

Multi-Level Anterior Cervical Discectomy and Fusion

Dennis Bullard, MD, FACS
Triangle Neurosurgery



INTRODUCTION

An anterior cervical microdiscectomy or corpectomy with attempted arthrodesis is an extremely successful procedure for treating a wide variety of cervical problems. One of the critical issues, however, is successful fusion. The use of autologous structural bone carries with it significant morbidity, but has been the standard for successful fusions in the past. Multiple alternatives using allograft have a wide range of issues in terms of both side effects and reduced fusion rates, especially in cases where there are comorbidities such as increased age, multilevel constructs, the use of steroids, smoking, diabetes.

MEDICAL HISTORY

A 78-year-old male presented with severe neck and right arm pain. He went from a full, active lifestyle to requiring narcotic analgesics around the clock. His examination showed diffuse weakness in the right arm with some unsteadiness of gait.

Magnetic Resonance Imaging (MRI) demonstrated moderate to severe spinal stenosis at multiple levels. At C3-C4, the spinal diameter was reduced to 5mm and there was T2 hyperintensity within the cervical cord. At C4-C5, C5-C6 and C6-C7 there was reduction of the spinal canal to 6 to 7 mm with foraminal stenosis (Figure 1).

CLINICAL TREATMENT PROTOCOL

The patient underwent partial corpectomies at C3 through C6 with attempted stabilization using Polyetheretherketone (PEEK) cages filled with demineralized bone matrix, autologous bone marrow and BioDFactor[®] Viable Tissue Matrix. Dynamic plating was used. Intraoperative Electromyography (EMG) and both Motor and Sensory Evoked Potentials were completed throughout the case and remained stable with skin closure. Estimated blood loss 100cc. The patient had an unremarkable postoperative recovery and was discharged the following day.

POST-OPERATIVE CLINICAL OBSERVATIONS

1-MONTH FOLLOW-UP: The patient had a decrease in neck and right arm pain compared to pre-operatively, which he categorized as mild. Tylenol alone controlled the pain. His examination showed mild weakness in the right biceps at 4+/5. Physical therapy was begun. X-rays showed all components in good position (Figure 2).

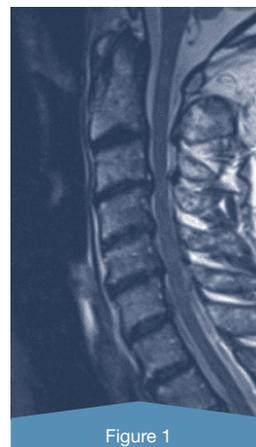


Figure 1



Figure 2

POST-OPERATIVE CLINICAL OBSERVATIONS CONT.

POST-OPERATIVE 3-MONTH FOLLOW-UP: The patient had significant reduction in neck and right arm pain. His examination showed normal strength with resolution of his prior weakness. He utilized only Tylenol for pain control. Cervical X-rays showed a stable construct and early bone formation within the PEEK cages (Figure 3).

POST-OPERATIVE 6-MONTH FOLLOW-UP: The patient had no subjective complaints and felt he had returned to a full normal lifestyle. Neurologic examination was intact. X-rays showed satisfactory positioning of all components and excellent bone formation (Figure 4).



About Dr. Bullard

Dennis E. Bullard, MD, FACS is a Board Certified Neurological Surgeon and a Fellow of the American College of Surgeons. He is a graduate of St. Louis University Medical School in 1975. He did his internship and residency at Duke University and a fellowship in neurology at the National Hospital for Neurologic Disease in London. He was on the faculty at Duke University from 1982 through 1987 and was a tenured Associated Professor in Neurosurgery. He received a Teacher Investigator award from the National Institutes of Health and research awards from the International Neurosurgical Society and the Southern Neurosurgical Society.



Dr. Bullard has been in practice in Raleigh since 1987. He is a former chairman of the Joint Section on Tumors and the Stereotactic and Functional Section of the Congress of Neurological Surgeons and the American Association of Neurological Surgeons. He has served as chairman of surgery and neurosurgery at Rex Hospital. His major interests are spinal problems with a special emphasis on the cervical spine and minimally invasive procedures for the lumbar spine.

| | PRE-OPERATIVE | 1-MONTH POST-OPERATIVE | 3-MONTH POST-OPERATIVE | 6-MONTH POST-OPERATIVE |
|-----------|---------------|------------------------|------------------------|------------------------|
| VAS | | | | |
| NECK | 22 | 11 | 0 | 0 |
| RIGHT ARM | 20 | 5 | 3 | 0 |
| LEFT ARM | 0 | 0 | 0 | 0 |
| NDI | 12% | 4% | 2% | 0% |
| DSQ | | | 0 | 0 |

Table 1. Visual Analog Scale (VAS), Neck Disability Index (NDI) and Dysphagia Short Questionnaire (DSQ) Scores Pre-Operatively and Post-Operatively.

DISCUSSION / CONCLUSION

The patient had multiple comorbidities including age and daily use of narcotic analgesics. Partial corpectomies, PEEK interbody cages with bones matrices and BioDFactor, and dynamic plating helped establish early bone growth. Both clinically and radiographically at 6 months, the patient healed well, demonstrated excellent bone formation and was no longer taking narcotic analgesics daily.



BioDFactor is regulated by the FDA under 21 CFR Part 1271 and Section 361 of the Public Health Service Act.

BioD, LLC

1715 Aaron Brenner Drive
Suite 204
Memphis, TN 38120

Toll Free - 1-877-675-4149
contact@biollc.com
www.biologics.com