

Characteristics of grafted bony fusion patterns following hybrid anterior decompression and fusion to treat multilevel degenerative cervical myelopathy

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Background: For the treatment of multilevel degenerative cervical myelopathy (DCM), hybrid anterior decompression and fusion (H-ADF) with corpectomy and discectomy using a dynamic plate and cage has demonstrated a reduction in complications compared to conventional methods, with favorable clinical outcomes. However, increased fusion segment in this hybrid technique may affect the decreased ratio of grafted bony fusion rate.

Research question: What are the characteristics of grafted bony fusion patterns following H-ADF, and how do these patterns impact clinical outcomes, including neurological improvement and sagittal alignment?

Design: This study is a retrospective observational analysis aimed at evaluating the early-phase grafted bony fusion patterns and their clinical implications in patients undergoing H-ADF for multilevel DCM.

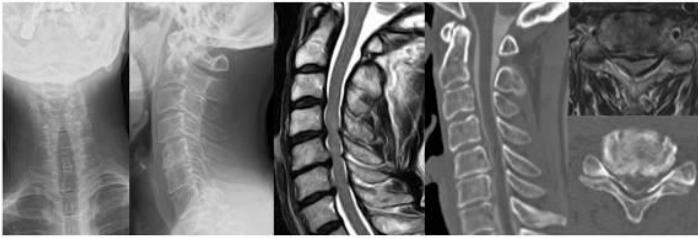
Methods: Evaluation of interbody fusion utilizing local range of motion measured through X-ray and CT sagittal/coronal reconstruction images were conducted. In addition, CT axial images were employed to assess lateral fusion of the grafted bone.

Results: 24 patients were included in the present study. One year after surgery, the interbody fusion of the grafted bone and cage was observed in 13/24 (54%) and 14/24 (58%), respectively. Alternatively, lateral fusion of the grafted bone was observed in 22/24 patients (92%). At two years after surgery, interbody fusion increased to 20/24 (83%) for both the grafted bone and the cage. At one year after surgery, the recovery rate of JOA score was 49.7 ± 27.6 in the grafted bony fusion group and 64.8 ± 25.1 in the non-fusion group, with no significant difference.

Discussion: In H-ADF, lateral fusion of the grafted bone was observed earlier at one year postoperatively, followed by progressive interbody fusion over the subsequent two years. Prolonged interbody fusion did not affect the neurological improvement.

Fig. 1

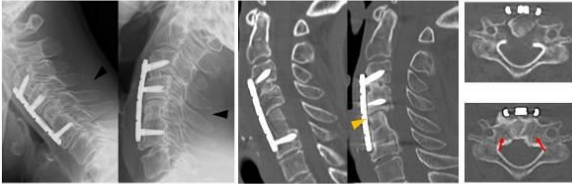
Representative Case: 62 year-old female



- C5/6 severe worsening myelopathy due to osteophyte and hypertrophy of ligamentum flavum.
- JOA score was 9 /17.

Fig. 2

C3-6 AHDF (C3/4 ACDF, C5 ACF) was performed.



- Interbody fusion was not observed at C4/5 1y after surgery.
- Lateral side bony fusion of the grafted iliac bone was observed.
- JOA score was recovered up to 15 (RR 75%).