

Introduction

Although extremely effective at a single level, anterior cervical discectomy and fusion (ACDF) with an anterior cervical plate (ACP) for a multilevel construct can be associated with a number of peri- and postoperative complications Figure 1). Alternatively, and quite possibly superior to cervical plating, cervical integrated interbody fusions with subsequent compressive/lag fixation, has emerged as a promising alternative: smaller exposure, zero-anterior profile, individual, but multilevel-specific sagittal realignment (Figure 2).

Objectives: Retrospectively to evaluate patients treated from single-to-multiple levels with integrated interbody fusion.

Figure 1. Adjacent segment degeneration above and below prior ACDF.



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Methods

203 patients (53.4±10.7years) with symptomatic degenerative disc disease with radiculopathy and/or myelopathy were treated with a cervical integrated interbody fusion device with compressive fixation. Patients were assessed pre- and post-operatively at 6 weeks, 3, 6, 12, 24 months and evaluated for patient-derived outcome measures, radiographic parameters (effect on device-level lordosis, overall cervical sagittal alignment, fusion status), and device-related complications.



Figure 2. Cervical Integrated Interbody Fusion Cage: STALIF C-PEEK, STALIF-C Ti, and STALIF C FLX 3D-printed titanium cages, Centinel Spine, LLC, West Chester, PA

Results

74 patients underwent the procedure at single level, 68 at 2-levels, 39 at 3-levels, 17 at 4-levels (Figure 3A), 4 at 5-levels (Figure 3B), and 1 at 6-levels. No intra-operative complications were recorded. Radiographic results showed lordosis was maintained in the global spine and bone formation was present in the inner column of the device. Overall fusion rate was 92%. The revision surgery patients showed better alignment than pre-operatively with static plates. There were no signs of heterotopic ossification of the ligaments/vertebral bodies. There were no device failures. 86% of patients were able to return to the same level of work as prior to surgery.

Case Example – Swan Neck Correction

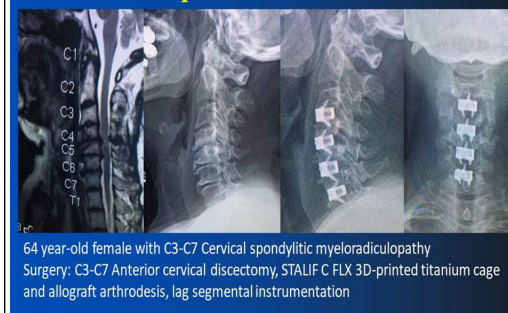


Figure 3A,B. 4- and 5-level fusion.

Conclusions

Integrated interbody fusion with compressive/lag fixation appears to be a viable alternative. Previously, studies with static integrated interbody fixation devices have not reported as well as ACP with regards to fusion and clinical outcomes. The benefit of lag-design to provide better fixation and more accurate lordotic curve maintenance of the cervical spine was seen in our series. The opportunity to either revise a previous ACDF with ACP or add to a pre-existing ACDF offers greater flexibility to treat the index level pathology rather than global construct approach.

Learning Objectives

Integrated interbody fusion with compressive/lag fixation appears to be a viable alternative. Previously, studies with static integrated interbody fixation devices have not reported as well as ACP with regards to fusion and clinical outcomes. The benefit of lag-design to provide better fixation and more accurate lordotic curve maintenance of the cervical spine was seen in our series. The opportunity to either revise a previous ACDF with ACP or add to a pre-existing ACDF offers greater flexibility to treat the index level pathology rather than global construct approach.