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Assessment of variability in Turkish spine surgeons' trauma practices

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ABSTRACT

Objectives: The aim of this study was to analyse the variability among Turkish spinal surgeons in the management of thoracolumbar fractures by carrying out a web survey.**Methods:** An invitation text and web-link of the survey were sent to the members of the Turkish Spine Society mail group. A fictitious spine trauma vignette, a 23 year-old male with a L1 burst fracture, was presented and 25 questions were asked to participants. Variability of answers in a given question was assessed with the Index of Qualitative Variation (IQV). Questions with high IQV values (>%80) were selected to evaluate the relation between participant factors (speciality, age, degree and experience level of the surgeon, type of the work centre and volume of the trauma patients).**Results:** Sixty-four (88%) among the 73 participating surgeons completed the survey. 45 (70%) of them were orthopaedic surgeons and 19 (30%) were neurosurgeons. 11 questions had very high variability (IQV ≥ 0.80), 5 had high variability (0.58–0.75) and 2 had low variability (IQV ≤ 0.20). The question with the highest variability was related to the use of brace after surgery (IQV = 0.93). Following one was about the selection of fixation levels (IQV = 0.91). Neurosurgeons were more likely to use brace postoperatively and professors were less likely to perform decompression.**Conclusion:** This survey shows that thoracolumbar spine trauma practice significantly varies among Turkish spine surgeons. Surgeons' characteristics affected some specific answers. Lack of enough knowledge about spine trauma care, fracture classifications and surgical techniques and/or ethical factors may be other reasons for this variability.© 2017 Turkish Association of Orthopaedics and Traumatology. Publishing services by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Introduction

Management of thoracolumbar fractures is one of the main issues in spine surgeons' practice. Although there are well accepted, treatment guiding classification systems, it is possible to observe quite different methods even in the treatment of similar type of fractures. Differences in experience levels, type of the work centre, volume of the trauma patients, perspective differences between disciplines (orthopaedics and neurosurgery) and/or lack of evidence based knowledge may be reasons for this variability.

Lonjon et al studied variability in spine trauma practices among French spine surgeons in 2013 and they defined the influencing factors.¹ Little published evidence is available about this topic. Aim of this study is to analyse the variability among Turkish spinal surgeons in the management of thoracolumbar fractures by carrying out a web survey based on a fictitious spine trauma vignette. Measuring the quality of clinical practice by using clinical vignettes is a comprehensive and validated method.^{2,3} We hypothesized that significant variability exists between Turkish spinal surgeons' practices in spine trauma care.

Material and methods

Study was designed as a cross sectional study. An invitation text and web-link of the survey were sent to the members of the Turkish Spine Society mail group, which has 350 members. In the first section of the survey, a fictitious spine trauma vignette was presented as, "A 23 year-old male with a L1 burst fracture was

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presented to the emergency department of your centre, following a traffic accident occurred at 30 min ago, around midnight. Patient was conscious and complaining about back pain. Physical examination revealed paraesthesia in both lower extremities with normal motor and sphincter functions. You can find the sagittal and axial computed tomography images of the patient below” (Fig. 1). Following the presentation of the vignette, 25 questions were asked to participants in 4 sections (treatment choices, infection, classification and personal information); and it was allowed to skip any question, except those in personal information section. Surveys with missing obligatory questions were accepted as incomplete. Clinical vignette and questions were selected mostly similar as in the French study with some additional questions and different images.¹ The study team reached a consensus on these questions, which are adequate to discuss about many controversial topics in spine trauma care. These questions were listed in Table 1 and the full survey in Appendix A.

The survey was prepared on SurveyMonkey Inc (San Mateo, California, USA, www.surveymonkey.com) platform. Data collection protocol was selected, as Weblink and multiple responses were not allowed from the same device.

An invitation for participation to survey was sent with a brief explanation and with survey word in the subject line of email. The invitation process was repeated 2 more times in 7 days interval. This process was conducted in accordance with published guideline to improve the response rate.⁴

Statistical analysis

All valid data for each question were used for statistical analysis, even if the questionnaire was not answered fully. Variability

of answers in a given question was assessed with the Index of Qualitative Variation (IQV). The IQV is based on the ratio of the total number of differences in the distribution to the maximum number of possible differences. The IQV can vary from 0.0 to 1.0. If all cases of the distribution fall within one category, without any diversity or variation, the IQV is 0.0. Conversely, the maximum value 1 occurs if, an identical number of cases fall within each category⁵ (Fig. 2).

