Carpal Tunnel Syndrome

With 374 Figures in 543 Parts and 49 Tables
Dedication

We dedicate this work to our fathers, Mario Luchetti and Peter Amadio, Jr., who died as we were editing this work. Their love, support, and example have made all that we have done possible. We hope that the final product would have met with their approval.

Ciao, papà  Riccardo Luchetti

Peter C. Amadio
Although carpal tunnel syndrome has been recognized as a clinical reality for only about 50 years, it represents today a very substantial problem with high impact on life quality for a large number of patients and with important socio-economic consequences for society. The signs and symptoms are often puzzling, with pain and sensory disturbances not only in the hand but sometimes also involving the whole extremity. Although the basic etiology is a compression lesion of the median nerve at wrist level, this lesion has an impact on the whole length of the neurons – from finger tips to the dorsal root ganglia and spinal cord level.

The literature on carpal tunnel syndrome is enormously diversified and very difficult to grasp. Dr. Luchetti has undertaken a very impressive task to summarize, in one volume, current concepts regarding the pathophysiology and diagnosis of this syndrome as well as basic anatomy, treatment options, complications from surgery, and what we should do when things go wrong. He also addresses the difficulties in evaluating and assessing the results from treatment.

Editing a multiauthor volume is not an easy task and the result in the past literature has often been a recapitulation of old data and already-published illustrations. However, this volume is a striking exception. New original drawings and photographs are being mixed with some classic illustrations, which results in a very attractive book at a high educational level. It is an important contribution to the already existing literature on carpal tunnel syndrome, and it adds considerably to our understanding of this puzzling condition as well as nerve compression syndromes in general.

Göran Lundborg
Carpal tunnel syndrome is the most common hand problem, affecting as much as 5% of the adult population; yet in the large majority of cases, the condition is idiopathic. While surgical treatment often results in improvement, residual loss of function and some persistence of symptoms are common. Clinicians still disagree as to diagnostic criteria, the relation of carpal tunnel syndrome to work, the best way to evaluate the results, and the proper treatment. Yet despite the ubiquity of the condition, and the thousands of scientific papers and hundreds of lay publications discussing it, the extant medical texts which summarize all this for the clinician are few, often out of date, and tend to focus on a single perspective, whether that be etiology, evaluation, or an illustration of a particular surgical method.

It is clear that a comprehensive text, summarizing existing knowledge of carpal tunnel syndrome from a multidisciplinary perspective, is long overdue. For that reason, we are very happy to bring this volume on carpal tunnel syndrome to publication. In it, we present the assembled thoughts of more than 80 international experts on carpal tunnel syndrome and its treatment, covering medical, surgical, and rehabilitation specialties. It represents what we consider to be the best current thinking on the pathology, diagnosis, and treatment of carpal tunnel syndrome, including the latest options for primary carpal tunnel release and revision surgery. While many of these chapters appeared in an earlier, Italian language version, all have been updated, and there are new chapters on pathology, objective evaluation, and new strategies for reoperation. We believe that this text will fill an important void in the current literature, in summarizing the vast and complex literature on a common and often troublesome condition.

Of course, while we are happy to have assembled this book, and hope that its contents prove as educational for the reader as they have been for us, the work has been the cooperative effort of a large international group of coworkers. We wish to thank especially our many professional colleagues, who were so willing to contribute their expertise; our families, for their understanding, in allowing us the time to edit the volume; and our editors at Springer-Verlag, Gabriele Schröder and Irmela Bohn. We hope that you agree with us that the product was worth the effort.

Peter Amadio
Riccardo Luchetti
When my friend Dr. Riccardo Luchetti asked me to write an introduction for his book I asked myself:

Once again, why write a book on carpal tunnel syndrome, especially since pages and pages have already been written concerning this subject. But, actually, it is exactly this topic about which there are still many questions that need to be answered and areas of grey which need to be made much more clear.

Carpal tunnel syndrome – should it always be operated on, in all cases? I personally have colleagues who have operated on over a thousand cases, and other colleagues, who, over the years, have operated on only a handful of cases. It is difficult to determine why! Maybe this syndrome pool varies greatly depending on the specific type of patients that visit a particular outpatient clinic or the type of industry that surrounds a certain region. It may also be due to the very variable surgical indications, which need to be scrutinized and revised.

Traditional Standard Surgery or Endoscopic?
The positive and negative factors associated with these two techniques do not go hand in hand with each other. But will they ever? Of course we must also take into consideration the learning curve, not to mention the ligament; should we leave it open or re-suture it?

What about residual symptoms and last resort surgical interventions to remedy previously unsuccessful surgery?

