

AAOS GUIDELINE ON THE TREATMENT OF CARPAL TUNNEL SYNDROME

2011 REPORT FOR THE “RE-ISSUE” OF THE ORIGINAL GUIDELINE

“This guideline is greater than 5 years old and is reviewed every five years. New studies have been published since this guideline was developed, however the AAOS has determined that these studies are not sufficient to warrant changing the guideline at this time. The information contained in this guideline provides the user with the best evidence available at the time this guideline was published.”

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I. SUMMATION OF ORIGINAL GUIDELINE

INTRODUCTION

The original guideline on the Treatment of Carpal Tunnel Syndrome (CTS) was the second guideline developed by the AAOS in-house. It has twelve recommendations of varying strengths (See Appendix I). Based on the current procedure for updating AAOS guidelines, the Medical Librarian ran a preliminary search to identify literature that could address and possibly change the original recommendations.

SUMMATION OF ORIGINAL SUPPORTING DATA

Table 1. Summation of the original recommendations and the strength of the available evidence.

<u>Recommendation</u>	<u>Topic</u>	<u>Strength</u>
1	Initial Non-Surgical Txt	Low
2	Non-Surgical Txt (Post 2 wks)	Moderate
3	Co-Morbidities	Inconclusive
4a	Local Steroid Injections or splinting	Moderate
4b	Oral Steroids and Ultrasound	Low
4c	Carpal Tunnel Release	Strong
4d	Heat Therapy	Low
4e	Other Non-Surgical	Inconclusive
5	Surgery-complete division of the flexor retinaculum	Strong

Recommendation	Topic	Strength
6	Surgical Techniques	Moderate, Low and Inconclusive
7	Pre-Operative Antibiotics	Low
8	Post-Surgery Immobilization and Rehabilitation	Moderate and Inconclusive
9*	Evaluation Instruments	Moderate, Low and Inconclusive

^a Recommendation 9 addresses research instruments and we did not look for additional literature that would further evaluate these tools.

II. SUMMATION OF NEW/ADDITIONAL DATA FOUND

PRELIMINARY SEARCH RESULTS

The Medical Librarian identified 18 systematic reviews and 81 randomized control trials that address carpal tunnel syndrome and have been published since our original CTS Treatment guideline was approved. We reviewed these abstracts and recalled any of the studies that appeared to meet the initial inclusion criteria and could answer any of the original guideline recommendations. [Please see Appendix II for the search strategies.] We recalled three systematic reviews for bibliography review and seventeen randomized control trials for full-text review. Eleven of the randomized control trials addressed a recommendation and were evaluated for quality. Only higher level evidence would initiate a change in the recommendations, hence we did not consider lower quality evidence that might only supplement the conclusions of the original recommendations.

One study reported the minimally clinically important difference for the symptom severity score of the Boston Carpal Tunnel Syndrome instrument. For other outcomes measured for CTS, no MCID has been reported; therefore, simple reporting of a significant difference does not mean that the difference is clinically important.

Table 2. Summation of additional evidence found.

Comparison Made	Evidence	Applicable Recommendations	# Studies	Result (s)	Will the new evidence change current AAOS Recommendation (s)?
Std Conservative TXT (SCT) vs. SCT plus Tendon nerve gliding exercises ¹	I	1, 2	1	Non-significant for three outcomes	No; std conservative treatment is an option in the guideline.
SCT vs. Tendon nerve gliding exercises ¹	I	1, 2	1	Non-significant for one of three outcomes; favors SCT in 2 outcomes	No: SCT is an option in the guideline.

Comparison Made	Evidence	Applicable Recommendations	# Studies	Result (s)	Will the new evidence change current AAOS Recommendation (s)?
SCT plus Tendon and nerve gliding exercises vs. tendon and nerve gliding exercises ¹	I	1, 2	1	Non-significant for 1 of 3 outcomes / favors SCT plus tendon and nerve gliding exercises in 2 of 3 outcomes at 11 months	No: change in non-surgical txt is suggested if symptoms do not resolve within 2-7 weeks.
Ultrasound (US) vs. Corticosteroid Injection and Splinting ²	I	4a, 4b	1	Non-significant difference for six of seven outcomes; favors US for one outcome	No; steroid injections or splinting are suggested and US is an option in the GL.
Acupuncture vs. Steroid ³	I	4e	1	Non-significant difference for one outcome	No; this is insufficient evidence to make a recommendation for acupuncture. Duration of the study is one month.
Betamethasone Injection vs. NSAIDS ⁴	I	4e	1	Non-significant difference in results for four of five outcomes at 3 months.	No; this is insufficient evidence to make a recommendation.

