

Comparative efficacy and safety of different modalities of surgical management of Carpal Tunnel Syndrome

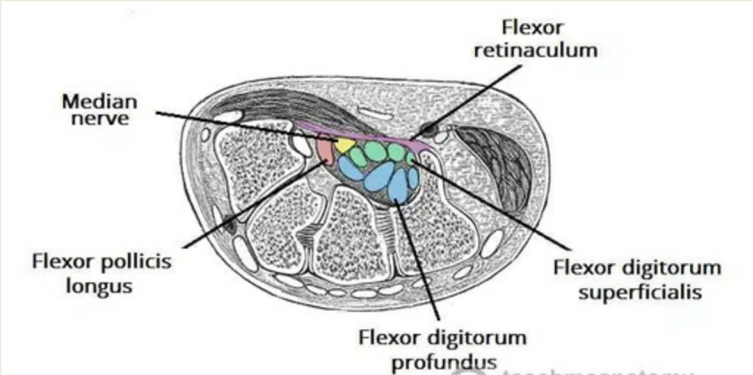
A Systematic Review and Meta-Analysis

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01. Introduction

Carpal tunnel syndrome (CTS) is a common condition characterized by **median nerve compression**, leading to symptoms such as pain, numbness, and functional impairment. Surgical interventions, including open carpal tunnel release (OCTR), endoscopic carpal tunnel release (ECTR), and minimal invasive techniques, are widely used to relieve these symptoms.



02. Challenges

- The **effectiveness and safety** of different surgical options for carpal tunnel syndrome (CTS), such as endoscopic and open release, **remain unclear** due to conflicting outcomes in the literature, emphasizing the need for further research.



03. Objective/Aim

This systematic review and meta-analysis aimed to evaluate the efficacy and safety of these surgical modalities.

04. Study Goals

- By analyzing
- Symptom relief,
 - Functional outcomes, and
 - Complication rates,



the findings will assist in refining clinical decision-making and enhancing patient care in CTS management..

04. Methodology

A systematic literature search was conducted using databases such as **PubMed, Embase, and the Cochrane Central Register** of Controlled Trials, yielding studies that compared different surgical interventions for CTS.

Inclusion criteria	Exclusion criteria
Studies comparing surgical methods for CTS with reported clinical outcomes.	Non-comparative studies, reviews, and case reports excluded from analysis.

Included studies- **11 studies with 834 Participants met the inclusion criteria**

- Data extraction was performed by two independent reviewers, and the methodological quality of included studies was assessed using **ROB 2** and **MINORS** checklist.

05. Analysis

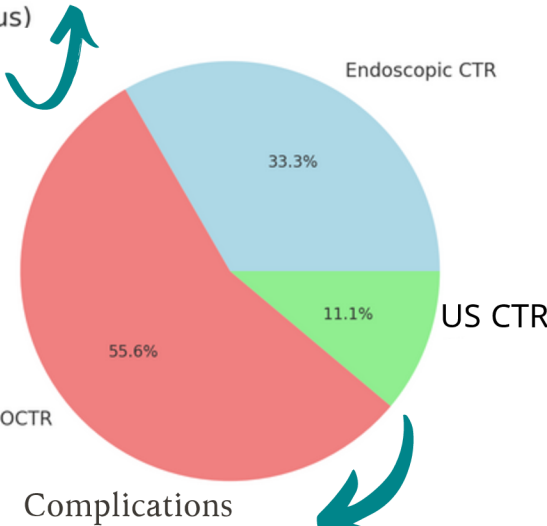
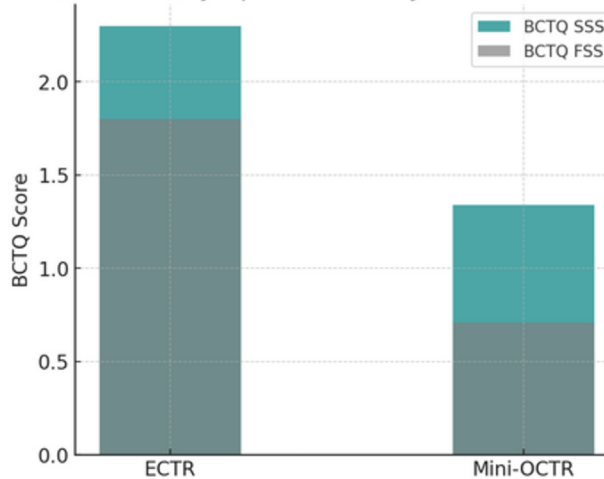
Efficacy :Evaluated using Boston Carpal Tunnel Questionnaire (**BCTQ**), Symptom Severity Scale (**SSS**), Functional Status Scale (**FSS**), Disabilities of the Arm, Shoulder, and Hand (**DASH**) scores, and Visual Analog Scale (**VAS**)

Safety Evaluation: Focuses on **complication rates**

06. Results

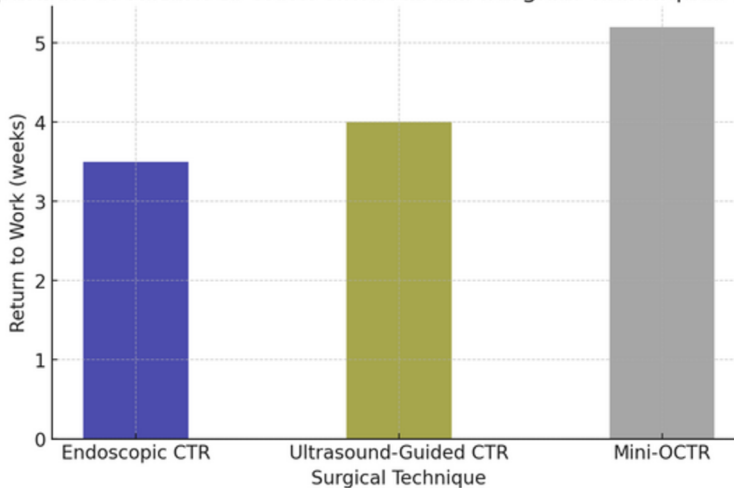
ECTR showed the greatest improvements in **BCTQ SSS and FSS**

BCTQ Scores (Symptom Severity & Functional Status)



US CTR has **lowest** complications compared to ECTR

Comparison of Return to Work Time Across Surgical Techniques



ECTR allows for a **faster return to work** (~3.5 weeks) compared to ultrasound-guided CTR (4 weeks)

07. Conclusions



Endoscopic CTR offers superior symptom relief, lower complication rates, and a faster return to work.



08. Recommendation

- Advocating for **broader access to ECTR** improve patient outcomes.

- Patient-Centered Approach** - Treatment decisions should be tailored to individual patient presentations.

09. Limitations

This study acknowledges limitations, including small sample sizes, heterogeneity among the included studies and lack of long term complication datas.

10.References

