Journal of Pain Research

Dovepress
Taylor & Francis Group

Open Access Full Text Article

LETTER

Data Inconsistency, Cost Paradox, and Learning Curve Bias: Critical Concerns Regarding the EUBS Study [Letter]

Tao Li[1,2], Lijiang Lv[1,2]

[1]The Third School of Clinical Medicine, Zhejiang Chinese Medical University, Hangzhou, Zhejiang, People's Republic of China; [2]The Third Affiliated Hospital of Zhejiang Chinese Medical University, Hangzhou, Zhejiang, People's Republic of China

Correspondence: Lijiang Lv, The Third School of Clinical Medicine, Zhejiang Chinese Medical University, Hangzhou, Zhejiang, 310005, People's Republic of China, Email lvlijiang7858@163.com

Dear editor

We read with great interest the retrospective study by Wang et al comparing the Endoscopic Ultrasonic Bone Scalpel (EUBS) and High-Speed Drill (HSD) in percutaneous endoscopic cervical discectomy (PECD).[1] While the study addresses an important technological advancement, we identified three critical methodological flaws that substantially undermine the validity of the conclusions.

First, there is a significant inconsistency between the reported results in the text and the data presented in Table 3. In the "Results" section, the authors explicitly state that there were "no statistically significant differences in VAS scores. and JOA scores. at baseline (all P>0.05)". However, Table 3 unequivocally lists the preoperative P-values as 0.010 for VAS and 0.008 for JOA, indicating that the EUBS group had significantly more severe symptoms and neurological deficits at baseline. This contradiction is a major reporting error. Furthermore, because the baselines are unequal, the subsequent direct comparison of postoperative mean scores is statistically invalid. The observed postoperative equivalence might simply reflect that the EUBS group had more room for improvement. We strongly recommend the authors correct the textual error and re-analyze the data using Analysis of Covariance (ANCOVA) to adjust for these baseline confounders.

Second, the cost-effectiveness analysis presents a statistical anomaly that requires explanation. According to Table 2, there was no significant difference in total hospitalization costs between the EUBS and HSD groups (30.52k vs 30.69k RMB, p=0.89). This equivalence is unexpected given that ultrasonic disposable tips are substantially more expensive than standard HSD burrs. In many similar studies, this consumable cost difference drives a significant divergence in total expenditure. Theoretically, higher consumable costs could be offset by reduced operative time (lowering anesthesia and facility fees); however, the authors reported no statistically significant difference in total operative time between the two groups (105.31 vs 118.95 min, p=0.15). If neither the facility fees nor the total costs differed, it implies an unexplained reduction in other billing categories for the EUBS group. A detailed breakdown of the cost structure is essential to clarify this discrepancy, as hospital administrators rely on transparent economic data for technology adoption.

Finally, potential chronological bias may confound the reported efficiency gains. The study spans a four-year period (2019–2023). Endoscopic cervical surgery is known to have a steep learning curve. As noted in analogous endoscopic studies by Kang et al, proficiency significantly affects operative duration.[2] If HSD procedures were predominantly performed earlier in the study period and EUBS adopted later, the observed reduction in "bone fenestration time" might reflect the surgeons' improved competency with the PECD approach itself rather than the superiority of the ultrasonic device. We recommend the authors perform a chronological stratification analysis or match cases by date to isolate the device's impact from the surgeon's learning curve.

Received: 10 December 2025
Accepted: 18 December 2025
Published: 20 December 2025

We appreciate the authors' contribution to minimally invasive cervical surgery and hope these points help clarify the study's findings.

Disclosure

The authors report no conflicts of interest in this communication.

References

1. Wang ZF, Hu MZ, Liu ZJ, et al. Assessment of safety and efficacy of full-endoscopic ultrasonic bone scalpel for cervical spondylotic radiculopathy. *J Pain Res*. 2025;18:6627–6636. doi:10.2147/JPR.S528131
2. Kang MS, Park HJ, Park SM, et al. Learning curve for biportal endoscopic posterior cervical foraminotomy determined using the cumulative summation test. *J Orthop Surg Res*. 2023;18(1):146. doi:10.1186/s13018-023-03611-0

https://doi.org/10.2147/JPR.S587872