Comparison Made	Evidence	Applicable Recommendations	# Studies	Result (s)	Will the new evidence change current AAOS Recommendation (s)?
Sodium Chloride vs. Steroid ⁵	I	4a	1	Results favor local steroid injection for short-term relief.	No; supports conclusions of Rec 4a. Study duration is one week.
Steroid vs. Procaine HCL ⁶	II	4a, 4e	1	Of eight outcomes majority of differences were non-significant.	No; supports conclusions of Rec 4a and does not provide sufficient evidence to make a recommendation for local procaine HCL.
Surgical vs. Non-Surgical ⁷	I	5	1	Of eight outcomes at three durations, two favor surgical.	No; this evidence will not Rec 5.
Laser vs. sham laser ⁸	II	4e	1	One of two outcomes favored laser for short term relief of pain. Five	No, insufficient evidence to make a recommendation for laser txt.
Open release vs. Endoscopic ⁹	II	5	1	outcomes: four favor endoscopic release in the short term.	No: the evidence supports Recommendation 5

Comparison Made	Evidence	Applicable Recommendations	# Studies	Result (s)	Will the new evidence change current AAOS Recommendation (s)?
Laser vs. placebo ¹⁰	II	4e	1	Five outcomes at two durations; favor laser at 4 weeks compared to placebo	This evidence indicates it may be possible to make a moderate to weak recommendation for laser txt if combined with previous study results. The lack of an MCID for any CTS parameters is problematic.
Gabapentin vs. placebo ¹¹	II	4e	1	Non-significant for one outcome at two durations	No; the evidence is insufficient to make a recommendation.

COMMENTS:

New evidence was found that could address recommendations 1, 2, 4a, 4b, 4e, and 5. The evidence will not change the conclusions for recommendations 1,2, 4a or 5 and might allow for one additional recommendation to be made for laser treatment from the list of treatments that carry no recommendation in 4e.

We do not recommend that the guideline be updated because few MCIDs have been identified for the outcomes in CTS and we do not know if the significant differences found for the comparisons within the majority of these new studies are clinically important. Since the majority of new evidence would not initiate changes in the guideline recommendations, we recommend re-issuing the original guideline accompanied with this report.

III. APPENDICES

APPENDIX I

Recommendation 1

A course of non-operative treatment is an option in patients diagnosed with carpal tunnel syndrome. Early surgery is an option when there is clinical evidence of median nerve denervation or the patient elects to proceed directly to surgical treatment.

(Grade C, Level V)

Recommendation 2

We suggest another non-operative treatment or surgery when the current treatment fails to resolve the symptoms within 2 weeks to 7 weeks.

(Grade B, Level I and II)

Recommendation 3

We do not have sufficient evidence to provide specific treatment recommendations for carpal tunnel syndrome when found in association with the following conditions: diabetes mellitus, coexistent cervical radiculopathy, hypothyroidism, polyneuropathy, pregnancy, rheumatoid arthritis, and carpal tunnel syndrome in the workplace.

(Inconclusive, No evidence found)

Recommendation 4a

Local steroid injection or splinting is suggested when treating patients with carpal tunnel syndrome, before considering surgery.

(Grade B, Level I and II)

Recommendation 4b

Oral steroids or ultrasound are options when treating patients with carpal tunnel syndrome.

(Grade C, Level II)

Recommendation 4c

We recommend carpal tunnel release as treatment for carpal tunnel syndrome.

(Grade A, Level I)

Recommendation 4d

Heat therapy is not among the options that should be used to treat patients with carpal tunnel syndrome.

(Grade C, Level II)

Recommendation 4e

The following treatments carry no recommendation for or against their use: activity modifications, acupuncture, cognitive behavioral therapy, cold laser, diuretics, exercise,

electric stimulation, fitness, graston instrument, iontophoresis, laser, stretching, massage therapy, magnet therapy, manipulation, medications (including anticonvulsants, antidepressants and NSAIDs), nutritional supplements, phonophoresis, smoking cessation, systemic steroid injection, therapeutic touch, vitamin B6 (pyridoxine), weight reduction, yoga.

(Inconclusive, Level II and V)

Recommendation 5

We recommend surgical treatment of carpal tunnel syndrome by complete division of the flexor retinaculum regardless of the specific surgical technique.

(Grade A, Level I and II)

Recommendation 6

We suggest that surgeons do not routinely use the following procedures when performing carpal tunnel release:

skin nerve preservation (Grade B, Level I)
epineurotomy (Grade C, Level II)

The following procedures carry no recommendation for or against use: flexor retinaculum lengthening, internal neurolysis, tenosynovectomy, ulnar bursa preservation

(Inconclusive, Level II and V).

Recommendation 7

The physician has the option of prescribing pre-operative antibiotics for carpal tunnel surgery.

(Grade C, Level III)

Recommendation 8

We suggest that the wrist not be immobilized postoperatively after routine carpal tunnel surgery

(Grade B, Level II).

We make no recommendation for or against the use of postoperative rehabilitation.

(Inconclusive, Level II).

