

Carpal Tunnel Syndrome: Complications and Legal Implications

Dionysia Vasdeki¹, MD, Charalambos Chryssanthakis², PhD, Sokratis Varitimidis¹, MD, PhD,
Zoe H Dailiana^{1,3}, MD, PhD

¹Department of Orthopaedic Surgery, Faculty of Medicine, School of Health Sciences, University of Thessaly, 3
Panepistimou St, Biopolis, Larissa, 41500, Greece

²Department of Administrative Science and Public Administration, National and Kapodistrian University of Athens, 6
Themistokleous St, Athens, 10678, Greece

³Hand, Upper Extremity and Microsurgery Department, Iaso Thessalias, Larissa, 41500, Greece

ABSTRACT

Purpose. Carpal tunnel surgery, although very frequent, may be complicated by median nerve injury, representing a significant source of litigation in hand surgery. There is no available data regarding negligence claims in carpal tunnel surgery in Greece. The aim of this study was to identify the number of claims related to carpal tunnel surgery in Greece and to estimate the corresponding financial burden to the National Health System.

Material and Methods. All legal claims of negligence for hand and upper extremity surgery that went to a trial, attributed to all surgical specialties, in Greece for a 20-year period were reviewed. Data was further analysed to identify claims related to carpal tunnel release.

Results. One successful claim related to carpal tunnel surgery was identified. The case involved a 36-year-old patient who underwent open carpal tunnel release and suffered from intraoperative injury of the median nerve. After further procedures, the patient was disclosed incapable to work. Subsequently a claim was set, which reached to a trial. An indemnity payment of €20.000 was set.

Conclusion. This is the first report of negligence claim about carpal tunnel surgery that went to trial in Greece. Carpal tunnel release is a common procedure, seldomly accompanied with devastating complications, representing a frequent cause for litigation in hand surgery. Legal claims related to carpal tunnel surgery can be a considerable financial burden for surgeons and health systems. Understanding the factors that lead to successful legal proceedings will help surgeons improve their practice to prevent injury and subsequent litigations.

KEY WORDS: Carpal tunnel syndrome; complications; negligence; iatrogenic; litigation; claim.

CORRESPONDING
AUTHOR,
GUARANTOR

Zoe H Dailiana, MD, PhD, Professor, Department of Orthopaedic Surgery,
Faculty of Medicine, University of Thessaly, 3 Panepistimou St, Biopolis, Larissa,
41500, Greece, e-mail: dailiana@med.uth.gr, Telephone: +302413502722, Fax:
+302413501011

Guarantor: Zoe H Dailiana, MD, PhD, Professor, Department of Orthopaedic
Surgery, Faculty of Medicine, University of Thessaly, Larissa, Greece

Introduction

Carpal tunnel syndrome (CTS) is a disabling condition commonly presenting to orthopaedic, plastic, neuro- and hand surgeons. It is the most frequent compressive neuropathy of the upper extremity and has been defined as a symptomatic compression neuropathy of the median nerve at the level of the wrist, by the American Academy of Orthopaedic Surgeons (AAOS). Surgical release of the carpal tunnel is the gold standard for the management of CTS. It is a commonly performed hand procedure, with more than 500.000 releases being performed in the United States each year [1-3].

Either an open or an endoscopic approach can be applied for carpal tunnel release. However, neither approach is without risk of complications. Nerve, arterial or tendon injury, incomplete transverse carpal ligament release and incomplete symptom resolution, infection, scar hypersensitivity, and complex regional pain are associated complications. Although rare, they can be devastating and life-altering for the patient. Injury of the median nerve can be sustained during carpal tunnel release with an incidence of approximately 0.1% in both endoscopic and open approach [4]. Median nerve injury has been described as the most common cause for claim in carpal tunnel surgery and has been associated with highest probability for successful litigations [1,2,5].

There have been previous studies on medical litigations related to carpal tunnel surgery, mainly in the United Kingdom and the United States [1-3,6]. However, there is no available literature on medical malpractice in carpal tunnel surgery and in hand surgery generally in Greece.

