



## Editorial



# From the Editor-in-Chief: Featured Articles in the December 2023 Issue

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Among the papers published in the December issue of *Neurospine*, the featured articles selected by editors are as follows.

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**“Bone Remodeling and Modeling: Cellular Targets for Antiresorptive and Anabolic Treatments, Including Approaches Through the Parathyroid Hormone (PTH)/PTH-Related Protein Pathway”** by Martin and Seeman.<sup>1</sup>

Bone remodeling, balancing formation and resorption, occurs across the skeleton. Anti-resorptive drugs have been key in treating bone loss and fractures. Recent treatments, such as parathyroid hormone (PTH) and its analog, PTH-related protein, show promise in restoring bone volume and preventing fractures. Additionally, therapies targeting the Wnt signaling pathway, particularly through the inhibition of sclerostin, represent a significant development. Despite these anabolic advancements, the ongoing need for antiresorptive drugs remains critical to maintain restored bone.

**“Utilization of Vertebroplasty/Kyphoplasty in the Management of Compression Fractures: National Trends and Predictors of Vertebroplasty/Kyphoplasty”** by O'Neill et al.<sup>2</sup>

This study analyzed the use of kyphoplasty/vertebroplasty in managing compression fractures, particularly amid the increasing elderly and osteoporosis-affected population. Examining data from 91 million patients, it found that only 9.2% of patients with compression fractures received these procedures as initial treatment. Patients undergoing kyphoplasty/vertebroplasty were typically older, female, obese, smokers, and had higher comorbidity scores. The study identified female sex, smoking status, and obesity as strong predictors for receiving these treatments. Despite the prevalence of vertebral compression fractures, most are managed nonoperatively, and the annual rate of kyphoplasty/vertebroplasty remained stable between 8% and 11%.

**“Development and Validation of an Online Calculator to Predict Proximal Junctional Kyphosis After Adult Spinal Deformity Surgery Using Machine Learning”** by Lee et al.<sup>3</sup>

This study aimed to create a personalized risk calculator for proximal junctional kyphosis (PJK) after adult spinal deformity (ASD) surgery. Analyzing data from 201 patients, it identified postoperative proximal junctional angle, body mass index, and deformity type as key predictors for PJK. A random forest machine learning model, chosen for its high accuracy (83%) and good predictive performance, was used to develop an online risk calculator.



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This tool, available at a specified URL (uniform resource locator), helps surgeons predict PJK risk more precisely, aiding in refining treatment strategies for ASD patients.

**“Quantitative Comparison of Vertebral Structural Changes After Percutaneous Vertebroplasty Between Unilateral Extrapedicular Approach and Bilateral Transpedicular Approach Using Voxel-Based Morphometry”** by Kim et al.<sup>4</sup>

This study compared unilateral extrapedicular vertebroplasty (UEV) with bilateral transpedicular vertebroplasty (BTV) for treating vertebral fractures. Using 3-dimensional voxel-based morphometry, it assessed the volume and distribution of bone cement and the incidence of subsequent vertebral compression fractures (SVCF) in 222 treated vertebral bodies. The study found that UEV, despite concerns, allowed for sufficient and optimally distributed bone cement injection, similar to BTV. There was no significant difference in the rate of intradiscal leakage or SVCF between the 2 methods. Therefore, UEV, being less invasive, may be a superior alternative to BTV in terms of clinical effectiveness and safety.

**“Simultaneous Single-Position Oblique Lateral Interbody Fusion Combined With Unilateral Percutaneous Pedicle Screw Fixation for Single-Level Lumbar Tuberculosis: A 3-Year Retrospective Comparative Study”** by He et al.<sup>5</sup>

This study compared single-position oblique lateral interbody fusion with unilateral percutaneous pedicle screw fixation (SP-OLIF) against a posterior-only approach for treating single-level lumbar tuberculosis. Analyzing 136 patients, the study found that SP-OLIF resulted in significantly less operative time, blood loss, and hospital stay, along with a lower complication rate. Patients in the SP-OLIF group also showed quicker clinical improvement, with reduced pain and disability scores shortly after

surgery, and faster normalization of inflammation markers. No recurrences were reported during the follow-up period. Overall, SP-OLIF proved to be an efficient, minimally invasive method offering advantages over the posterior-only approach.

- **Conflict of Interest:** The author has nothing to disclose.

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