

Biplanar Expandable Interbody Cage

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Biplanar expandable (BE) cages have been recently designed for use in [transforaminal lumbar interbody fusion](#) (TLIF) for treatment of spinal stenosis and spondylolisthesis as they offer advantages over conventional static cages and [uniplanar](#) expandable cages. The size of the static intervertebral cage that one can insert into the disc space is limited by the confines of Kambin's triangle, which is a narrow surgical corridor. Hence, expandable implants were developed to bridge the gap between the small size required during insertion and the maximum size desired for optimum anterior column support ¹⁾

A study investigated 1-year clinical and radiological outcomes of [biplanar Expandable Interbody Cages](#) following [transforaminal lumbar interbody fusion](#) (TLIF) in an [Asian population](#).

A [retrospective review](#) was conducted of all consecutive patients who underwent TLIF with BE cages performed by 2 fellowship-trained spine surgeons from 2020 to 2021. Inclusion criteria included open or minimally invasive (MIS) TLIF, of up to 3 spinal segments, performed for treatment of degenerative disc disease, spondylolisthesis, or spinal stenosis. Patient-reported outcomes, including visual analog score (VAS) for back and lower limb pain, Oswestry Disability Index (ODI) and North American Spine Society neurogenic symptom score (NSS), and various radiographic parameters, were evaluated.

Results: A total of 23 patients underwent TLIF with BE cages with a follow-up duration of 1.25 years. Of those patients, 7 (30%) underwent 1-level TLIF, 12 (52%) underwent 2-level TLIF, and 4 (18%) underwent 3-level TLIF, with a total of 43 spinal segments fused. Four patients (17%) underwent MIS TLIF while 19 patients (83%) underwent open TLIF. VAS for back pain scores improved by 4.8 ± 3.4 ($P < 0.001$) from 6.5 ± 2.6 to 1.7 ± 2.2 ; VAS for lower limb pain scores improved by 5.2 ± 3.8 ($P < 0.001$) from 5.7 ± 3.4 to 0.5 ± 1.6 ; ODI scores improved by 29.0 ± 18.1 ($P < 0.001$) from 49.4 ± 15.1 to 20.4 ± 14.2 ; and NSS scores improved by 36.8 ± 22.1 ($P < 0.001$) from 53.3 ± 21.1 to 16.5 ± 19.8 . Significant improvements in radiological parameters included increase in anterior disc height, posterior disc height, foraminal height, segmental lordosis, and lumbar lordosis. There were no implant-related complications, cage subsidence, cage migration, or revision surgery at 1 year.

Conclusions: TLIF performed with BE cages led to significantly improved patient-reported outcomes and radiographic parameters at 1 year and is safe for use in Asians.

Clinical relevance: The results of this study support the effectiveness and safety of TLIF with biplanar expandable cages. ²⁾

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Lewandrowski KU, Ferrara L, Cheng B. Expandable Interbody Fusion Cages: An Editorial on the Surgeon's Perspective on Recent Technological Advances and Their Biomechanical Implications. *Int J Spine Surg.* 2020 Dec;14(s3):S56-S62. doi: 10.14444/7127. Epub 2020 Oct 29. PMID: 33122184; PMCID: PMC7735473.

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Sim DS, Kasivishvanaath A, Jiang L, Cheong Soh RC, Ling ZM. Biplanar Expandable Cages for Transforaminal Lumbar Interbody Fusion Are Safe and Achieve Good 1-Year Clinical and Radiological Outcomes in an Asian Population. *Int J Spine Surg.* 2023 Aug;17(4):520-525. doi: 10.14444/8472. Epub 2023 Apr 19. PMID: 37076255; PMCID: PMC10478701.

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