Questions with high IQV values (>80) were selected to evaluate the relation between participant factors (speciality, age, degree and experience level of the surgeon, type of the work centre and volume of the trauma patients). Chi square test with Yates correction and Fisher’s exact test were used to analyse nominal variables. The statistical significance was set as $p < 0.05$. Statistical analyses were carried out using the NCSS 10 Statistical Software programme (2015. Kaysville, Utah, USA, ncss.com/software/ncss).

Results

64 (88%) among the 73 participating surgeons completed the survey. The rest answered some questions but not all of the obligatory personal information questions. All of the respondents were male ($n = 64$), with a mean age of 45 ± 7 years (range, 30–60). 45 (70%) of them were orthopaedic surgeons and 19 (30%) were neurosurgeons. Type of the work centres were distributed as, 44% university hospital, 28% training and research hospital, 28% private hospital, 9% private practice and 3% public hospital (7 respondents selected more than one centre). Respondents were 30% professor, 30% associate professor, 23% specialist, 14% assistant professor and 3% chief assistant. Experience in spinal surgery was more than 15

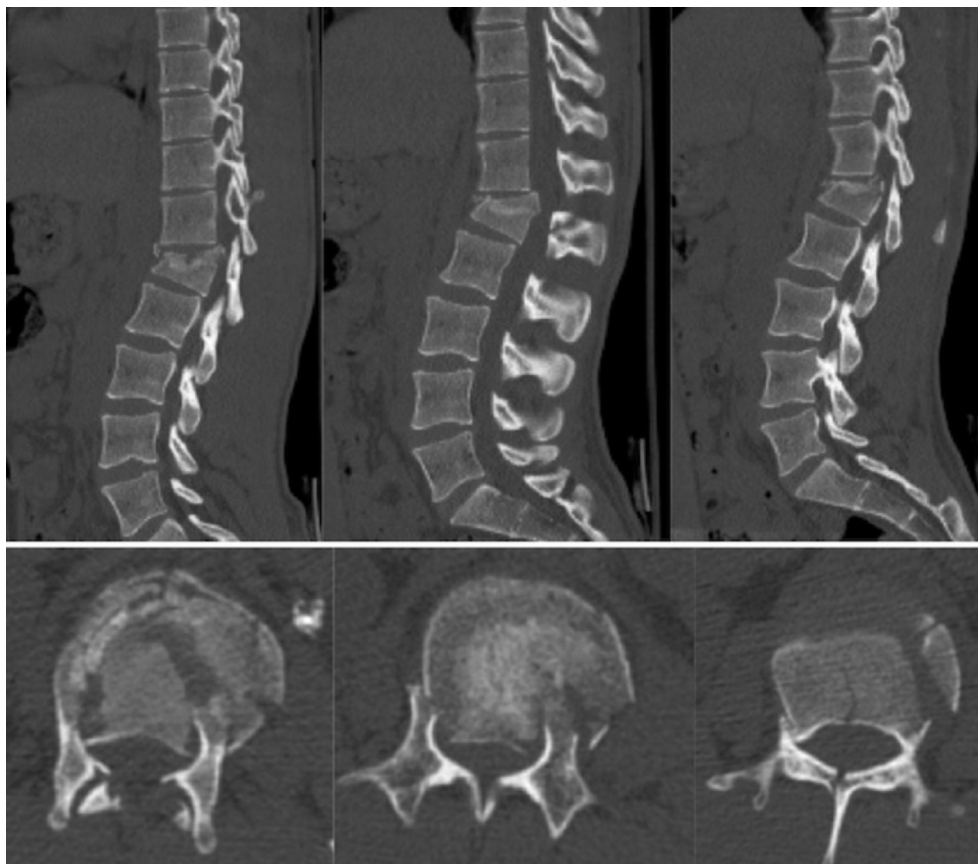


Fig. 1. Sagittal and axial CT images of the 23 year-old male with a L1 burst fracture.

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