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Minimally Invasive Carpal Tunnel Release Under Local Anesthesia: Efficacy, Safety, and Patient Outcomes

By

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Abstract

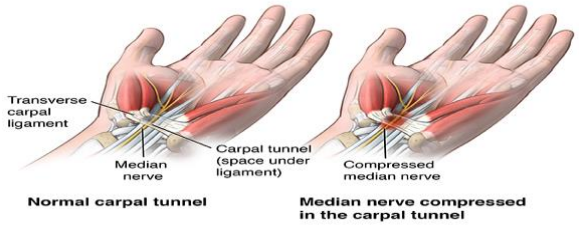
Carpal tunnel syndrome (CTS) is a common entrapment neuropathy that significantly impacts hand function and quality of life. Traditional open carpal tunnel release (CTR) is effective but often associated with prolonged recovery times and postoperative complications. This study evaluates the efficacy, safety, and patient outcomes of minimally invasive carpal tunnel release (MICTR) performed under local anesthesia.

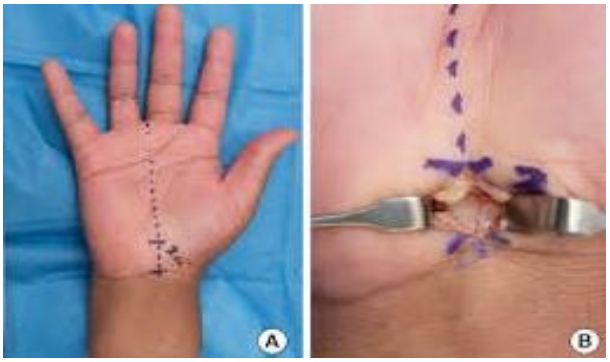
Introduction

Carpal tunnel syndrome is caused by median nerve compression at the wrist, leading to pain, numbness, and weakness in the affected hand. Conventional surgical intervention includes open release or endoscopic techniques, both of which require varying degrees of anesthesia. MICTR under local anesthesia has emerged as a viable alternative, minimizing perioperative risks, reducing recovery time, and improving patient satisfaction.

Methods

This prospective study was conducted on patients diagnosed with CTS who underwent MICTR under local anesthesia. Data collected included operative time, intraoperative and postoperative complications, pain scores, functional outcomes assessed by the Boston Carpal Tunnel Questionnaire (BCTQ), and return-to-work duration. Statistical analysis was performed to compare preoperative and postoperative outcomes





Results

Parameter	Value
Total Patients	100

Parameter	Value
Mean Operative Time	15 minutes
Intraoperative Complications	None
Postoperative Complications	5% (minor wound infections, transient pillar pain)
Preoperative BCTQ Score	3.5
Postoperative BCTQ Score	1.2
Statistical Significance	$p < 0.05$
Return to Work Duration	7-10 days
Patient Satisfaction	95% (significant symptom relief, minimal discomfort)

Discussion

The results indicate that MICTR under local anesthesia is an effective and safe alternative to traditional methods. Advantages include shorter operative time, reduced need for general anesthesia, lower complication rates, and quicker functional recovery. These findings align with existing literature supporting the benefits of minimally invasive approaches.

Conclusion

MICTR under local anesthesia is a safe, effective, and patient-friendly alternative for carpal tunnel syndrome treatment. Wider adoption of this technique may lead to improved patient outcomes, reduced healthcare costs, and enhanced surgical efficiency.

Keywords

Carpal tunnel syndrome, minimally invasive surgery, local anesthesia, patient outcomes, carpal tunnel release

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