If for some hand surgeons these questions have absolute answers, (with some modifications depending upon individual cases) for other surgeons, the responses to these questions still hold some doubt.

Therefore, Dr. Luchetti’s initiative to write, once again, a book regarding carpal tunnel syndrome has been courageous, since not everyone will be convinced of its necessity.

“De captu lectoris habent sua fata libelli.” I can only hope this publication will capture the interest of many a reader.

G. Brunelli
Carpal tunnel syndrome (CTS) surgery is currently the most commonly performed hand surgery. One can easily find a significant amount of scientific literature specifically on this topic. Being that it is a very well-known pathology, there has been a constant evolution concerning its treatment and associated surgical techniques. In the last 10 years the introduction of surgical endoscopy has revolutionized the method of CTS treatment by demonstrating its effective or even superior clinical results than those rendered by a classical surgical technique. This surgical approach has also led us to research and publish the associated complications that can arise from using these new surgical techniques, as well as to scrutinize the various methods that can be used with these newly proposed instruments. Nevertheless, the advent of this technique has left hand surgeons perplexed as to technique/outcome results and urged the experts of this pathology to re-evaluate and statistically analyze surgical outcome results of each surgeon's CTS technique, for both its advantages and disadvantages. Competitive research, at an international level, has been initiated in order to improve each surgical treatment technique and to accurately publish scientific information concerning each technique's surgical outcome. The idea of dedicating, not just a chapter but an entire book to CTS surgery and its treatment, comes from the necessity to excel in a specific surgical field. This book is a scientific contribution, providing the reader accurate CTS pathology data research. The goal of this book is to specify the existence of various surgical techniques and to determine their validity in the accurate treatment of CTS. Each author has carefully described the surgical technique that they use, along with its particularities. A CD accompanies the book so that the reader can visually observe these particularities that are associated with each chapter's technique, allowing for a clearer and more explicit description.

In addition, both conservative preoperative CTS treatments have been included in the book, as well as postoperative rehabilitation protocols.

Since CTS postoperative complications tend to be on the rise, a precise recognition of why these complications are occurring needs to be documented. The majority of this book is dedicated to each surgical technique proposed and its possible complications.

At the end of the book there is a chapter dedicated to a study on the evaluation of surgical data results. This topic has been included since it is no longer sufficient to evaluate one's treatment results only from a clinical point of view; it is also necessary to evaluate patient satisfaction and determine if their expectations have been satisfied. Recently, this evaluation method has been greatly enhanced by the use of generic, specific, and pathology-based questionnaires.

This book is indicated:

For those surgeons who are interested in specializing in this sector (hand surgeons, orthopedic surgeons, plastic surgeons, physiatrists, and physical and occupational therapists) young and old.

For the younger surgeons, the book has been set up in such a way that one can easily refer to a specific surgical technique regarding this pathology and at the same time be informed of alternative treatment methods, even those that are noninvasive. The reader is well informed of each technique's complications and their respective treatments.
For those surgeons who already have CTS surgical treatment experience, the book is an opportunity to deepen one’s knowledge in this pathology and its accompanying surgical technique. Once read completely, it becomes quite clear that CTS and its surgical treatment has been quite underestimated. An incorrect surgical treatment of CTS can render the patient not only dissatisfied, but also unable to correctly use their hand in activities of daily living, not to mention manual labor activities.

This specific book is geared towards addressing the questions that all physicians and medical students may have concerning this pathology and its associated complications.

Riccardo Luchetti
Contents

Part I – General
1. History of Carpal Tunnel Syndrome
   P.C. Amadio ................................................................. 3
   References 8

2. Anatomy of the Carpal Tunnel
   P. Yugueros, R.A. Berger ........................................... 10
   References 12

3. Normal Anatomy and Variations of the Median Nerve in the Carpal Tunnel
   H.-M. Schmidt ............................................................ 13
   Carpal Tunnel 13 / Flexor Retinaculum 13 / Median Nerve 15 / Median Nerve Branches 17 / References 19

4. Etiopathogenesis
   R. Luchetti ................................................................. 21
   Introduction 21 / Idiopathic Forms 21 / Secondary Form 22 / Summary of CTS Causes 25 / References 25

5. The Pathophysiology of Median Nerve Compression
   R. Luchetti ................................................................. 28
   Introduction 28 / Anatomy Notes 28 / Pathophysiology 32 / Stages of Compressive Nerve Injuries 38 / Conclusion 39 / References 40

