entrapment syndrome in the upper extremity.
- Several techniques have been described for surgical treatment of cubital tunnel syndrome with no clear consensus.
- Endoscopic cubital tunnel release has recently been reported as a promising, minimally invasive technique.
- This systematic review aims to compare outcomes and complications of open simple cubital tunnel release (OCTuR) and endoscopic cubital tunnel release (ECTuR) of the ulnar nerve in the treatment of idiopathic cubital tunnel syndrome.

## Methods

- The electronic search of PubMed MEDLINE, Ovid MEDLINE, EMBASE and SCOPUS identified 118 citations.
- Inclusion criteria: (1) 18 years or older, (2) idiopathic cubital tunnel, (3) surgical intervention used was OCTuR or ECTuR, (4) Outcomes were objective and well-described, (5) language was English or French, (6) year of publication was 1980-2013, and (7) study included 10 or more patients.
- Exclusion criteria: (1) studies including surgical techniques other than OCTuR or ECTuR.
- Outcomes of interest included pre- & postoperative severity grading, complications, number of re-operations and the need for intra-operative conversion to another technique.
- For the purpose of analysis, post-operative outcomes as reported by author-specific or disease-specific instruments were manually combined into a single, uniform unit of measurement, which includes four categories: "excellent", "good", "fair" and "poor".

## Results

- A total of 19 studies met the inclusion criteria representing 403 open and 508 endoscopic decompressions.
- Follow-up ranged from 5 to 51 months (mean 16 months, median 12 months) in the OCTuR group and 6 to 37 months (mean 20 months, median 20) in the ECTuR group.
- The mean age of patients was 45 years in the OCTuR group vs 50.4 years in the ECTuR group.

Table 1. Summary of Grading and Complications by Group

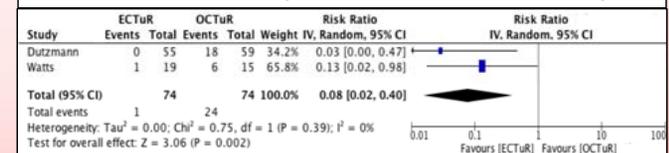
Group	Combined Preoperative Grading	Combined Postoperative Grading	Complications	Re-operations	Converted to open
OCTuR (N=403)	Grade I: 39 (17.2%) Grade II: 59 (26%) Grade III: 129 (56.8%)	Excellent: 244 (62.9%) Good: 81 (20.9%) Fair: 45 (11.6%) Poor: 18 (4.6%) Ungraded: 15	Hematoma: 2 MABC nerve lesion: 20 Scar sensitivity: 10 Diffuse elbow pain: 1 Subluxation: 4 Infection: 1 Re-operation: 12 Conversion: 0 <b>Total: 50 (12.4%)</b>	Failure: 8 Subluxation: 4 <b>Total: 12 (3%)</b>	None
ECTuR (N=536)	Grade I: 92 (17.2%) Grade II: 252 (47%) Grade III: 192 (35.8%)	Excellent: 294 (56.9%) Good: 151 (29.2%) Fair: 50 (9.7%) Poor: 13 (2.5%) Converted: 9 (1.7%) Ungraded: 19	Hematoma: 17 MABC nerve lesion: 10 Diffuse elbow pain: 1 Subluxation of nerve: 4 Infection: 1 CRPS: 2 Thrombophlebitis: 1 Ulnar nerve injury: 1 Re-operation: 9 Conversion: 3 <b>Total: 49 (9.1%)</b>	Recurrence: 4 Failure: 3 Subluxation: 2 <b>Total: 9 (1.7%)</b>	Ganglion: 1 Subluxation: 1 Nerve adhesions: 1 <b>Total: 3 (0.6%)</b>

CRPS: Complex Regional Pain Syndrome; AT: Anterior transposition; MT: submuscular Transposition; MABC nerve: Medial Antebrachial Cutaneous nerve

## Meta-Analysis

- Two studies comparing ECTuR to OCTuR were included in the meta-analysis with a total of 74 patients.
- The analysis was done for two outcomes: (1) clinical improvement and (2) complications; (i) scar tenderness / elbow pain; (ii) hematoma; (iii) ulnar nerve subluxation; and (iv) re-operation.
- Analysis revealed a marginally significant difference in favor of ECTuR with regards to the clinical improvement (p=0.06).
- Overall complication rate was significantly lower with ECTuR (p=0.01).
- Subgroup analysis of complications revealed significantly higher incidence of scar tenderness & elbow pain with OCTuR (p=0.002).
- No significant differences in the other complications; hematoma (RR 3.64; p=0.24), ulnar nerve subluxation (RR 9.64; p=0.13), re-operation (RR 5.36; p=0.28).

Table 2. Forest Plot of Complications: Scar tenderness / Elbow pain



## Conclusion

- The current study demonstrates promising benefits of ECTuR over OCTuR in terms of comparable safety & outcomes and reduced complication profile.
- Despite higher incidence of hematoma in endoscopic group that was mostly managed conservatively, endoscopic is shown to have less scar sensitivity and medial antebrachial nerve injury.