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## A novel arthroscopic technique for carpal tunnel release

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### Abstract

**Aim and Objective:** To introduce a simple and aesthetically superior arthroscopic technique for carpal tunnel release.

**Background:** Both open carpal tunnel release and endoscopic carpal tunnel release are highly effective treatments for carpal tunnel syndrome. Arthroscopic method for carpal tunnel release is gaining more interest due to the rising post-operative complications of conventional surgery.

**Technique:** Arthroscopic carpal tunnel release.

**Conclusion:** The arthroscopic intervention for carpal tunnel syndrome is a simple and cosmetically superior technique with fewer complications in carpal tunnel release.

**Clinical Significance:** Smaller incision, safe, cosmetically better, no sophisticated devices used, faster recovery.

**Keywords:** Carpal tunnel syndrome, arthroscopy, flexor retinaculum, endoscopy, technique

### Introduction

Carpal tunnel syndrome (CTS) is among the most typical hand-related pathologies requiring surgery. As the nonsurgical treatments are only effective if it is detected early, surgical approaches would be required if symptoms were severe or did not respond to conventional therapies. Arthroscopic surgery is becoming more popular due to the fact that it has earlier return to normalcy than open surgery. Our method is easy, safe, and visually appealing. It also offers a shorter recovery period, allowing patients to resume their everyday activities more quickly.

### Technique

In this method, the Kaplan Cardinal line is drawn first, followed by the incision. The tourniquet and esmasch bandage are used routinely. The procedure is done under local anaesthesia using a 10cc dose of lignocaine with adrenaline and bupivacaine. To begin the procedure, a transverse incision made over the volar aspect of the wrist. Because it is a transverse incision, it is more cosmetically acceptable. It also does not include the hand, thenar, or hypothenar eminences. Dissection is done subcutaneously. The palmaris longus tendon is retracted, flexor retinaculum is visualised and a nick is made in it carefully with a number 15 knife. Care taken not to damage the underlying median nerve. The arthroscope used in this technique is standard 4mm knee arthroscope and only the scope is used neither the canula nor the sleeve is used to prevent crowding in the small available space. Then the scope is introduced in to the carpal tunnel, the flexor retinaculum, is visualized, we have to proceed with scope in one hand and cutting scissors in other hand. The flexor retinaculum is cut from proximal to distal. Starting from the small incision which we had already made with the number 15 knife in the flexor retinaculum the median nerve can be visualized underneath the retinaculum. There would be a need for a learning curve for the method. The flexor retinaculum is gradually cut through, and the area is expanded. Bleeding may occur; pause and resume the procedure. The scope might become obscured multiple times which might require repeated cleaning with a gauze piece. The curved scissors with terminal blunt end is directed towards the ulnar side to avoid harming the recurrent branch of the median nerve. The terminal end of

the flexor retinaculum distally can be clearly identified by rotating the scope upward once releasing the ligament from the proximal to the distal side is complete, release it in the opposite direction. Wound closure with simple sutures and sterile dressings followed.

### Discussion

Carpal tunnel syndrome (CTS), a typical case of neuropathy, happens due to the median nerve compression at the wrist. This leads to a tingling sensation or feeling of numbness in the hands, reduced grip strength, wastage of muscles, and reduced functionality at work [1]. Comparatively, women have higher odds of developing CTS [2]. According to studies on why some people get CTS while others do not, differences in hand size did not make a difference; however, the use of forceful exertions and deviated wrists was connected with it [3]. Non-operative methods, as well as surgical intervention, are used in the treatment of CTS. If treated promptly, it could be completely cured [4]. There are numerous non-operative treatment options for CTS during the early stages. While some therapies, like splinting as well as corticosteroid injections, have significant evidence supporting their usage, other, less popular methods have less supporting evidence in the current studies [5]. The open surgical intervention of the transverse carpal ligament is the standard treatment choice for CTS [6]. But many patients have been managed using non-operative methods to avoid or postpone surgery due to the rising number of complications of the open method, which includes scar tenderness, adhesions of tendons, scar tissue entrapment of the median nerve, and a prolonged post-

operative recovery period, as a result of which the median nerve is still compressed, and the risk of irreversible nerve injury is enhanced [7]. Endoscopic carpal tunnel release (ETCR) has recently emerged for the treatment of CTS. ECTR has a functionally meaningful advantage in comparison with the open method in improving grip strength. And endoscopic method results in fewer complications. Resuming daily activities is quicker by eight days on average post endoscopic release [8]. Complications of the surgical interventions were neurapraxia, nerve, tendon, or artery injury, and wound infection necessitating antibiotics or further surgical care [9]. ECTR is said to be cosmetically better with reduced scar tenderness due to the small incision, a faster recovery, and better patient satisfaction [10]. Our method is a simple technique that does not necessitate the use of any complicated equipment like retrograde cutting knives, endoscopic dilator canals which makes the procedure less costlier and noncomplicated. It is also more cosmetically pleasing than open incisions, which can cause scar tenderness and delay in scar healing. In this technique we are shifting the incision from a more sensitive area in the palm to a lesser sensitive area in the wrist, that too along the crease so that it is more cosmetically appealing. The incision is barely visible, and the patient can resume their daily activities sooner. With more significant benefits and higher patient satisfaction, arthroscopic carpal tunnel release is the better treatment modality for CTS.



Fig 1: Kaplans cardinal line drawn



Fig 2: Transverse incision made



Fig 3: Flexor retinaculum cut and median nerve visualized

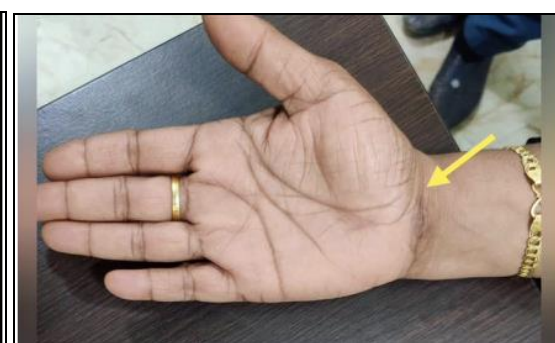


Fig 4: Healed scar.

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