Carpal Tunnel Release Experience with Minimal Wrist Incision

El bileğine Mini İnsizyon ile Karpal Tunel Serbestleştirilmesi Deneyimimiz

Aydemir Kale

Bülent Ecevit Üniversitesi Tıp Fakültesi, Beyin ve Sinir Cerrahisi Anabilim Dalı, Zonguldak, Türkiye.

ABSTRACT

Objective: Carpal tunnel syndrome (CTS) is the most common peripheral trap neuropathy resulting from compression of the median nerve in the carpal tunnel of the wrist. Open release of the transverse carpal ligament is now the most commonly used method. New techniques are being developed to avoid complications of standard long curvilinear incision.

Methods: Between March 2010 and January 2016, carpal tunnel release was performed by the same surgeon with 110 minimally invasive techniques in 96 patients due to CTS. Complaints and physical examination findings were compatible with CTS and mid- to severe-severity CTS cases supported by EMG were included in the study.

Results: Complaints and examination findings were recorded at the post-operative 1st year outpatient clinics of the patients. Of the 110 carpal tunnel release, in 50 patients (%45.5) total, in 45 patients (%40.9) significant, in 13 patients (%11.8) slight improvement were recorded, while no improvement was recorded in 2 patients (%1.8). They stated that 88% of the patients were satisfied with the operation and 12% were not satisfied. Visual Analog Scale (VAS) was used to evaluate pain complaints. The mean VAS score was 7.5 pre-operatively and 3.2 at post-operatively 1 year follow-up.

Conclusion: In patients with CTS, median nerve decompression with minimal wrist incision is an effective and reliable surgical procedure.

Key Words: Carpal tunnel syndrome, minimal incision, surgery, median nerve

Received: 07.25.2017 Accepted: 10.17.2017

ÖZET

Amaç: Karpal tünel sendromu (KTS), median sinrin el bileğindeki karpal tünelde sıkışması sonucu ortaya çıkan en sık periferik tuzak nöropatidir. Transvers karpal ligamanın açık serbestleştirilmesi günümüzde en yaygın kullanılan yöntemdir. Standart uzun kurvilinear insizyonun komplikasyonlarından sakınmak için yeni teknikler geliştirilmektedir.

Yöntem: Mart 2010- Ocak 2016 yılları arasında KTS nedeniyle 96 hastaya 110 minimal invazif tekniğ ile aynı cerrah tarafından karpal tünel serbestleştirilmesi yapıldı. Şikayet ve fizik muayene bulguları KTS ile uyumlu olup EMG ile ön tanısı desteklenmiş orta ve ağır derece KTS oğulları çalışmaya alındı.

Bulgular: Hastaların post-operatif 1. yıl poliklinik kontrol kontrollerindeki şikayet ve fizik muayene bulguları kaydedildi. 110 karpal tünel serbestleştirilmesi sonrası 1. yılda, 50’inde (%45,5) tam, 45’inde (%40,9) belirgin, 13’inde (%11,8) hafif düzeme kaydedildi. Onlar 88% hastaları ameliyatdan memnuniyet duymuş, %12’si memnuniyet duymamıştı. Hastaların %88’si ameliyatda belirttikleri ağrıları %7,5 pre-operatifte, %3,2 operasyon sonrası 1. yılta değer verdikleri görüldü.

Sonuç: KTS hastalarında, minimal el bileği insizyonu ile median sinirin dekompresyonu, etkin ve güvenilir bir cerrahi prosedürdür.

Anahtar Sözcükler: Karpal tünel sendromu, minimal insizyon, cerrahi, median sinir

