CASE STUDY | prodisc® C Vivo

28-Year-Old Male with 6-Week History of Right-Sided Neck and Arm Pain



By Ehsan Jazini, MD
Spine Surgeon

Practice
Virginia Spine Institute

Location
Reston, VA

Area of Interest
Dr. Jazini was the first in the nation and in some instances, the world to perform advanced surgical techniques in cervical and lumbar disc replacement, augmented reality (AR) spine surgery, and robotic spine surgery. He performs these advanced surgeries using modern technology intended to improve operative control and patient safety and make surgery less invasive for patients.

Education

Medical School
Albert Einstein College of Medicine, Bronx, NY

Residency
University of Maryland Medical Center, Baltimore, MD

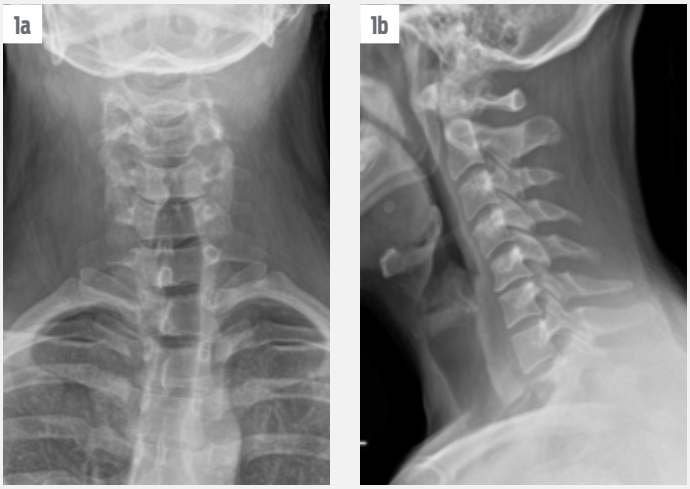
Fellowship
Combined Neurosurgery and Orthopedic Fellowship in Adult & Pediatric Spine Surgery
Norton-Leatherman Spine Center, Norton Hospital, Kosair's Children's Hospital

SINCE 1990 35+ YEARS OF CLINICAL SUCCESS

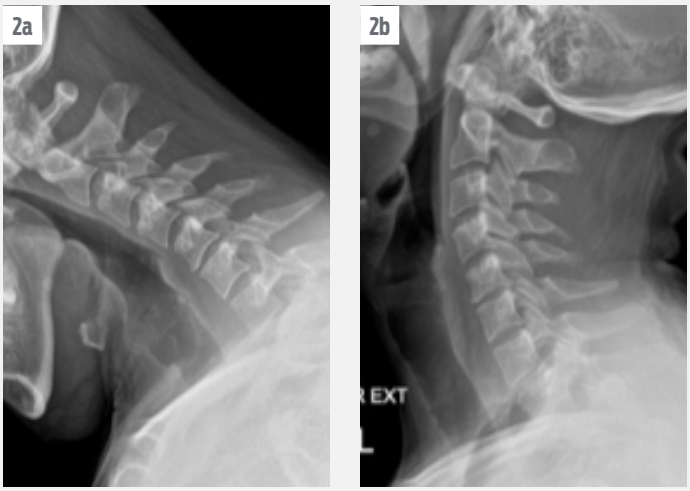
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PATIENT HISTORY

28-year-old male presented with 6-week history of right-sided neck pain and right bicep, dorsal forearm and first- and second-digit pain and numbness. He also reports objective weakness of the right arm. The patient notes his pain began after sleeping in an uncomfortable position on a couch. He does note a similar episode a few months back; however, he notes it was much less severe and resolved within a few days. At this point the patient has tried a prednisone taper which did improve his pain slightly, however he still rates his pain 6 to 8 out of 10 on the visual analog pain scale. His neck to arm ratio 70:30. He denies difficulties with balance or dexterity. He denies specific exacerbating or alleviating factors regarding his pain.



FIGURES 1a & 1b: Pre-Operative A/P (a) and Lateral (b) Radiographs



FIGURES 2a & 2b: Pre-Operative Flexion (a) and Extension (b) Radiographs

EXAMINATION

No acute distress, AOx3, positive Spurling's on the right.

