

Introduction

Multi-level anterior cervical discectomy and fusion (ACDF) is a common treatment for cervical disc disease resulting in radiculopathy and/or myelopathy. In 3 or greater level cases, the published nonunion rate when using allograft can be as high as twenty percent. Techniques employed to reduce the nonunion rate include using iliac crest autograft, posterior instrumentation (lateral mass screws), hard collars for extended periods of time, and bone growth stimulators. Each of these adjuncts has distinct disadvantages, and none guarantee successful fusion. We describe an effective alternative that has eliminated nonunion in this patient group in our experience.

Pre-Op MRI



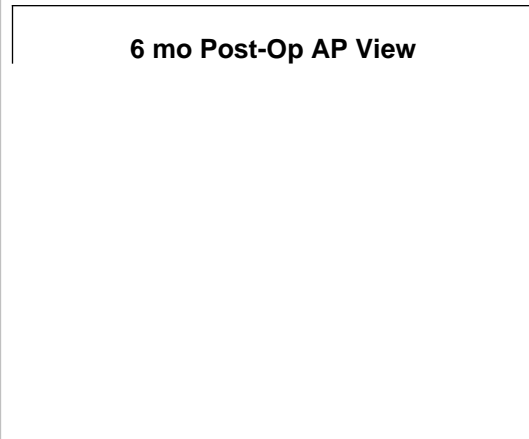
Methods

We retrospectively reviewed the charts of consecutive patients who underwent 3 or greater level ACDF supplemented by percutaneously placed bilateral titanium facet implants over the past 3 years and had a minimum of 1 year radiographic follow-up. Patients were instructed to wear a soft collar for 2 weeks post operatively and could resume activities of daily living without restriction thereafter.

Results

Less than 1 hour of additional operating room time was required for the posterior procedure. 36 patients were identified. One patient was lost to follow-up due to death, unrelated to the surgery. X-rays were taken at approximately 6, 12, 24, and 52 weeks post-operatively. All had intact constructs on radiographs, without evidence of hardware failure, pseudarthrosis, change in alignment, or development of kyphosis. The most unique complaint to the posterior procedure was muscle spasm (n=6), and was treated with physical therapy and medication.

6 mo Post-Op AP View



Conclusions

The addition of a minimally invasive percutaneous posterior facet fusion has reduced the rate of nonunion in our experience, without adding significant morbidity. Further analysis is needed to determine if this affects patient satisfaction and QALY metrics.

Learning Objectives

Discuss the possibility of a minimally invasive percutaneous fusion for treatment of multi-level degenerative disc disease in addition to a ACDF for Cervical Myelopathy and consider the possibilities the treatment of non-union status post anterior cervical fusion instead of a posterior spinal fusion.

References

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2. Cheung JPY, Luk KD-K. Complications of Anterior and Posterior Cervical Spine Surgery. *Asian Spine Journal*. 2016;10(2):385-400. doi:10.4184/asj.2016.10.2.385.
3. Yu S, Li F, Yan N, Yuan C, He S, Hou T. Anterior Fusion Technique for Multilevel Cervical Spondylotic Myelopathy: A Retrospective Analysis of Surgical Outcome of Patients with Different Number of Levels Fused. Shamji M, ed. *PLoS ONE*. 2014;9(3):e91329.

6 mo Post-Op Lat View



Regained Lordosis

2 yr Post-Op CT Scan Fusion Intact

