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Research paper

# Our experience in first 100 cases of endoscopic carpal tunnel release: An Indian perspective

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ABSTRACT

*Purpose:* This study was done to determine the role of endoscopic carpal tunnel release in the treatment of carpal tunnel syndrome and also to note the conversion rates of endoscopic to open release, causes for conversion and to analyse the learning curve of the operating surgeon for endoscopic procedure.
*Methods:* A total of 100 consecutive idiopathic carpal tunnel cases were included who had undergone preoperative ultrasonography (USG) for assessment of carpal tunnel morphology. All patients were primarily scheduled for a standard single portal endoscopic release after excluding the contraindications for endoscopic carpal tunnel release (ECTR). The conversion rate of endoscopic to open carpal tunnel release (OCTR) was analysed and reasons for conversion were established by an independent observer.
*Results:* Out of 100 patients, 74 (74%) underwent endoscopic release and 26(26%) underwent mini-open release. The conversion rates from endoscopy to open was noted to be 26%. Distal edge not being visualized in 14 cases (53%) was the most common cause for conversion followed by tight canal hindering the insertion of the scope in four cases (15.3%). In the first fifty cases in our study, 20 cases were converted to open release which amounted to 40% conversion rate, but in the next 50 subset of patients the conversion rates had dropped to 13.3%.
*Conclusion:* Endoscopic carpal tunnel release can be accepted as the treatment of choice for the surgical decompression of carpal tunnel owing to decreased postoperative complications. One of the major limitations of the ECTR is the slow learning curve of a surgeon. Difficulty to visualise the distal edge of TCL was most common cause for conversion. With increasing experience of a surgeon in endoscopic release, the conversion rates would decrease.
Level of study: level 4, decision analysis


## 1. Introduction

Carpal tunnel syndrome (CTS) is the most common entrapment neuropathy of the upper limb with a reported prevalence of 6% in the general population.[1]

The treatment of carpal tunnel syndrome is either conservative or surgical. Conservative treatment is generally offered to patients suffering from mild to moderate symptoms and ranges from oral medication, splinting and steroid injection.[2] surgical treatment includes open or endoscopic release of transverse carpal ligament. Open carpal tunnel release has been considered the operative procedure of choice for decompression of the median nerve in CTS. There has been an increasing trend in treating CTS patients with endoscopic carpal tunnel release (ECTR) as it is claimed to be associated with minimal pain and scarring due to small incision with rapid recovery and early return to work .[3] Steep learning curve and possibility of damaging the surrounding neurovascular structure are few complications of ECTR.[4]

This study was done with an aim to determine the role of endoscopic carpal tunnel release in the treatment of carpal tunnel syndrome. The objective of the study was to note the conversion rates of endoscopic to open release, causes for conversion and to analyse the learning curve of the operating surgeon for endoscopic procedure. We hypothesised that the learning curve of the surgeon would improve as more cases were performed and subsequently, the conversion rates would reduce.

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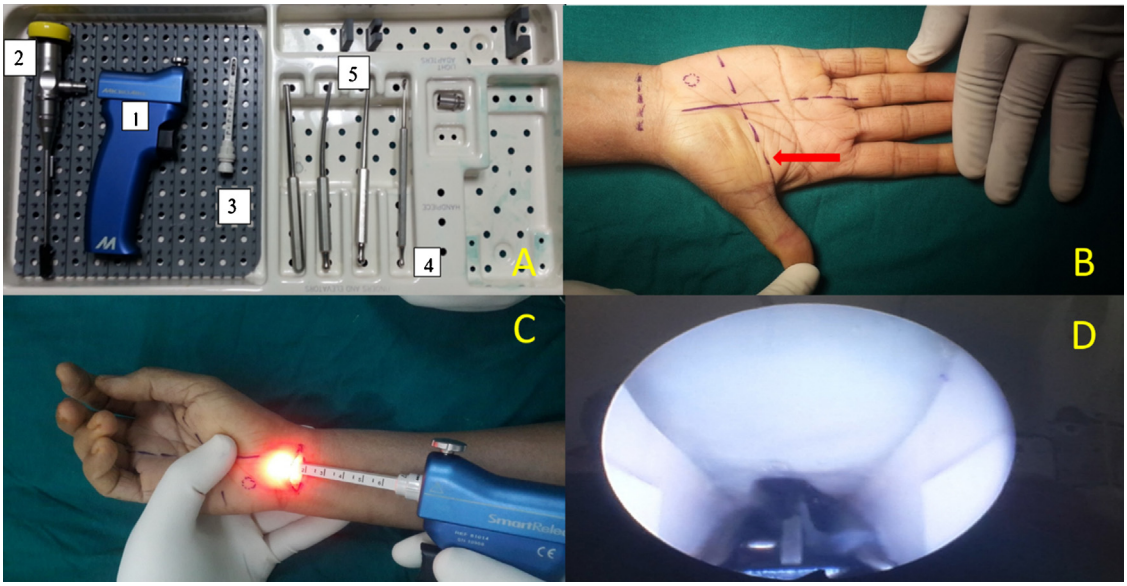