CERVICAL NEUROLOGICAL EXAM	
Fasciculations	Not present bilaterally
Hoffman's	Not present bilaterally
Clonus	Not present bilaterally
Babinski	Not present bilaterally
Biceps Reflex	2/4 bilaterally
Brachioradialis Reflex	2/4 bilaterally
Triceps Reflex	2/4 bilaterally
Grip Strength	5/5 bilaterally
Intrinsics Strength	5/5 bilaterally
Grip Strength	5/5 bilaterally
Finger Flexor Strength	5/5 bilaterally
Finger Extensor Strength	5/5 bilaterally
Wrist Flexor Strength	5/5 bilaterally
Wrist Extensor Strength	5/5 left | 4/5 right
Biceps Strength	5/5 left | 3/5 right
Triceps Strength	5/5 bilaterally
Deltoids Strength	5/5 bilaterally
Shoulder Atrophy	Not present bilaterally
Arms/Forearms Atrophy	Not present bilaterally
Hand Atrophy	Not present bilaterally

Cervical x-rays demonstrated loss of cervical lordosis with 50%-disc collapse at C5/6 with focal kyphosis. Mild scoliosis in his neck with apex at C5/6, <10 degrees.

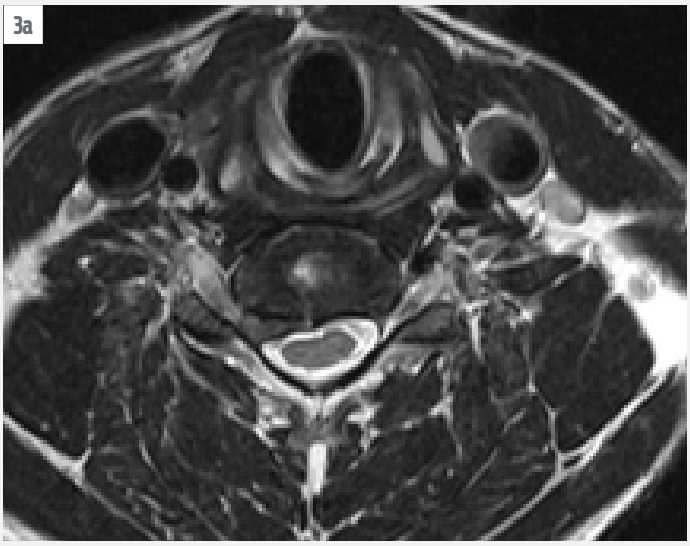
Cervical MRI demonstrated large right foraminal stenosis at C5/6 causing severe foraminal stenosis and cord displacement.

Initial recommendation was epidural steroid injection and PT with close follow up in 2 weeks.

Patient reported continued right interscapular pain, arm weakness, arm numbness. Right biceps was 3/5, wrist extension 3/5 on the right.

OPERATIVE PLAN

One level ACDR, prodisc C Vivo at C5-6. Vivo was selected due to relative domed shaped at C4-5. In this case given patient's young age and no evidence of facet arthropathy on cervical radiographs CT was not obtained. Intraoperative fluoroscopy and findings after complete discectomy and release confirmed the decision making to stick with prodisc C Vivo due to endplate morphology.





FIGURES 3a & 3b: Pre-Operative MRI in Axial View (a) and Sagittal View (b) at T2

DISCUSSION/RESULTS

Complete resolution of neck and arm pain with great restoration of motion and alignment goals.



FIGURE 4: One-Year Post-Operative A/P Radiograph





FIGURES 5a & 5b: One-Year Post-Operative Flexion (a) and Extension (b) Radiographs

MOTION ANALYSIS (AI GENERATED)		Adjacent: physiologic motion & abnormal level		
Pre-Operative	**Flexion (kyphosis)**	**Extension (lordosis)**	**Difference (degrees)**	
C4/5	5.8	6.1	11.9	
C5/6 (abnormal)	5.5	0.7	6.2	
C6/7	5	2	7	
6 Months	**Flexion (kyphosis)**	**Extension (lordosis)**	**Difference (degrees)**	**Net Motion (degrees)**
C4/5	6	6.2	12.2	0.3
C5/6 (abnormal)	6.5	6	12.5	6.3
C6/7	6	1	7	0

Cervical Alignment	Pre-Operative	Post-Operative
C2-7 degrees	6 kyphosis	8.6 lordosis

AI Motion Analysis Interpretation

Physiologic motion at upper levels are usually higher than lower levels as confirmed here. There is a relative lack of motion at C5-6 compared to C4-5 being down by 50%.

After surgery the motion at C4-5 and C5-6 are nearly identical with no changes at C6-7.

The net motion gained is virtually all at C5-6.

Alignment improved from 6 degrees of kyphosis to 8.6 degrees of lordosis.

CENTINEL SPINE
US Headquarters: 900 Airport Rd, Ste. 3B, West Chester, PA 19380 USA
EMEA Office: Grafenauweg 8, 6300 Zug, Switzerland
Email: info@centinelspine.com
Web: www.centinelspine.com

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