

Is Graft Always Required? Empty Versus Allograft-Filled Titanium Mesh Cages in Single-Level ACCF

Idris Gurpinar (Istanbul, Turkiye), Furkan Almas (Istanbul, Turkiye), Caner Günerbüyük (Istanbul, Turkiye), Mehmet Yigit Akgun (Istanbul, Turkiye), Tunc Oktenoglu (Istanbul, Turkiye), Ali Fahir Ozer (Istanbul, Turkiye), Ozkan Ates (Istanbul, Turkiye)

Introduction

Anterior cervical corpectomy and fusion (ACCF) requires anterior column reconstruction after vertebral body resection. Although titanium mesh cages are commonly filled with graft material, autograft may not always be feasible and the routine use of allograft increases cost without clear evidence of superiority in all cases. In selected situations, reconstruction with an empty cage is therefore occasionally used in clinical practice. The aim of this study was to compare the radiological and clinical outcomes of single-level ACCF performed using empty versus allograft-filled titanium mesh cages.

Materials and Methods

A total of 24 patients who underwent single-level ACCF were retrospectively analyzed. Eight patients were reconstructed with an empty cage and 16 with an allograft-filled cage. Clinical outcomes were assessed using Visual Analog Scale (VAS) and Oswestry Disability Index (ODI). Fusion was evaluated on 12-month postoperative CT. Perioperative parameters, complications, and reoperation rates were compared.

Results

Both groups demonstrated significant postoperative improvement in VAS and ODI scores ($p < 0.001$). Fusion was achieved in 75.0% of patients in the empty cage group and 81.2% in the allograft group, with no significant difference ($p = 1.000$). There were no significant differences between groups regarding clinical outcomes, fusion rates, operative time, blood loss, hospital stay, complication rates, or reoperation rates.

Conclusion

In selected single-level ACCF cases, reconstruction with an empty titanium mesh cage provides clinical and radiological outcomes comparable to those achieved with allograft-filled cages and may represent a reasonable alternative when biological grafting is not feasible or not desirable.

