



Lumbar Spinal Stenosis: Introduction to the World Federation of Neurosurgical Societies (WFNS) Spine Committee Recommendations

Francesco Costa¹, Carla D. Anania¹, Mehmet Zileli³, Franco Servadei², Maurizio Fornari¹

■ **INTRODUCTION:** Lumbar spinal stenosis (LSS) is a common degenerative disease that every spine surgeon will come across in daily practice. Despite this, the natural history and treatment have not been well established and standardized as yet, and there have been few guidelines published on this topic to date. The aim of the World Federation of Neurosurgical Society Spine Committee Consensus Conference is to define evidence-based and expert-based recommendations for the diagnosis and treatment of LSS, considering the different possibilities and facilities in countries worldwide.

■ **METHODS:** An international committee of spinal surgeons reunited to perform the Consensus Conference on the topic of LSS. The Delphi method was applied to administer a questionnaire and obtain a consensus on various topics. A multidisciplinary committee defined 6 panels: 1) natural course and diagnosis of LSS; 2) conservative treatment and follow-up; 3) percutaneous techniques; 4) decompressive surgery; 5) fusion surgery; 6) mobility preserving surgery. The statements and the literature review were presented and voted.

■ **RESULTS:** A total of 44 statements were stated and then voted by 16 experienced spine surgeons to obtain the final results. A total of 36 statements reached a consensus, of which 34 reached a positive consensus and 2 a negative consensus, whereas no consensus was reached in 8 cases.

■ **CONCLUSIONS:** In the absence of evidence-based medicine, these recommendations offer support for all practitioners, independent from economic resources and personal

experience. Obviously, further studies are needed and will be well accepted to support or modify these recommendations.

INTRODUCTION

In the recent years, the role of the evidence-based medicine has progressively grown, providing useful tools in daily practice. But it must be considered that evidence-based findings are generated almost entirely in the Western World, limiting the role of these recommendations and guidelines worldwide. In fact, it is often difficult to perform randomized clinical studies regarding the treatment of specific pathologies that can then be widely used all around the world, especially in countries with reduced resources. For this reason, in recent times, scientific societies have worked together introducing the concept of global indication.¹⁻⁴

That is why the World Federation of Neurosurgical Societies (WFNS) organizes conferences and meetings as a combination of evidence-based and expert-based suggestions trying to define recommendations to assist practitioners in their everyday practice. In particular, the WFNS Spine Committee Consensus Conferences have instigated a worldwide survey on the different topics in spine surgery. The aim is to obtain strong agreement or recommendations to address key clinical questions surrounding diagnosis and treatment to assist surgeons in all countries, affording daily spine pathologies.

One of the topics analyzed recently was lumbar spinal stenosis (LSS). Despite this being a common degenerative disease that every spinal surgeon comes across in everyday practice, the natural history and treatment are not well established or standardized. There have been few guidelines published on this topic till date.⁵⁻⁸

Key words

- Consensus conference
- Delphi method
- Guidelines
- Lumbar spinal stenosis
- Spinal surgeon

Abbreviations and Acronyms

LSS: Lumbar spinal stenosis

WFNS: World Federation of Neurosurgical Societies

From the ¹Neurosurgery Department, Humanitas Clinical and Research Hospital, Rozzano, Italy; ²Translational Sciences Departement, Humanitas University and Clinical/Research Hospital, Pieve Emanuele, Milan, Italy; and ³Ege University Faculty of Medicine, Department of Neurosurgery, Bornova, Izmir, Turkey

To whom correspondence should be addressed: Carla D. Anania, M.D.
[E-mail: carla.anania@humanitas.it]

Citation: *World Neurosurg.* X (2020) 7:100075.
<https://doi.org/10.1016/j.wnsx.2020.100075>

Journal homepage: www.journals.elsevier.com/world-neurosurgery-x

Available online: www.sciencedirect.com

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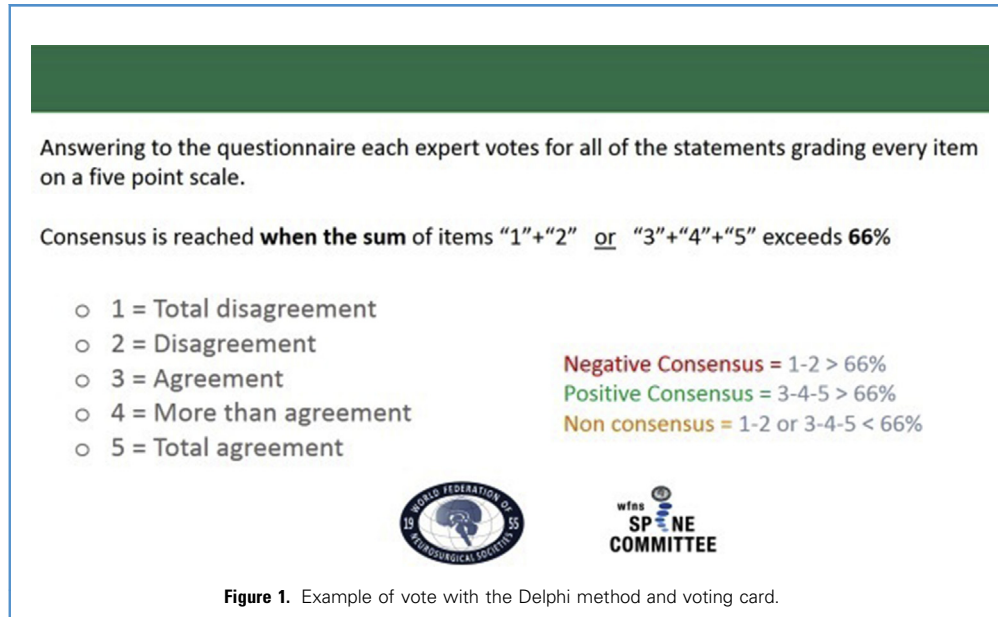


