

## Letter to the Editor



# Letter to the Editor: Commentary on Kummell's Disease Is Becoming Increasingly Important in an Aging Society: A Review (*Korean J Neurotrauma* 2023;19:32-41)

Subum Lee

Department of Neurosurgery, Korea University Anam Hospital, Korea University College of Medicine, Seoul, Korea



► See the article "Kummell's Disease is Becoming Increasingly Important in an Aging Society: A Review" in volume 19 on page 32.

**Received:** Dec 19, 2023  
**Accepted:** Jan 16, 2024  
**Published online:** Feb 6, 2024

### Address for correspondence:

**Subum Lee**  
Department of Neurosurgery, Korea University Anam Hospital, Korea University College of Medicine, 73 Goryeodae-ro, Seongbuk-gu, Seoul 02843, Korea.  
Email: lee\_s@korea.ac.kr

Copyright © 2024 Korean Neurotraumatology Society

This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<https://creativecommons.org/licenses/by-nc/4.0/>) which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

### ORCID iDs

Subum Lee   
<https://orcid.org/0000-0003-4732-8137>

### Conflict of Interest

The author has no financial conflicts of interest.

Dear Editor,

I recently had the opportunity to engage with a well-structured review paper on Kummell's disease, which I found insightful.<sup>5)</sup> This paper proved to be instructive not only for me but also for the readership of the *Korean Journal of Neurotrauma*. Kummell's disease, as defined by the authors in the introduction, refers to a condition characterized by delayed post-traumatic vertebral collapse, avascular necrosis of the vertebrae, or ischemic vertebral collapse.<sup>9)</sup>

As described by the authors, conservative treatment for Kummell's disease invariably includes osteoporosis medication. Additionally, I concur that bisphosphonates are ineffective in promoting fracture healing and accelerating bone union. Bisphosphonates can slow down the healing of fractures by overly reducing normal bone activity.<sup>7)</sup> Furthermore, there seems to be an association between the use of bisphosphonate medications and the appearance of intervertebral clefts.<sup>2)</sup> When treating patients with severe osteoporosis who have acute vertebral compression fractures, the healing effect of bisphosphonates is relatively slow. Additionally, these medications carry a high risk of causing new fractures.<sup>10)</sup>

As the authors indicated, the use of bone anabolic agents is known to be more effective than that of bisphosphonates. Examples of such drugs include teriparatide and romosozumab. Among these, teriparatide has been used for a long time and has shown excellent clinical outcomes. In a retrospective study of 98 patients undergoing nonoperative treatment for a recent osteoporotic vertebral compression fracture, the union rate six months after treatment was 89% in the teriparatide group and 68% in the bisphosphonate group. Fracture-site surgical interventions were not required in the teriparatide group; however, two patients in the bisphosphonate group eventually underwent surgical treatment for symptomatic nonunion or vertebral collapse.<sup>4)</sup>

Once vertebral necrosis occurs, union becomes problematic in the presence of a vertebral cleft. When using teriparatide, peripheral bridging of bones along the vertebral edges occurs,

restoring the stability of the collapsed vertebra.<sup>4)</sup> Concerning peripheral bridging around fractures, teriparatide promotes ossification of the spinal ligaments and accelerates hyperplastic bone formation around vertebral fractures in cases of diffuse idiopathic skeletal hyperostosis.<sup>3,8)</sup>

I partially agree with the authors' view that long-segment fixation is advantageous for kyphosis correction and achieving solid stability, as supported by high-level evidence from meta-analyses.<sup>11)</sup> However, recent methods, such as transpedicular intrabody cage insertion for anterior column support, can yield good results, even with short-segment fixation.<sup>1,6)</sup> This approach may be particularly beneficial for elderly patients and those with comorbidities.

In aging societies of developed countries, the prevalence of osteoporotic vertebral compression fractures and their complications, such as Kummell's disease, is increasing. This paper reviews treatment strategies and provides well-organized information for spine surgeons. I am grateful to the authors for publishing this successful review paper and applauding their efforts. Based on this discussion, I look forward to ongoing collaborative research in the neurotrauma society.

## REFERENCES

1. Chen C, Gao X, Li H, Pan X, Wang S. Intravertebral insertion of interbody fusion cage via transpedicular approach for the treatment of stage III Kummell disease: a technical note and case presentation. *Br J Neurosurg* 37:1909-1914, 2023 [PUBMED](#) | [CROSSREF](#)
2. Ha KY, Park KS, Kim SI, Kim YH. Does bisphosphonate-based anti-osteoporosis medication affect osteoporotic spinal fracture healing? *Osteoporos Int* 27:483-488, 2016 [PUBMED](#) | [CROSSREF](#)
3. Hamano H, Takahata M, Ota M, Hiratsuka S, Shimizu T, Kameda Y, et al. Teriparatide improves trabecular osteoporosis but simultaneously promotes ankylosis of the spine in the twy mouse model for diffuse idiopathic skeletal hyperostosis. *Calcif Tissue Int* 98:140-148, 2016 [PUBMED](#) | [CROSSREF](#)
4. Iwata A, Kanayama M, Oha F, Hashimoto T, Iwasaki N. Effect of teriparatide (rh-PTH 1-34) versus bisphosphonate on the healing of osteoporotic vertebral compression fracture: a retrospective comparative study. *BMC Musculoskelet Disord* 18:148, 2017 [PUBMED](#) | [CROSSREF](#)
5. Ko MJ, Lee BJ. Kummell's disease is becoming increasingly important in an aging society: a review. *Korean J Neurotrauma* 19:32-41, 2023 [PUBMED](#) | [CROSSREF](#)
6. Lee J, Song KS. Transpedicular intravertebral cage augmentation in a patient with neurologic deficits after severely collapsed kummel disease: minimum 2-year follow-up. *World Neurosurg* 135:146-155, 2020 [PUBMED](#) | [CROSSREF](#)
7. Matos MA, Tannuri U, Guarniero R. The effect of zoledronate during bone healing. *J Orthop Traumatol* 11:7-12, 2010 [PUBMED](#) | [CROSSREF](#)
8. Matsumoto T, Ando M, Sasaki S. Effective treatment of delayed union of a lumbar vertebral fracture with daily administration of teriparatide in a patient with diffuse idiopathic skeletal hyperostosis. *Eur Spine J* 24 Suppl 4:S573-S576, 2015 [PUBMED](#) | [CROSSREF](#)
9. Steel HH. Kummell's disease. *Am J Surg* 81:161-167, 1951 [PUBMED](#) | [CROSSREF](#)
10. Tseng YY, Su CH, Lui TN, Yeh YS, Yeh SH. Prospective comparison of the therapeutic effect of teriparatide with that of combined vertebroplasty with antiresorptive agents for the treatment of new-onset adjacent vertebral compression fracture after percutaneous vertebroplasty. *Osteoporos Int* 23:1613-1622, 2012 [PUBMED](#) | [CROSSREF](#)
11. Yu Y, Zeng H, Guo E, Tang B, Fang Y, Wu L, et al. Efficacy and safety of posterior long-segment fixation versus posterior short-segment fixation for Kummell disease: a meta-analysis. *Geriatr Orthop Surg Rehabil* 13:21514593221107509, 2022 [PUBMED](#) | [CROSSREF](#)