Cortical iliac crest autograft

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The cortical iliac crest autograft (CICA)/structural allograft (SA) has still been recognized as the gold standard for the ACDF technique for its high degree of histocompatibility and osteoinduction ability though the flourishing and evolving cage development. However, there was no further indication for using CICA/SA in ACDF based on basic information of inpatients. Li et al. operative experience implied that applying CICA/SA has an advantage in faster fusion but not the long-term fusion rate. Therefore, the study aimed to compare the fusion rates between CICA and cage, between SA and cage, and between CICA/CA and cage.

Based on the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA), a comprehensive literature search of electronic databases including PubMed, Embase, Cochrane Library, and Web of Science was conducted to identify these clinical trials that investigated the postoperative 3, 6, 12 and 24 months fusion rates of CICA/structural SA versus cage. Assessment of risk of bias, data extraction and statistical analysis were then carried out by two independent authors with the resolve-by-consensus method. The primary outcome was fusion rate at 3, 6, 12 and 24 months postoperatively. The secondary outcomes were also meta-analyzed such as hardware complications, operative duration and hospitalization time. Our meta-analysis was registered with PROSPERO (Identifier: CRD42022345247).

A total of 3451 segments (2398 patients) derived from 34 studies were included after the screening of 3366 articles. The segmental fusion rates of CICA were higher than cages at 3 ($P = 0.184$, $I2 = 40.9\%$) and 6 ($P = 0.147$, $I2 = 38.8\%$) months postoperatively, but not 12 ($P = 0.988$, $I2 = 0.0\%$) and 24 ($P = 0.055$, $I2 = 65.6\%$) months postoperatively. And there was no significant difference in segmental fusion rates between SA and cage at none of 3 ($P = 0.047$, $I2 = 62.2\%$), 6 ($P = 0.179$, $I2 = 41.9\%$) and 12 ($P = 0.049$, $I2 = 58.0\%$) months after operations. As for secondary outcomes, the CICA was inferior to cages in terms of hardware complications, operative time, blood loss, hospitalization time, interbody height, disk height and Odom rating. The hardware complication of using SA was significantly higher than the cage, but not the hospitalization time, disk height, NDI and Odom rating.

Applying CICA has the advantage of faster fusion than using a cage but not the long-term fusion rate in ACDF. Future high-quality RCTs regarding the hardware complications between CICA and cage in younger patients are warranted for the deduced indication [1)]

see also Fibula Tissue Transfer

Iliac crest bone graft harvest donor site morbidity

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1)
Li Y, Su T, Meng T, Song D, Yin H. The fusion rates at different times of cortical iliac crest autograft or allograft compared with cages after anterior cervical discectomy and fusion: a meta-analysis. Eur Spine J. 2024 Feb 6. doi: 10.1007/s00586-023-08118-0. Epub ahead of print. PMID: 38319436.