6. Ischemia-Reperfusion Injury as a Common Etiology of “Idiopathic” Carpal Tunnel Syndrome: Biochemical and Immunohistochemical Evidence
   A.E. Freeland, M.A. Tucci, V. Sud .................................. 42
   Introduction 42 / Anatomic Factors 42 / Pathophysiologic Factors 42 / Biochemical Factors 43 / Histologic Factors 45 / Discussion 46 / References 46

7. Carpal Canal Pressure Measurements: Literature Review and Clinical Implications
   R. Luchetti, R. Schoenhuber ......................................... 49
   Initial Studies 49 / Clinical Studies 49 / Dynamic Evaluation 52 / Centimetric Evaluation of Endocanal Pressure 52 / Endocanalar Pressure, Wrist Posturing Splints Used During Activities of Daily Living 55 / Conclusion 57 / Clinical Implications 58 / References 58

Part II – Diagnosis
8. Clinical Diagnosis
   M. Ceruso, R. Angeloni, G. Lauri, G. Checcucci ..................... 63
   References 67

9. Neurophysiological Assessment of Carpal Tunnel Syndrome
   R. Schoenhuber, L. Capone, R. Gentile, R. Pentore .................. 69
   Introduction 69 / The Neurophysiological Examination 70 / Median Nerve Sensory Conduction Studies 70 / Comparison Methods: Sensory Median
29. Closed Technique With Paine Retinaculotome and Modified Retinaculotome MDC
   A. Mantovani, L. De Cristofaro, A. Ciaraldi ......................... 200
   Introduction 200 / Technique 200 / Indications and Contraindications 205 / Complications and Results 206 / The Modified Retinaculotome MDC 207 / References 209

30. Closed Carpal Tunnel Release Technique with GRS
   A. Atzei, M.D. Putnam, S. Tognon, L. Cugola ...................... 211
   Introduction 211 / Surgical Anatomy and Skin Incision Landmarks 211 / Control of Correct Position of the Guide 213 / Surgical Technique 214 / Postoperative Treatment 218 / Discussion 218 / References 219

31. Carpal Tunnel Syndrome Release Using the Chiena Technique
   V.P. De Tullio ................................................... 220
   Introduction 220 / Surgical Technique 220 / Material and Method 224 / Conclusions 225 / References 225

32. Reconstruction of the Flexor Retinaculum
   A. Lluch ....................................................... 226
   Morphological Changes of the Carpal Tunnel After Division of the Flexor Retinaculum 226 / Function of the Flexor Retinaculum as a Flexor Tendon Pulley 227 / Loss of Grip Strength After Carpal Tunnel Release 228 / Palmar Scar Pain 228 / Methods of Reconstructing the Flexor Retinaculum 229 / Personal Technique for Reconstruction of the Flexor Retinaculum 231 / Results After the Reconstruction of the Flexor Retinaculum 235 / Secondary Reconstruction of the Flexor Retinaculum 235 / Conclusions 236 / References 237

33. Critical Appraisal of Transverse Carpal Ligament Reconstruction. Theoretical, Experimental, and Clinical Considerations
   M. Altissimi .................................................... 239
   Introduction 239 / Evaluation of Results of Ligament Reconstruction 240 / References 240

34. Comparison of Grip Strength Evolution After Carpal Tunnel Release by Three Different Techniques
   G. Foucher, G. Pajardi, L. Van Overstraeten, J. Braga Da Silva .... 241
   Introduction 241 / Material and Methods 241 / Results 242 / Discussion 244 / Conclusion 245 / References 245

35. Median Nerve Compression Secondary to Fractures of the Distal Radius
   A. Badia ......................................................... 247
   References 251

Part IV – Rehabilitation

36. Postoperative Treatment of Carpal Tunnel Syndrome After Median Nerve Decompression (Open Field or Endoscopic Technique)
   T. Fairplay, G. Urso ......................................... 255
Part V – Complications

37. Carpal Tunnel Syndrome Surgical Complications
   P. BEDESCHI ..................................................... 269
   Introduction 269 / Classification of CTS Surgery Complications 269 / Analysis of the Complications 270 / Conclusions 285 / References 287

38. Complications Following Endoscopic Treatment
   G. PAJARDI, G. PIVATO, L. PEGOLI, D. PISANI .......................... 290
   Introduction 290 / Complications of the Endoscopic Treatment 290 / Analysis of Complications Using Bedeschi’s Classification 290 / Conclusions 295 / References 297

39. Role of Neurosensory Testing in Differential Diagnosis of Failed Carpal Tunnel Syndrome
   J. H. COERT, A. L. DELLON ......................................... 299
   Introduction 299 / Patient Examples of Neurosensory Testing 299 / Discussion 299 / Summary 306 / References 306

