

Journal Club: Outpatient Cervical and Lumbar Spine Surgery Is Feasible and Safe: A Consecutive Single Center Series of 1449 Patients

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 Congress of Neurological Surgeons.

Subject Article: Helseth Ø, Lied B, Halvorsen CM, Ekseth K, Helseth E. Outpatient cervical and lumbar spine surgery is feasible and safe: a consecutive single center series of 1449 patients. *Neurosurgery*. 2015;76(6):728-738.

SIGNIFICANCE/CONTEXT AND IMPORTANCE OF THE STUDY

We read and reviewed the article “Outpatient Cervical and Lumbar Spine Surgery is Feasible and Safe: A Consecutive Single Center Series of 1449 Patients” by Helseth et al,¹ published in *Neurosurgery* in June 2015. The authors of this study set out to show that, with careful patient selection and the correct circumstances, surgery for degenerative spine disease can be done safely at an outpatient facility. In the traditional PICO format (population, intervention, control, outcome), the authors studied patients undergoing anterior cervical discectomy and fusion (ACDF), posterior cervical foraminotomy, and lumbar microsurgical decompression in an outpatient setting. They compared their results with those of previously published studies and looked at multiple complications, including mortality, hematoma, hospital admission, and readmission.

Because of the increasing demand for surgical management of degenerative spine disease and the limited health resources to meet these demands, the authors felt that showing that such surgery could be done safely in an outpatient setting was an important finding. It is easy to see why the use of outpatient facilities in this situation would certainly increase the resources available significantly.

ORIGINALITY OF THE WORK

The authors were able to provide the largest single-center series of outpatient surgery for degenerative spine disease published to date.¹ However, there have been numerous other studies published with regard to this subject.

Pugely et al² reviewed over 4000 records from the National Surgical Quality Improvement Program database to prove safety and feasibility of lumbar microdiscectomy. In addition, multiple studies have shown the safety and efficacy of ACDF in the outpatient setting.^{3,4} However, other studies have not included patients undergoing both cervical and lumbar procedures.

APPROPRIATENESS OF THE STUDY DESIGN OR EXPERIMENTAL APPROACH

This study population is described as a prospective cohort. However, a big downfall of the study is its lack of a true control group for comparison purposes. The authors compare their data with the data of other studies previously published. These studies showed the complication rates of inpatient surgery. Although this comparison is certainly useful, it does not provide a true control group. Therefore, this population is more consistent with a large case series. The authors did outline strict inclusion and exclusion criteria, which is certainly helpful for understanding the patient population being studied.

With the above being said, it seems as though the ultimate goal of the authors was to perform what is essentially a phase I trial with regard to outpatient degenerative spine surgery. If that truly is the case, their study design is appropriate. By using previously published data from inpatient surgeries as comparisons, the authors are able to show that outpatient spine surgery is both feasible and safe.

ADEQUACY OF EXPERIMENTAL TECHNIQUES

The primary statistic provided by the authors was percentages for each of the complications. This is certainly an appropriate statistical measure for displaying complication rates. In

addition, the authors were able to provide complication percentages from other studies. However, there is a paucity of statistical analysis in the study. A Fisher exact test was used only once in the study to compare hematoma development in those taking aspirin vs those who were not. Although this statistical test was appropriate and showed significance, only 9 of the 1449 patients experienced a hematoma. The overall small sample size of patients who experienced a hematoma is concerning when interpreting this statistical significance. Overall, the authors provided appropriate data; however, the lack of statistical analyses available make interpretation increasingly difficult.

SOUNDNESS OF CONCLUSION AND INTERPRETATIONS

As described above, the interpretation of the data provided in this study is difficult because of the lack of statistical analysis. Although it certainly seems as though the data provided by the authors with regard to complications are similar to the data of previous studies, it is difficult to definitively state this without the availability of statistical analysis. Therefore, we find it difficult to come to the definitive conclusion that outpatient spine surgery is both safe and feasible based on the information provided. Although their complication rates appear to be similar to those previously published, statistical analysis would certainly help to strengthen their data and, thus, the conclusion that outpatient spine surgery is both safe and feasible.