Figure 1. Example of vote with the Delphi method and voting card.

One of the most important recommendations has been the guidelines of the North American Spine Society published in 2011. However, the level of evidence for the different topics was, in many cases, insufficient or of low grade, and the literature review was based on scientific data published before July 2010.⁹

The aim of the WFNS Spine Committee Consensus Conference is to define evidence-based and expert-based recommendations for the diagnosis and treatment of degenerative lumbar spinal stenosis. These recommendations are intended to reflect contemporary treatment concepts for symptomatic degenerative LSS as presented in the highest quality clinical literature and best clinical practices available on this subject, considering the different possibilities and facilities in countries worldwide.

MATERIAL AND METHODS

An international committee of spinal surgeons (consisting of senior staff or department chiefs, both neurosurgeons and orthopedic surgeons) reunited to perform the Consensus Conference on the topic of LSS. The Delphi method was applied to administer a questionnaire and obtain a consensus on various topics. This is an approach frequently used in scientific and medical contexts with the aim of reaching a consensus among a group of experts when scientific evidence is lacking or conflicting.¹⁰⁻¹²

The Consensus Conference was structured in 2 workshops:

1. The first part was conducted in Milan in November 2018. The committee was multidisciplinary, composed of experts in spine pathology comprising the following specialists: neurosurgeons, orthopedic surgeons, neuroradiologists, neurophysiologists, and physiatrists. The aim of the meeting was to assess the statements through a preliminary review of the literature. Six panels were defined: 1) natural course and diagnosis of LSS; 2) conservative treatment and follow-up; 3) percutaneous techniques; 4) decompressive surgery; 5) fusion surgery; 6) mobility preserving surgery.

For each panel, 3 speakers presented the literature reviews and the present levels of evidence to create 1–6 statements for the voting session.

2. The second part was held in Belgrade in March 2019. The statements and the literature review were presented to a committee of 15 experienced spinal surgeons of the WFNS Spinal Committee, as stated in the Delphi method itself to have a high degree of validity.

The literature review included papers from the last 10 years (from 2008 to 2018) and was conducted using the Cochrane Database of Systematic Reviews and MEDLINE/PubMed. Among the identified articles, a secondary search of the listed citations was performed to ensure that all relevant publications were included.

To establish a consensus, the levels of agreement or disagreement on each item were voted independently in a blind way using a Likert-type scale from 1 to 5 (1 = strongly disagree, 2 = disagree, 3 = somewhat agree, 4 = agree, 5 = strongly agree). Results were expressed as a percentage of respondents who scored each item as 1 or 2 (disagreement) or as 3, 4, or 5 (agreement). Consensus was achieved when the sum for disagreement or agreement was $\geq 66\%$ (Figure 1). Each consensus point was clearly defined with evidence strength, recommendation grade, and consensus level provided.

Furthermore, we decided to include not only the final results of the reached consensus but also its strength by analyzing the distribution of respondents among the possible answers, as summarized in Table 1.⁶

After each presentation, the statements presented by 1 speaker were discussed by the panel and necessary changes were done before voting each statement.

RESULTS

During the first consensus meeting conducted in Milan, the steering committee was composed of 15 experts in spinal

Table 1. Strength of Consensus

Strength of Consensus Definition	
Strong	>80% consensus
Moderate	50%–79% consensus
Weak	<49% consensus
Quorum defined as 80% of participants available for vote.	

pathologies and they assessed 44 statements to obtain the questionnaire. In detail, the statements assessed for each panel were the following. Panel 1: 8 statements regarding natural history and diagnosis with both radiological imaging and electrophysiological tests. Panel 2: 8 statements regarding conservative and physical treatment, which kind of physical therapy is indicated and for how long. Panel 3: 6 statements regarding interventional treatment, which type of drugs to use and for how long to proceed before considering surgery. Panel 4: 11 statements regarding surgical treatment indications, which type of surgery and its complications. Panel 5: 7 statements about the presence of low back pain in adjunct to symptoms correlated to the LSS, definition of instability and indications for fusion surgery instead of only decompression surgery. Finally, panel 6: 4 statements regarding adjacent segment disease and indications for dynamic fusion surgery.

