

Optimizing Postoperative Management for PKP: Combining Traditional Chinese Medicine and Modern Rehabilitation Techniques [Letter]

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Dear editor

Osteoporotic vertebral compression fracture (OVCF) is a common disabling condition in the elderly,¹ and traditional treatments often yield limited results.² Percutaneous kyphoplasty (PKP) has become widely used for its ability to relieve pain and restore vertebral height.² However, adjacent disc degeneration (ADD) following PKP has garnered attention, with potential mechanisms including thermal damage, biomechanical alterations, and disrupted nutrient pathways from bone cement.³ Reported ADD incidence ranges from 34% to 52.6%, but whether it is directly caused by PKP or a continuation of natural degeneration remains uncertain.³ Key risk factors include preoperative disc degeneration, bone cement leakage, and altered biomechanical environments.⁴ Current studies are limited by inadequate multivariate analyses and short follow-ups, impeding a full understanding of ADD and complicating postoperative management.

We commend Song et al⁵ for their valuable contributions. The retrospective study identified severely degenerated discs (Pfirrmann grade \geq IV) and intradiscal cement leakage (ICL) as major risk factors for ADD following PKP. The study also suggested a potential link between ADD and an increased risk of adjacent segment fractures (ASF), providing valuable evidence for understanding ADD mechanisms and guiding clinical risk assessment and intervention strategies. However, certain limitations in the study merit further investigation.

First, the grouping method did not fully account for differences in disc degeneration rates. Severely degenerated discs may progress slower, while mildly degenerated discs could degenerate faster due to postoperative biomechanical changes,^{6,7} potentially underestimating long-term risks for the latter. Second, the study did not control for postoperative activity levels or rehabilitation measures, which can significantly affect load distribution and influence ADD and ASF development.⁸ Additionally, environmental and lifestyle factors like smoking, alcohol use, and diet, which impact disc health, were not considered. Lastly, the absence of temporal analysis of ASF limits differentiation between early injury and late degeneration.

Future research should explore degeneration rate differences among discs with varying preoperative conditions through longitudinal follow-up on disc height loss. Finite element analysis could simulate stress distribution to elucidate degeneration mechanisms. Standardized documentation of postoperative activity and rehabilitation, including load-bearing intensity and brace use, is also essential to assess their impact on ADD. Integrating imaging and clinical data would further optimize postoperative management. Lifestyle factors, including smoking, alcohol consumption, and dietary habits, should also be included in multi-center studies to develop comprehensive multivariable models and improve the precision of risk assessments. Most importantly, combining the holistic perspective of traditional Chinese medicine (TCM) with modern rehabilitation techniques could enhance postoperative management for PKP. Utilizing TCM approaches, such as kidney-nourishing herbal treatments (eg, *Eucommia*, *Dipsacus*), alongside osteoporosis therapies, could improve metabolic function and slow disc degeneration. Spleen-strengthening and liver-soothing strategies, coupled with guided exercises like Tai Chi or Baduanjin, may optimize spinal biomechanics and

musculoskeletal function. A “comprehensive health maintenance” rehabilitation model that integrates acupuncture, massage, and other TCM therapies with modern techniques could facilitate early stabilization and long-term balance, offering a holistic solution for PKP patients while advancing the field of rehabilitation medicine.

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References

1. Trout AT, Kallmes DF, Kaufmann TJ. New fractures after vertebroplasty: adjacent fractures occur significantly sooner. *AJNR Am J Neuroradiol.* 2006;27:217–223.
2. Farooq N, Park JC, Pollintine P, et al. Can vertebroplasty restore normal load-bearing to fractured vertebrae? *Spine.* 2005;30:1723–1730. doi:10.1097/01.brs.0000171906.01906.07
3. Feng Z, Chen L, Hu X, et al. Vertebral augmentation can induce early signs of degeneration in the adjacent intervertebral disc: evidence from a rabbit model. *Spine.* 2018;43:E1195–e203. doi:10.1097/BRS.0000000000002666
4. Rahmani MS, Takahashi S, Hoshino M, et al. The degeneration of adjacent intervertebral discs negatively influence union rate of osteoporotic vertebral fracture: a multicenter cohort study. *J Orthop Sci.* 2018;23:627–634. doi:10.1016/j.jos.2018.03.008
5. Song H WA, Zang L, Wang T, Yuan S, Fan N, Du P. Analysis of risk factors causing adjacent disc degeneration after percutaneous kyphoplasty for osteoporotic vertebral compression fractures. *J Pain Res.* 2024;17:3985–3995. doi:10.2147/JPR.S486668
6. Natarajan RN, Andersson GB. Lumbar disc degeneration is an equally important risk factor as lumbar fusion for causing adjacent segment disc disease. *J Orthop Res.* 2017;35:123–130. doi:10.1002/jor.23283
7. Ramakrishna VAS, Chamoli U, Viglione LL, et al. Mild (not severe) disc degeneration is implicated in the progression of bilateral L5 spondylolysis to spondylolisthesis. *BMC Musculoskelet Disord.* 2018;19:98. doi:10.1186/s12891-018-2011-0
8. Keller K, West JC. Functional movement impairment in dancers: an assessment and treatment approach utilizing the Biomechanical Asymmetry Corrector (BAC) to restore normal mechanics of the spine and pelvis. *J Back Musculoskelet Rehabil.* 1995;5:219–233. doi:10.3233/BMR-1995-5307

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