In addition, the population of patients in this study had very few comorbidities. The situation surrounding the outpatient surgery (ie, located next to a university hospital, patients willing to stay in a nearby hotel if they live far away) would also be difficult to replicate. Therefore, the generalizability of the conclusions is difficult to determine.

RELEVANCE OF DISCUSSION

The authors do a nice job in their discussion of reviewing the previously available data with regard to inpatient spine surgery. Showing both the newly acquired data and the previously available data in the same portion of the article allows the reader to easily compare the 2.

Also, the authors broke down their discussion section based on the most commonly observed complications in their study population. Separating all these out makes it easier for the reader to compare complication rates.

In the end, the authors were attempting to show that certain degenerative spinal surgery could be accomplished safely at an outpatient facility. Although the authors certainly do a great job of outlining the possible complications and their rates, as well as the complication rates from previous publications, they do not show statistical analyses of these comparisons. We feel that without this analysis, it is difficult to make conclusions about the safety and

feasibility of outpatient spine surgery in comparison with inpatient spine surgery.

CLARITY OF WRITING, STRENGTH, AND ORGANIZATION OF ARTICLE

The authors' writing is both clear and interesting. They very nicely outline each of the complications they discuss with a heading in both the results and the discussion sections. Overall, we found the article to be very well organized and easy to read.

ECONOMY OF WORDS

The authors did a nice job of concisely summarizing the previously available data that they were using as comparisons. In addition, in their introduction, the authors were able to concisely describe their objective and give their rationale for the study. Overall, the authors' wording was economical throughout the article.

RELEVANCE, ACCURACY, AND COMPLETENESS OF BIBLIOGRAPHY

The discussion section very nicely describes the available literature for each of the complications outlined in the study. In addition, in the introduction, the authors discuss the literature available with regard to outpatient spine surgery. Overall, their bibliography seems to be relevant, accurate, and complete.

NUMBER AND QUALITY OF FIGURES, TABLES, AND ILLUSTRATIONS

The authors displayed the demographic information for their study in the first table. This was done in a way that was clear and easy to view. The other tables were concise and also easy to view. The publication seemed to have an appropriate number of figures that clearly displayed the necessary data.

FUTURE/NEXT STEPS

Although this study does provide data with regard to the rate of complications in outpatient spinal surgery, a randomized controlled trial comparing complication rates for inpatient and outpatient spinal surgery would provide stronger evidence with regard to the safety and feasibility of outpatient spinal surgery.

In addition, statistical analysis comparing the available inpatient data with the outpatient data acquired for this study would allow the authors to conclude with more confidence that outpatient spinal surgery is both safe and feasible.

Disclosure

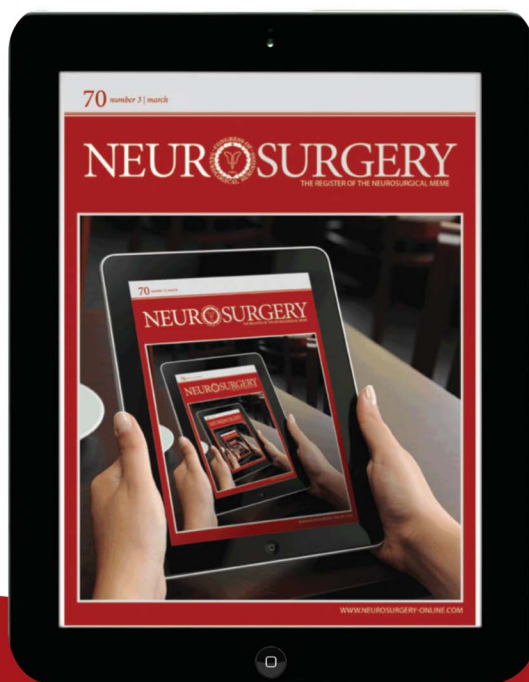
The authors have no personal, financial, or institutional interest in any of the drugs, materials, or devices described in this article.

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