INTRODUCTION

Carpal tunnel syndrome (CTS) is the most common peripheral trap neuropathy, which is the result of compression of the median nerve in the carpal tunnel of the wrist (1-3). It affects 1-5% of the population and mostly observed in middle aged women (1). Night-time coincidences, numbness and tingling in the median nerve distribution, weakness and/or atrophy in tenosynovial muscles, tinnel-phalen sign, and loss of two-point discrimination are diagnostic criterias (4). Complaints and physical examination findings are confirmed by electromyography (EMG). Conservative treatment is sufficient for cases with mild symptomatic CTS, but surgical treatment is applied in advanced cases. The open release of the transverse carpal ligament was first performed by Larrmonth in 1933 (5). Today, open carpal tunnel release with standard long curvilinear incision is the method of choice for most surgeons (1-3,6). Disadvantages of standard incision include incisional pain, scar tenderness, cosmetic problems, and reduced hand function (1,2,7,8). Alteratively, various surgical methods such as limited incision, endoscopic techniques have been described (1,2,9,10). All of these techniques have advantages and disadvantages as well as low morbidity and high success rates. The aim of this retrospective study is to evaluate the results of patients who underwent surgery for CTS with a single mini-incision in the wrist.

MATERIAL and METHODS

This study was approved by the Local Ethical Committee (2017/08-6) of our institution. Between March 2010 and January 2016, carpal tunnel release was performed by the same surgeon with 110 minimally invasive techniques in 96 patients due to CTS. All of the patients signed a detailed consent form. There were 75 (78%) female and 21 (22%) male patients.

RESULTS

In the study, 110 carpal tunnel release with minimal incision were performed in 96 patients. Major bleeding, nerve or tendon damage was not observed during surgery. None of the patients had wound infection. It was noted that scar sensitivity was in early postoperative period in 10 patients and continued in only one patient at 1 year control. Of the 110 carpal tunnel release, in 50 patients (45.5%) total, in 45 patients (40.9) significant, in 13 patients (11.8) slight improvement were recorded, while no improvement was recorded in 2 patients (1.8%). They stated that 88% of all of the patients were satisfied with the operation and 12% were not satisfied. Satisfaction rate was 94% (33 patients) in mid severity CTS cases and 85% (64 patients) in severe cases. The mean VAS score was 7.5 pre-operatively and 3.2 at post-operatively 1 year follow-up.

DISCUSSION

Open carpal tunnel release with standard long curvilinear incision is the method of choice for most surgeons (1-3,6). This safe and effective procedure’s complications especially in the late period, such as scar sensitivity, pain, hypertrophic scar formation, sympathetic dystrophy, which reduce patient comfort and quality of hand use are well known (2,3,7,11). Various incision techniques and instruments have been used in recent years to prevent these complications (1-3,6,8,10,12). Successful results are obtained with all these techniques and each has its own drawbacks and side effects. In this study, we present the results of patients who underwent carpal tunnel release by applying open surgery with minimal incision to the wrist.

Klein et al. (8) reported successful results of 1 cm mini-incision with minimal scar sensitivity. Scar sensitivity was 13.5% in the early postoperative period and 2.9% in the 6th month. In our study, the rates were 9.1% in the early period and 6.0% in the first year. They also intervened in this study at the same time in bilateral cases (8). In bilateral CTS cases of our study, the surgical procedure was applied at least 1 month after the other hand.

Another method is the endoscopic release of the carpal tunnel. Although it has advantages, introduction of a narrow tunnel with an endoscope, prolongation of the tourniquet, complications of nerve ischemia and superficial palmar arc injury are the risks of the procedure (1,2,10,13).

Three different minimally invasive carpal tunnel release procedures was presented over 88% successful rates in a study (13).

Isik et al. (2) reported that they achieved pain-numbing control and reduced scaring problems by applying microsurgical mini-incision proximal to the curvature of the distal flexion, which is thinner than the skin, as in our study. Of the patients in our study, 86.4% reported complete/significant improvement in their complaints, while 88% were satisfied with the operation.

There are a number of risks due to limited vision with minimal incision technique. The recurrent thenar branch of the median nerve is also at risk for possible anatomical variations. In addition, palmar arteries, especially the superficial palmar arc, may be injured (2,9). No damage to these structures occurred in any of the patients in our study. The frequency of such complications will be reduced by slowly and sensibly cutting the carpal tunnel and, if necessary, obtaining assistance from the microscope may be useful.

CONCLUSION

In patients with CTS, median nerve decompression with minimal wrist incision is an effective and reliable surgical procedure. Palmar tenderness, cosmetic problems and disadvantages of hand use can be reduced by this method.

Conflict of interest

No conflict of interest was declared by the authors.
REFERENCES