The purpose of this study is to seek the available data about medical malpractice for carpal tunnel surgery in Greece and compare them with the international malpractice data, and to evaluate the burden of successful litigations in Greece.

Material and Methods

We requested data on all legal claims of negligence for hand and upper extremity surgery

that went to a trial, attributed to all surgical specialties, from the archives of the Council of State, in Greece, within the period 2000-2019. We further analysed data to identify the number of claims related to carpal tunnel surgery that went to court, the decision and the total payment, in case of a successful claim.

Our study has been approved by our institutional research ethics board. All data was anonymised, as indicated by the General Data Protection Regulation (GDPR).

Results

Among the malpractice claims that went to a trial in the period 2000-2019, 12 were related to hand and wrist surgery and only one case was related to carpal tunnel release within this period. The claim was successful, and a compensation was set for the plaintiff.

Summary of Case

A 36-year-old female cleaner presented to the orthopaedic outpatient department of a general hospital in Greece complaining of pain and unpleasant tingling in her right hand. She was examined by an orthopaedic surgeon and diagnosed with Carpal Tunnel Syndrome (CTS). Subsequently, release of transverse carpal ligament was performed, under local anaesthesia, by the aforementioned orthopaedic surgeon. Two years postoperatively, the patient visited the same doctor, because of persisting pain and discomfort in her right hand. After clinical examination a diagnosis of De Quervain's syndrome was made and the patient had another operation, performed again by the same surgeon. According to the operative report, release of the sheath of the abductor pollicis longus (APL) and the extensor pollicis brevis (EPB) was performed intraoperatively. However, the patient had no improvement of her symptoms, even after the second operation and for this reason she visited a hand surgeon. An electromyography was performed then, revealing injury of the median nerve and of a sensory branch of the radial nerve. Therefore, she underwent two further operations, but there

was no improvement of her symptoms. The patient was registered incapable for work.

A claim was set against the orthopaedic surgeon who performed the carpal tunnel release and the first dorsal compartment (APL, EPB) release, four years after the carpal tunnel release surgery. As the patient claimed, the orthopaedic surgeon did not perform any electromyography tests preoperatively and the diagnosis was based only on clinical examination, while intraoperatively he provoked injury to the median nerve and the sensory branch of the radial nerve of her right hand, and finally, postoperatively he gave her no clear explanation about the complications she experienced, nor did he refer her to a more specialised surgeon for their management. As a result, the patient has been registered incapable to work.

The case reached to a conclusion after the testimony of an expert witness. The amount of €20.000 was set as a compensation for the patient. The case closed 12 years after the claim was set.

Discussion

Carpal tunnel syndrome is a common compressive neuropathy. Approximately 4-5% of people suffer from CTS worldwide. It is more prevalent in population aged between 40 and 60 years and most often affects females with rates up to 9.2%, while for men the respective rates are up to 6% [7-9].

A thorough clinical examination is important to be performed before setting the diagnosis of CTS. Phalen's and Tinel's provocative tests can also be used for diagnosis. Nerve Conduction Studies (NCS) have been considered the gold standard for the diagnosis of CTS, since they are objective tests that determine the conduction of the median nerve. The evidence shows that a combination of clinical and electrophysiological studies can better confirm the diagnosis and provide treatment orientation for the physician [7,8].

Carpal tunnel release remains the gold standard for the treatment of carpal tunnel syndrome. More than 500.000 carpal tunnel releases through open, mini-open or endoscopic approach are

performed in the United States each year, while the rate of the release in the United Kingdom is 43-74 per 100.000. Patients generally report high satisfaction with the results and prospective studies have shown that approximately 70-90% of patients have good to excellent long-term results following surgical management of CTS [2,8]. However, complications can arise even during operations that are often perceived as routine operations, such as carpal tunnel release. Infection, hematoma, scar hypersensitivity, injury to neighbour tendons and vessels, pillar pain, complex regional pain syndrome and damage to the median nerve have been described after carpal tunnel release [4,7,10]. While these complications are rare, they can be devastating and can affect the quality of life of the patient. Major nerve injuries, during carpal tunnel release procedures, are reported in 0.13% of endoscopic cases and in 0.10% of open cases [4].


