



## Neurosurgical Forum LETTERS TO THE EDITOR

### Preoperative depression among patients undergoing spine surgery

TO THE EDITOR: We express our appreciation and great interest in the article by Agarwal et al.<sup>1</sup> (Agarwal N, Letchuman V, Lavadi RS, et al. What is the effect of preoperative depression on outcomes after minimally invasive surgery for adult spinal deformity? A prospective cohort analysis. *J Neurosurg Spine*. 2024;40[5]:602-610), in which the authors have provided valuable insight. However, we draw attention to some considerations that may further enhance the study's comprehensiveness.

#### Inclusion of Long-Term Follow-Up Data

Exploring the enduring impact of preoperative depression on postsurgery outcomes and overall patient satisfaction can provide important understanding for optimizing healthcare interventions. A pivotal study conducted by Park et al. underscored the significance of incorporating extended follow-up periods, specifically at 12 and 24 months postoperatively, to thoroughly evaluate patient outcomes.<sup>2</sup> This research revealed noteworthy improvements in outcomes when postoperative depression improved within the initial 3 months following the procedure.

Contrastingly, other long-term follow-up investigations have accentuated the lasting consequences of depression on patients' quality of life. Prospective studies spanning 5 and 10 years have demonstrated persistently negative outcomes in individuals who exhibited elevated depressive burden both before and after surgery.<sup>3,4</sup> These findings underscore the critical need for timely intervention, emphasizing that treatment initiation at an earlier stage is imperative. Moreover, ensuring that patients have access to long-term healthcare is essential for effectively managing their conditions and fostering sustained well-being.

#### Discussion of Intervention Strategies

Recognizing the profound implications for patient care, the paper would be enriched by a more extensive exploration of potential intervention strategies. A diversified approach to the patient's condition, delving into the root causes of their depression, is essential. In the context of chronic conditions such as lumbar spine diseases, which induce pain and substantial lifestyle compromises, there exists a robust foundation linking them to depression.

Consequently, a targeted focus on alleviating symptoms related to the primary disease, such as pain, emerges as a pivotal strategy.

A noteworthy study conducted by Lindbäck et al. introduced the efficacy of presurgical physiotherapy through a randomized controlled trial for patients with degenerative lumbar spine disorders. The results were compelling, revealing significant enhancements in quality of life, pain reduction, and improved psychological well-being.<sup>5</sup>

Cognitive behavioral therapy (CBT) as an integral modality warrants exploration within prehabilitation programs preceding surgery. A systematic review and meta-analysis underscored the significance of CBT on lumbar surgery outcomes, demonstrating positive effects on perioperative symptoms and overall physical and psychological health postsurgery.<sup>5,6</sup> In the realm of talk therapy, pharmacotherapy assumes an equally pivotal role. While limited literature exists on long-term antidepressant use for managing depression in this patient demographic, combination therapy emerges as a viable strategy to mitigate the severity of the condition. Ongoing specialist follow-up is crucial to provide a guided and nuanced approach.

Additionally, increased physical activity, exercise, and mindfulness exercises such as meditation and breathing techniques, exhibit promise in alleviating depression symptoms.<sup>7</sup> The literature supports the integration of these diverse modalities into a comprehensive prehabilitation program tailored to support patients grappling with depression, ultimately fostering an improvement in their overall well-being. Recognizing depression as a modifiable risk factor emphasizes the urgency of prompt identification and treatment initiation.

#### Consideration of Socioeconomic Factors

There is also influence of socioeconomic factors on preoperative depression and surgery outcomes. Individuals hailing from lower-middle-income countries face heightened vulnerability to these comorbidities, given the constraints of financial resources, limited access to care, and an elevated overall disease burden. This intricate interplay was elucidated in a retrospective cohort study led by Zhang and colleagues,<sup>6</sup> where patients experiencing greater social deprivation exhibited inferior preoperative physical and mental health. Remarkably, these individuals demonstrated significant improvement after surgical intervention.<sup>7</sup> Those with low activity levels, a correlate of

depression, displayed reduced engagement in health management compared with their non-depressed counterparts.

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## Disclosures

The authors report no conflict of interest.

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## INCLUDE WHEN CITING

Published online May 31, 2024; DOI: 10.3171/2024.3.SPINE24211.

## Response

We are grateful to receive the opportunity to respond to the letter addressing our original work. The authors of the letter offered three suggestions that would enhance the nature of the published study: “inclusion of long-term follow-up data,” “discussion of intervention strategies,” and “consideration of socioeconomic factors.”

We undoubtedly agree that including long-term follow-up data would enhance the quality of the presented work. The current work presented a follow-up of 12-months. Long-term follow-up is currently being collected and analyzed.

The data presented in the index work originate from a

prospectively maintained database of patients with spinal deformity. Apart from surgery itself, granular information regarding other interventions (e.g., pharmacotherapy and cognitive behavioral therapy) is not available in the database. As such, this has been highlighted in the original article as a lead point for future studies.

Socioeconomic factors influence the outcomes of spine disease.<sup>1-3</sup> Our future studies will examine social determinants of health when examining the influence of depression on postoperative outcomes among patients with spinal deformity.

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hours could be done through a Baujat plot and sensitivity analysis. Moreover, there was no explanation for studies carried out by Guest et al.<sup>5</sup> and Kepler et al.<sup>6</sup> demonstrating heterogeneous outcomes since the > 24-hour group (described as the delayed surgery group in their articles) did not specify the number of patients that were operated on at 36 hours, 48 hours, or even later. In conclusion, we can state that when exploring and treating heterogeneity, researchers should obtain information that is very relevant to clinical practice, reducing the limitations of the article.

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**INCLUDE WHEN CITING**

Published online May 31, 2024; DOI: 10.3171/2024.4.SPINE24297.

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## Acute traumatic central cord syndrome: removing the occulted confounding variables

TO THE EDITOR: We would like to congratulate Bin-Alamer et al.<sup>1</sup> on their article (Bin-Alamer O, Qedair J, Abou-Al-Shaar H, et al. Surgical intervention  $\leq$  24 hours versus > 24 hours after injury for the management of acute traumatic central cord syndrome: a systematic review and meta-analysis. *J Neurosurg Spine.* 2024;40[5]:653-661). We consider that there was great methodological rigor in carrying out the work through the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines.<sup>2</sup> However, there is a lack of definition of the upper limit of the > 24-hour group. There are no details considering chronological heterogeneity in the inclusion criteria and data extraction of the methods when analyzing the patients in this group.

When the authors dichotomized the surgeries that were done before and after 24 hours of the trauma, it should be emphasized that there may be patients who underwent surgery at 36 hours, 48 hours, or longer intervals after spinal cord injury. Importantly, despite the authors affirming a similarity in the presentation of both groups, in the group of patients included in the intervention after 24 hours, some studies have demonstrated heterogeneity in the American Spinal Injury Association (ASIA) motor presentation, analyzed using the  $I^2$  statistic.<sup>3,4</sup> The outcomes were also heterogeneous. An adequate exploration of the heterogeneity of studies that evaluated the ASIA motor score of patients who underwent surgery after 24

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**Disclosures**

The authors report no conflict of interest.

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**INCLUDE WHEN CITING**

Published online June 14, 2024; DOI: 10.3171/2024.3.SPINE24320.

**Response**

No response was received from the authors of the original article.

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