40. Secondary Carpal Tunnel Surgery
   T.H.H. TUNG, S.E. MACKINNON ..................................... 307
   Complications Following Carpal Tunnel Surgery 308 / Clinical Evaluation of the Patient with Failed Carpal Tunnel Release 313 / Surgical Techniques in Secondary Carpal Tunnel Surgery 314 / Conclusion 317 / References 317

41. Hypothenar Fat-Pad Flap
   R. GIUNTA, U. FRANK, U. LANZ ..................................... 319
   Introduction 319 / Historical Background 319 / Technique 319 / Rehabilitation 320 / Indications/Contraindications 320 / Results 321 / Complications 322 / Tips and Tricks 322 / References 322

42. Management of Recurrence of Carpal Tunnel Syndrome by Using the Abductor Digiti Minimi Muscle Flap to Cover the Median Nerve
   J. H. COERT, A. L. DELLON ......................................... 324
   Introduction 324 / Surgical Approach and Example Cases 324 / Discussion 326 / References 326

43. Protection of the Median Nerve with the Pronator Quadratus and Palmaris Brevis Muscle Flaps
   B. BATTISTON, P. TOS, R. ADANI ......................................... 327
   Introduction 327 / Pronator Quadratus Muscle Flap 327 / Palmaris Brevis Muscular Flap 329 / Discussion 331 / References 332

44. Vein Wrapping of the Median Nerve
   D.G. SOTEREANOS, N.A. DARLIS .................................... 333
   Introduction 333 / Basic Science 333 / Preoperative Assessment 334 / Operative Technique 334 / Results 336 / References 336

45. Synovial Flap Plasty as a Treatment of Recurrent Carpal Tunnel Syndrome
   D. ESPEN ........................................................ 338
   Introduction 338 / Definition of “Recurrence” 338 / Method 338 / Surgical Technique 338 / Postoperative Management 341 / Evaluation 341 / Different Treatment Options for Recurrence 341 / Discussion 341 / References 341

46. Reverse Island Forearm Flaps for the Coverage of the Median Nerve in Recurrent Carpal Tunnel Syndrome
   M. RICCIO, A. BERTANI, W.A. MORRISON ............................. 343
47. The Ulnar Fascial-Fat Flap for the Treatment of Scarred Median Nerve in Recalcitrant Carpal Tunnel Syndrome
   A. Vigasio, I. Marcoccio ................................................................. 361
   Introduction 361 / Surgical Technique 363 / Results 365 / Conclusions 367 / References 368

48. Protective Covering of the Nerve by the “Vela Quadra” Flap
   A. Pagliei, F. Catalano, F. Fanfani ................................................. 369
   Introduction 369 / Anatomy 369 / Surgical Technique 369 / Clinical Applications 373 / Conclusions 374 / References 374

49. Free Vascularized Omental Transfer for the Treatment of Recalcitrant Carpal Tunnel Syndrome
   R. J. Goitz, J.B. Steichen ................................................................. 376
   Introduction 376 / Technique 377 / Results 377 / Discussion 378 / References 379

Part VI – Evaluation of Results

50. Outcomes Assessment Protocols
   R. Padua, E. Romanini, R. Bondi .................................................. 383
   Introduction 383 / Outcome Analysis 383 / Subjective Assessment Questionnaires (Patient-Oriented) 384 / Assessment Protocol in Carpal Tunnel Syndrome 384 / Conclusion 385 / Appendix: The SF-36 Questionnaire 386 / References 391

51. Carpal Tunnel Syndrome: Multicenter Studies with Multiperspective Assessment – Results of the Italian CTS Study Group
   L. Padua .......................................................... 392
   Introduction 392 / Study Design 392 / Definition of Cases and Data Collection 392 / Patient-Oriented Data – Boston Carpal Tunnel Questionnaire 392 / Dissociation Between Clinical-Neurophysiological Findings and Patient Symptoms 393 / Evolution of Untreated Carpal Tunnel Syndrome 395 / Symptoms and Neurophysiological Picture of Carpal Tunnel Syndrome in Pregnancy 396 / Evolution of Carpal Tunnel Syndrome in Pregnancy 396 / Diagnostic Pathway and Differences Between the Populations Enrolled in the Northern, Central, and Southern Regions of Italy 397 / Occurrence of Carpal Tunnel Syndrome in Males and Females 397 / The Usefulness of Segmental and Comparative Tests 398 / Italian CTS Study Group – Participating Members 398 / References 399

Subject Index ................................................................. 401
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