



5068 West Plano Parkway Suite 122
 Plano, Texas 75093
 Phone: (972) 931-5100

DATE OF REVIEW: 09/29/2008

IRO CASE #:

DESCRIPTION OF THE SERVICE OR SERVICES IN DISPUTE:

Anterior Cervical Discectomy w/fusion C4-C6

A DESCRIPTION OF THE QUALIFICATIONS FOR EACH PHYSICIAN OR OTHER HEALTH CARE PROVIDER WHO REVIEWED THE DECISION:

This case was reviewed by a Texas licensed DO, specializing in Neurological Surgery. The physician advisor has the following additional qualifications, if applicable:

AOA Neurological Surgery

REVIEW OUTCOME:

Upon independent review the reviewer finds that the previous adverse determination/adverse determinations should be:

Upheld

Health Care Service(s) in Dispute	CPT Codes	Date of Service(s)	Outcome of Independent Review
Anterior Cervical Discectomy w/fusion C4-C6	63081, 63082, 22554, 22585, 22845, 20931, 20974	-	Upheld

PATIENT CLINICAL HISTORY (SUMMARY):

The patient is a male who is reported to have sustained a work related injury to his cervical spine on xx/xx/xx. On this date it is reported that the fell head first down a staircase at work. The patient underwent MRI of the cervical spine on 05/05/05. This study reports a loss of cervical lordosis with evidence of discal pathology at C4-5 and C5-6 with discal excursion at the C5-6 level extending posterolaterally on each side to contribute to a bilateral C5-6 neural foraminal narrowing. The patient underwent EMG/NCV study on

10/14/05 which revealed a chronic right C6 radiculopathy and mild to moderate right median nerve entrapment at the wrist. The patient received chiropractic treatment. On 06/26/07 the patient was referred to Dr. for EMG/NCV of the upper extremities. This study reports findings consistent with a chronic right C6 radiculopathy.

On 07/24/07 the patient was referred for MRI of the cervical spine. This study reports moderate C5-6 and mild to moderate C4-5 degenerative disc disease. There is mild disc space narrowing and disc desiccation at the remaining levels. There are minimal listhesis along the mid cervical spine as described. There is straightening of the cervical lordosis. The most significant findings were at C5-6 where there is a moderate posterior spondylotic ridge with associated disc protrusion resulting in moderate central stenosis and mild to moderate cord impingement without obvious cord edema. There is severe right and moderate left C5-6 neural foraminal stenosis related to spondylosis and facet arthrosis. At C4-5 there is disc bulging with the spondylotic ridge eccentric to the left with some narrowing of the left lateral recess as well as mild to moderate stenosis of the left C4-5 neural foramen. There is a mildly asymmetric spondylosis and disc bulge on the left at C3-4 with mild narrowing of the left lateral recess as well as mild stenosis of the left C3-4 neural foramen.

The record further includes an MRI of the cervical spine dated 05/09/08. This study reports a spondylotic annular bulge which contacts the ventral spinal cord more so to the left side. There is no cord signal abnormality. The spinal canal diameters are on the lower limits of normal. There is mild narrowing of the left neural foramen due to uncal arthropathy. The right neural foramen is patent. At C5-6 there is a spondylotic annular bulge effacing the anterior subarachnoid space resulting in cord flattening without cord signal abnormality. There is mild spinal canal stenosis right greater than left neural foraminal narrowing due to uncal arthropathy placing the exiting right C6 nerve root sleeve at risk for impingement.

The record includes an evaluation performed by Dr. He notes that the patient is currently under the care of Dr. and has received medicines and physical treatments. The patient reports that these treatments were not successful. He underwent MRI scan of the neck which is reported to have indicated disc herniations at C3-4, C4-5 and C5-6. It should be noted that the most recent MRI on 05/09/08 does not identify any pathology at C3-4. The patient currently reports pain in the arm and numbness in the right hand. He reports stiffness in the shoulder. On physical examination his gait was normal. He is 5'10" tall and weighs 190lbs. There was tenderness in the posterior aspect of the neck. There was no guarding. Cervical range of motion is reduced. Neurologic examination of the upper extremities revealed the absence of muscle wasting or atrophy. Reflexes were full and symmetric. Strength was full and equal in all muscle groups. Sensation was intact. There is some tenderness to palpation anteriorly about the shoulder. Maximum shoulder flexion was 150 degrees. Extension was 50 degrees. Abduction was 160, adduction was 40 degrees, internal and external rotation is 80 degrees. There are no apprehension or impingement signs. Dr. opines that the patient is able to return to his previous job duties. His injuries to the cervical spine and right shoulder have resolved.