Recommendation 9

We suggest physicians use one or more of the following instruments when assessing patients' responses to CTS treatment for research:

- Boston Carpal Tunnel Questionnaire (disease-specific)
- DASH – Disabilities of the arm, shoulder, and hand (region-specific; upper limb)

- MHQ – Michigan Hand Outcomes Questionnaire (region-specific; hand/wrist)
- PEM (region-specific; hand)
- SF-12 or SF-36 Short Form Health Survey (generic; physical health component for global health impact)

(Grade B, Level I, II, and III)

APPENDIX II

GUIDELINE: Treatment of Carpal Tunnel Syndrome – 2011/12 Update

Scoping search for update consideration

Database: PubMed/MEDLINE Search date: 3/14/11
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SEARCH STRATEGY

#1

"Carpal Tunnel Syndrome"[mh] OR "Carpal Tunnel"[titl]

#2

"2008"[PDat]:"2011"[PDat] AND English[lang]

#3

(animal[mh] NOT human[mh]) OR cadaver[mh] OR cadaver*[titl] OR ((comment[pt] OR editorial[pt] OR letter[pt] OR "historical article"[pt]) NOT "clinical trial"[pt]) OR addresses[pt] OR news[pt] OR "newspaper article"[pt] OR pmcbook OR "in vitro"[titl] OR "in vitro"[pt]

#4

#1 AND #2 NOT #3

#5 *

Medline[tw] OR systematic review[tiab] OR Meta-analysis[pt]

#6 **

"randomized controlled trial"[pt] OR "controlled clinical trial"[pt] OR randomized[tiab] OR placebo[tiab] OR "clinical trials as topic"[mh:noexp] OR randomly[tiab] OR trial[titl]

#7

#4 AND #5

#8

#4 AND #6 NOT #5

Study type	Search line	Results
Systematic Reviews	7	18
Randomized Controlled Trials	8	81

* Montori VM, Wilczynski NL, Morgan D, Haynes RB, for the Hedges Team. [Optimal search strategies for retrieving systematic reviews from MEDLINE: analytical survey](#). BMJ 2005 Jan 8;330(7482):68-73

** **Cochrane Highly Sensitive Search Strategy for identifying randomized trials in MEDLINE: sensitivity- and precision-maximizing version** (2008 revision); PubMed format. In: Higgins JPT, Green S, eds. Cochrane Handbook for Systematic Reviews of Interventions Version 5.0.2 [updated September 2009]. The Cochrane Collaboration, 2009. Available from www.cochrane-handbook.org.

APPENDIX III

AAOS BODIES THAT APPROVED THE RE-ISSUE OF THIS CLINICAL PRACTICE GUIDELINE

Guidelines Oversight Committee

The AAOS Guidelines Oversight Committee (GOC) consists of sixteen AAOS members. The overall purpose of this Committee is to oversee the development of the clinical practice guidelines, performance measures, health technology assessments and utilization guidelines.

Evidence Based Practice Committee

The AAOS Evidence Based Practice Committee (EBPC) consists of ten AAOS members. This Committee provides review, planning and oversight for all activities related to quality improvement in orthopaedic practice, including, but not limited to evidence-based guidelines.

Council on Research, Quality Assessment, and Technology

To enhance the mission of the AAOS, the Council on Research and Quality promotes the most ethically and scientifically sound basic, clinical, and translational research possible to ensure the future care for patients with musculoskeletal disorders. The Council also serves as the primary resource to educate its members, the public, and public policy makers regarding evidenced-based medical practice, orthopaedic devices and biologics, regulatory pathways and standards development, patient safety, occupational health, technology assessment, and other related areas of importance.

The Council is comprised of the chairs of the AAOS Biological Implants, Biomedical Engineering, Evidence Based Practice, Guidelines Oversight, Occupational Health and Workers' Compensation, Patient Safety, Research Development, and US Bone and Joint Decade committees. Also on the Council are the AAOS second vice-president, representatives of the Diversity Advisory Board, the Women's Health Issues Advisory Board, the Board of Specialty Societies (BOS), the Board of Councilors (BOC), the Communications Cabinet, the Orthopaedic Research Society (ORS), the Orthopedic Research and Education Foundation (OREF), and three members at large.

Board of Directors

The 17 member AAOS Board of Directors manages the affairs of the AAOS, sets policy, and determines and continually reassesses the Strategic Plan.

DOCUMENTATION OF APPROVAL

AAOS Guidelines Oversight Committee	September 7, 2011
AAOS Evidence-Based Practice Committee	September 7, 2011
AAOS Council on Research and Quality	September 13, 2011
AAOS Board of Directors	September 23, 2011

A minimum of **49** professionals reviewed and were provided the opportunity to vote to accept the re-issue of this guideline based on the contents of this document.

IV. REFERENCES

Reference List

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- (2) Bilgici A, Ulusoy H, Kuru O, Canturk F. The comparison of ultrasound treatment and local steroid injection plus splinting in the carpal tunnel syndrome: a randomized controlled trial. *Bratisl Lek Listy* 2010;111(12):659-665.
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