Injury of the median nerve during carpal tunnel release has been described as the most common cause for claim in carpal tunnel surgery and additionally as the commonest reason for successful litigations [1,2]. Khan and Giddins analysed 160 claims related to negligence in hand and wrist surgery in the United Kingdom; treatment of wrist fractures and carpal tunnel syndrome were the commonest causes for a claim, 48% and 22% respectively, with median nerve laceration intraoperatively being the commonest cause for litigation (78%) [3]. Atrey et al reviewed legal claims of orthopaedic negligence in the United Kingdom from 2000 to 2006. In a total of 69 hand and wrist surgery claims, 39 claims involved laceration of the median nerve during carpal tunnel release [11]. In a study of 42 cases of carpal tunnel surgery that went to a trial, by Gill et al, the most common reason for litigations was nerve injury (39.1%), followed by persistent pain and numbness (32.6%) and regional sympathetic dystrophy (19.6%). Additionally, 33.3% of these claims ended in decision in favour of the plaintiff, while the remaining claims ended in favour of the physician. Furthermore, in the same study it was reported that there was no signifi-

cant difference between the amounts of money set as compensations after a trial and for the amounts settled in an out-of-court arrangement [6].

Successful litigations about carpal tunnel release can be a considerable financial burden for the health systems. Krauss et al determined that 33% of litigations for upper extremity nerve injury resulted in an indemnity payment, with a payment rate higher than the average rate within all medical specialties, and with the carpal tunnel release being the most common reason for litigation (41% of claims), with an average indemnity \$177.912 per case [5]. In a 2016 study of 60 successful claims about carpal tunnel surgery over a 10-year period in the United Kingdom, it was estimated that the total cost to the NHS was £3.9 million and the mean cost of settlement approximately £65.440 [1].

Iatrogenic injury of the median nerve during carpal tunnel release is a known risk of the procedure and should be always included in informed consent discussions. Additional discussion of the risks of the operation contributes to the development of a trusting relationship between the patient and the surgeon, since patient's trust is mainly based on the impression of clinical competence that emerges in discussions with physicians and surgeons [9]. Sub-standard quality of care has also been described an important factor for initiating a medical claim, as well as the lack of explanation or an apology by the treating physician, when an error had occurred [5,12]. The case presented in the current study filled a claim based on several of the aforementioned reasons: poor preoperative diagnostic approach, poor quality of care resulting to injury of the median nerve and the sensory branch of the radial nerve, absence of an explanation about the complications postoperatively, and failure of referral to a specialised surgeon.

The present civil system in Greece provides compensation for cases of medical negligence. According to the Greek Civil Code's concept of tort, whoever harms another person illegally and culpably is obliged to compensate him (article 914, Civil Code). The conditions of liability for compensation based on the tort law are: i) the unlawful act or omission, ii) the fault, iii) the damage and ix) the causal link. The indemnity payment that was decided in the present case was €20.000. It is much lower than the average payments that were described in previous studies by Awjani and Ganesh [1,2]. Since this has been the only malpractice claim for carpal tunnel surgery that has reached the court in Greece, there has been no available case law regarding compensation for similar cases and this may explain why a low compensation payment was set.

This is the first report of medical negligence claims about carpal tunnel surgery that went to a trial in Greece. There has been only one successful claim over a 19-year period. Considering that there is an increasing tendency for medical negligence litigations worldwide, including Greece, hand surgeons need to protect themselves by maintaining good standard of care, keeping their patients well informed and building good relationship with them. Carpal tunnel release is a very common procedure which may be accompanied with devastating complications for the patient, financial burden for the health trust and emotional and reputational damage for the physician. A better understanding of the factors that lead to successful legal proceedings will help surgeons to improve their practice to minimize legal implications and litigation. 

Conflict of interest

The authors declared no conflicts of interest.

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