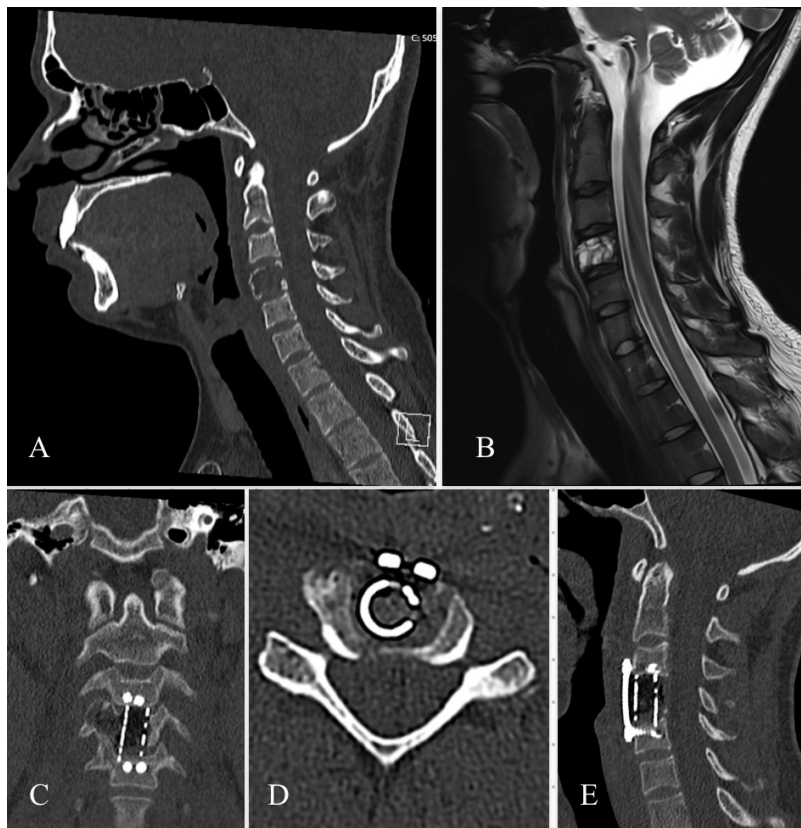


Figure 1: Preoperative and early postoperative imaging of a 22-year-old male patient with a lytic lesion of the C4 vertebral body. (A) Preoperative sagittal CT scan demonstrating the lytic destruction of the C4 vertebral body. (B) Preoperative sagittal T2-weighted MRI showing spinal cord compression at the C4 level. (C) Early postoperative coronal CT image after C4 corpectomy and reconstruction with an empty titanium mesh cage and anterior plate fixation. (D) Early postoperative axial CT image demonstrating appropriate cage positioning. (E) Early postoperative sagittal CT image confirming restoration of anterior column alignment and stability.

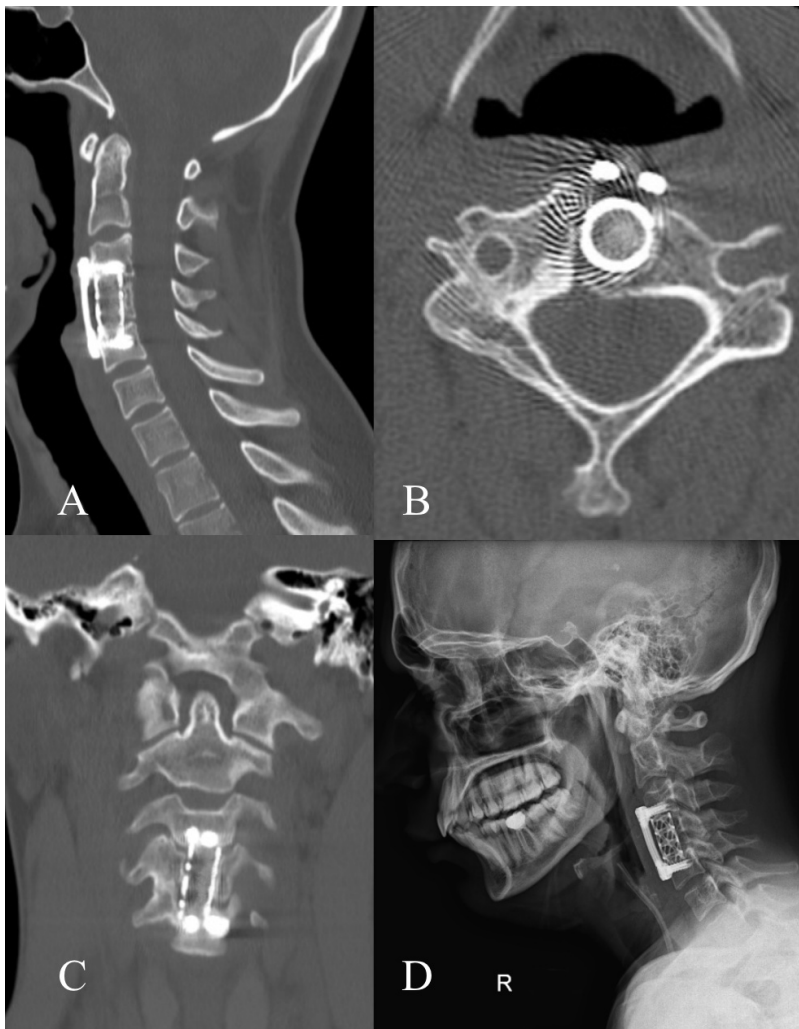


Figure 2: One-year follow-up imaging of the same patient shown in Figure 1.(A) Sagittal CT image demonstrating stable implant position and maintained cervical alignment.(B) Axial CT image showing bone formation within the cage.(C) Coronal CT image confirming continuous bone bridging between the adjacent vertebral endplates.(D) Lateral cervical radiograph demonstrating preserved alignment and construct stability.