A preliminary voting session was performed by 37 spine surgeons to verify the reliability of the questionnaire.

The statements were then voted at the Belgrade Consensus Conference by 15 experienced spine surgeons to obtain the final results.

A total of 36 (81.8%) statements reached a consensus, of which 34 reached a positive consensus and 2 a negative consensus, whereas in 8 cases (18.2%), no consensus was reached.

Furthermore, 30 statements (68.2%) reached a strong consensus especially regarding natural history, diagnostic exams, physical therapy, and surgical treatment indication to decompression. A moderate consensus was reached for 6 topics (13.6%) regarding interventional treatment and surgical indication for fusion surgery, whereas a weak consensus (nonconsensus in the Delphi method) was reached for 8 topics (18.2%) regarding the utility of facet joint injections, surgical decompression techniques, and their complication rate. Moreover, the steering committee identified these as “borderline” items for which further studies are needed.

The questionnaire, together with the neurosurgeons' answers and percentage of agreement or disagreement, will be discussed in detail in the other articles of this special issue.

DISCUSSION

In an era in which knowledge is shared and available worldwide thanks to the World Wide Web, both for “insiders” and everyday people, who are increasingly getting huge information about everything, to share informations as clear as possible is

mandatory. This “evolution” requires a higher grade of accuracy and as much standardization as possible of information in a progressive larger scale so as to avoid possible confusion generated by “millions of different voices.”

The power of sharing in the medical field allows access to information for all practitioners to support their everyday practice. In this scenario, it is advisable to have a standardization of recommendations and/or guidelines regarding diagnosis, natural course, and treatment of the different pathologies.

However, producing guidelines is often burdened by many biases and may not even reach the actual standards to be considered as guidelines. In his commentary to the update of the North American Spine Society guidelines published in 2013, Deyo contested that less than half of the existing guidelines met even 50% of the standards established recently by the Institute of Medicine and often produced conflicting conclusions.^{13,14}

To overcome this problem, it has become increasingly important to make use of the Consensus Conference. With the goal of ensuring the best possible care for adult patients suffering with medical disorders, a multidisciplinary group of experts can explain the best clinical practice based on their experience and literature review while other surgeons can agree or not based on their own personal experience. The choice of a multidisciplinary committee and the involvement of different surgical societies guarantee a broad-based representation and a reduction in conflict of interest.

Moreover, the Delphi method commonly used for consensus conference has its limits and biases. The selection process can also be a limit as explained by Deyo in his commentary, “What is to be decided is often already decided with the selection of the deciders.”¹⁰ To limit the implications of this bias the Spine Committee of WFNS organized the consensus conference in a double session: in the first, a committee analyzed the topics of interest, discussed the literature, and defined the statements, whereas in the second, another committee analyzed the previous work and finally voted on the statements.

Another limit of this method is the brevity of the questionnaire as well as the production of the statements; obviously, they cannot summarize all of the considerations regarding the topic.

Despite these limitations, it is our opinion that this approach can represent an advantage compared with other surveys. To the best of our knowledge, the guidelines and best clinical practice-based approaches that have been published have received nationwide validations. The WFNS Consensus Conference on LSS involves expert spinal surgeons from all around the world involving countries with high, middle, and low incomes. It is our opinion that this adds more value to the consensus reached and is a step forward to standardization. More than 80% of the statements reached a consensus from the committee, and it was a strong consensus for almost 70% of them.

Finally, the identification of borderline items, both during the creation and voting of the statements, allowed for suggestions regarding which studies are needed the most to solve this gray zone in the management of LSS. In particular, this survey has made it possible to identify 8 topics for which further large randomized controlled trials are needed to overcome present existing disagreements and doubts.

CONCLUSIONS

The Guidelines and Consensus Conference today represents one of the best instruments to standardize clinical practice. With the cited Consensus Conference, the WFNS Spine Committee achieved important results with a worldwide validation on some important topics regarding the management of LSS. In the absence of evidence-based medicine, this “happy medium” offers support to all practitioners, independent from economic resources and personal experience. Obviously, further studies are needed and will be well accepted to support or modify these recommendations.

DECLARATION OF COMPETING INTEREST

The authors declare that the article content was composed in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

CRediT AUTHORSHIP CONTRIBUTION STATEMENT

Francesco Costa: Conceptualization, Methodology, Writing - review & editing. **Carla D. Anania:** Writing - original draft, Writing - review & editing. **Mehmet Zileli:** Conceptualization, Validation. **Franco Servadei:** Conceptualization, Methodology. **Maurizio Fornari:** Conceptualization, Methodology.

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Received 13 January 2020; accepted 25 February 2020

Citation: *World Neurosurg.* X (2020) 7:100075.

<https://doi.org/10.1016/j.wnsx.2020.100075>

Journal homepage: www.journals.elsevier.com/world-neurosurgery-x

Available online: www.sciencedirect.com

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