The record includes a letter from Dr. disagreeing with the conclusions of Dr. on 05/22/08 report.

On 07/24/08 the patient was evaluated by Dr. It is reported that the patient sustained an injury to his cervical and lumbar spine as a result of his work injury. The patient reports he was at work when he fell off some stairs. He reports falling approximately two stories and struck his head. He immediately complained of neck and back pain. He was seen at the Emergency Room. He had an MRI in 2004 and was treated with physical therapy. He had repeat MRI in 2007 and 2008. He has recently come under the care of Dr. and was referred to Dr. Dr. initially recommended surgery but now Dr. no longer operates due to some medical condition. As a result the patient requires a new orthopedic surgeon. He currently presents with 8/10 cervical pain which radiates down his right arm and is associated with right arm numbness. He complains of 5/10 back pain. The patient has diet controlled diabetes. On physical examination the patient is well developed and well nourished. He has diminished sensation along the right C6 distribution and he also has weakened right brachioradialis reflex when compared to the left. His grip strength is slightly diminished on the right. He has some mildly weakened wrist extensor strength on the right. The patient has reproduction of his radiculopathy with placing his right ear on his right shoulder. Radicular symptoms get significantly worse when that is converted to a Spurling's test. MRIs were reviewed. Cervical radiographs taken at this visit reveal some disc height loss at C5-6 level but there is normal bony alignment with no evidence of fracture or subluxation. The patient is diagnosed with an HNP at C5-6, a protrusion at C4-5 and a right C6 radiculopathy. It is reported that the patient has had three years of non operative treatment and he has a cervical disc herniation with radiculopathy. Dr. has recommended the patient undergo an anterior cervical discectomy and fusion at C5-6 and suggests that a 2 level procedure may be in order.

On 08/04/08 a request for ACDF from C4 – C6 was submitted. The case was reviewed by Dr. It is reported that the procedure was not certified. The patient has previously refused surgical intervention as well as a chronic pain management program. She reports the patient has no evidence of instability and the patient has not been shown to have a radiculopathy. As a result she opines that the patient does not appear to be a candidate for surgery for degenerative changes alone. The case was subsequently appealed on 08/14/08. The appeal was reviewed by Dr. Dr. reports that the patient has xx year history of neck and right upper extremity pain. He has diminished sensation along the right C6 distribution, weakened right brachioradialis; reflex grip strength is diminished on the right and mildly weakened wrist extensor strength on the right. The patient has a reproducible radiculopathy. Dr. further reports the patient had diminished sensation along the right C6 distribution subjective in nature as well as what is felt to be objective weakness in the right pectoralis reflex and grip strength. There is also mild weakness of the wrist extensors. He opines he cannot approve this procedure being a 2 level anterior cervical discectomy and fusion. He reports no evidence of myelopathy though there are subjective complaints and objective findings of radiculopathy and notes that the extent of his conservative measures is not documented.

ANALYSIS AND EXPLANATION OF THE DECISION INCLUDE CLINICAL BASIS, FINDINGS AND CONCLUSIONS USED TO SUPPORT THE DECISION:

Items in Dispute: Anterior Cervical Discectomy w/Fusion from C4 – C6

I would concur with the two previous reviewers in that there is insufficient clinical information to establish the