**Fig. 1.** Standard single portal endoscopic release. A- endoscopic carpal tunnel set {1: hand piece with trigger, 2: 3 mm eye piece endoscope, 3: disposable endoscopic knife, 4: synovial elevator, 5: hamate finder and serial canal dilators}. B- Kaplan's line {red arrow}. C- insertion of scope into the carpal tunnel. D- endoscopic view of distal edge of transverse carpal ligament being divided].

## 2. Materials and methods

This was a prospective study done in which we analysed 100 consecutive patients with idiopathic carpal tunnel syndrome. Patients who did not improve after a trial of conservative management with splinting and analgesia for a minimum period of six weeks and those patients who consented for undergoing either open or endoscopic release surgery were included. The study was conducted after obtaining approval from the institutional ethics committee.

Previously operated case of carpal tunnel syndrome, patients who required tenosynovectomy and those with space-occupying lesions, patients with localized infection and inflammatory joint disease, trauma to the affected hand and those with anatomical variations identified by preoperative ultrasound imaging were all excluded from the study.

All patients were assessed for clinical findings like thenar atrophy, tinel's sign, altered sensations and provocative tests like Phalen's test, reverse Phalen's test, Durkan's test and Gilliat's test for diagnosis of carpal tunnel syndrome followed by nerve conduction velocity studies.

Patients then underwent preoperative ultrasonography for the assessment of carpal tunnel anatomy and morphology. Ultrasonography (USG) was done by a single senior radiologist specialised in musculoskeletal radiology. The purpose of performing an USG was to assess the carpal tunnel anatomy prior to performing endoscopy. The operating surgeon trained in hand surgery remained blinded for the results of ultrasound of the carpal tunnel. All patients were taken up primarily for standard single portal endoscopic carpal tunnel release (Fig. 1). The conversion rate of the endoscopic to open carpal tunnel release (OCTR) was analysed and the reasons for the conversion were established by an independent observer.

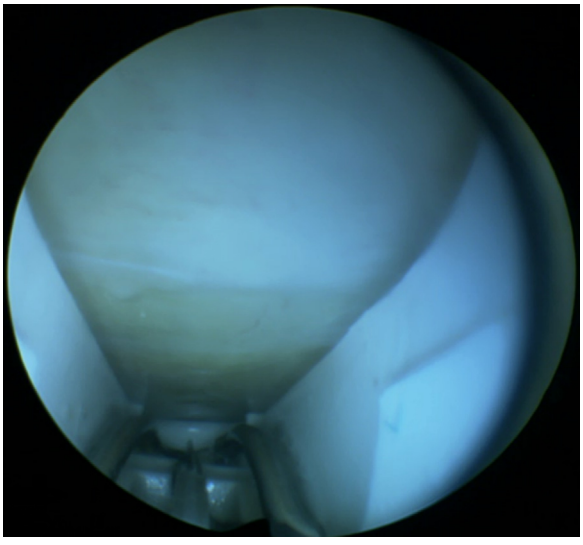

**Fig. 2.** Distal edge of TCL not visualized.

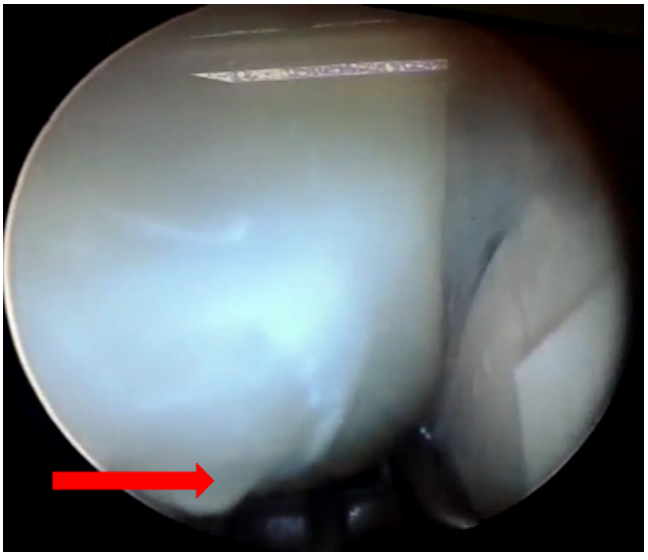

**Fig. 3.** Fat pad prolapse [red arrow].

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