medical necessity for a 2 level anterior cervical discectomy and fusion from C4 – C6. The available medical records indicate that the patient is reported to have fallen down a flight of stairs on 05/27/04. He subsequently is reported to have sustained injuries to the neck and low back. The patient has undergone imaging studies which indicate discal pathology at C4-5 and C5-6. At C4-5 there is spondylotic annular bulge which contacts the ventral spinal cord more towards the left side. There is no cord signal abnormality. The spinal canal diameter is in the lower limits of normal. There is mild narrowing of the left neural foramen due to uncal arthropathy. The right neural foramen is reported to be patent. At C5-6 there is a spondylotic annular bulge effacing the anterior subarachnoid space resulting in cord flattening without cord signal abnormality. There is mild spinal canal stenosis right greater than left neural foraminal narrowing due to uncal arthropathy placing the exiting right C6 nerve root sleeve at risk for impingement. The patient has undergone EMG/NCV studies on two separate occasions. Both studies confirm the presence of a chronic right C6 radiculopathy. The record suggests that the patient has undergone conservative care consisting of oral medications and potentially chiropractic treatment. There are no records that document the patient has undergone physical therapy. It is further noted on the patient's most recent physical examination that the patient has abnormalities consistent with a right C6 radiculopathy. The submitted records do not indicate that the patient has undergone cervical epidural steroid injections in an effort to conservatively treat the right C6 radiculopathy.

The Official Disability Guidelines, 11th edition, The Work Loss Data Institute

Fusion, anterior cervical - Recommended as an option in combination with anterior cervical discectomy for approved indications, although current evidence is conflicting about the benefit of fusion in general. (See [Discectomy/laminectomy/laminoplasty](#).) Evidence is also conflicting as to whether autograft or allograft is preferable and/or what specific benefits are provided with fixation devices. Many patients have been found to have excellent outcomes while undergoing simple discectomy alone (for one- to two-level procedures), and have also been found to go on to develop spontaneous fusion after an anterior discectomy. ([Bertalanffy, 1988](#)) ([Savolainen, 1998](#)) ([Donaldson, 2002](#)) ([Rosenorn, 1983](#)) Cervical fusion for degenerative disease resulting in axial neck pain and no radiculopathy remains controversial and conservative therapy remains the choice if there is no evidence of instability. ([Bambakidis, 2005](#)) Conservative anterior cervical fusion techniques appear to be equally effective compared to techniques using allografts, plates or cages. ([Savolainen, 1998](#)) ([Dowd, 1999](#)) ([Colorado, 2001](#)) ([Fouyas-Cochrane, 2002](#)) ([Goffin, 2003](#)) Cervical fusion may demonstrate good results in appropriately chosen patients with cervical spondylosis and

axial neck pain. ([Wieser, 2007](#)) This evidence was substantiated in a recent Cochrane review that stated that hard evidence for the need for a fusion procedure after discectomy was lacking, as outlined below:

- (1) *Anterior cervical discectomy compared to anterior cervical discectomy with interbody fusion with a bone graft or substitute:* Three of the six randomized controlled studies discussed in the 2004 Cochrane review found no difference between the two techniques and/or that fusion was not necessary. The Cochrane review felt there was conflicting evidence of the relative effectiveness of either procedure. Overall it was noted that patients with discectomy only had shorter hospital stays, and shorter length of operation. There was moderate evidence that pain relief after five to six weeks was higher for the patients who had discectomy with fusion. Return to work was higher early on (five weeks) in the patients with discectomy with fusion, but there was no significant difference at ten weeks. ([Jacobs-Cochrane, 2004](#)) ([Abd-Alrahman, 1999](#)) ([Dowd, 1999](#)) ([Martins, 1976](#)) ([van den Bent, 1996](#)) ([Savolainen, 1998](#)) One disadvantage of fusion appears to be abnormal kinematic strain on adjacent spinal levels. ([Ragab, 2006](#)) ([Eck, 2002](#)) ([Matsunaga, 1999](#)) ([Katsuura, 2001](#)) The advantage of fusion appears to be a decreased rate of kyphosis in the operated segments. ([Yamamoto, 1991](#)) ([Abd-Alrahman, 1999](#))
- (2) *Fusion with autograft versus allograft:* The Cochrane review found limited evidence that the use of autograft provided better pain reduction than animal allograft. It also found that there was no difference between biocompatible osteoconductive polymer or autograft (limited evidence). ([Jacobs-Cochrane, 2004](#)) ([McConnell, 2003](#)) A problem with autograft is morbidity as related to the donor site including infection, prolonged drainage, hematomas, persistent pain and sensory loss. ([Younger, 1989](#)) ([Sawin, 1998](#)) ([Sasso, 2005](#)) Autograft is thought to increase fusion rates with less graft collapse. ([Deutsch, 2007](#)). See [Decompression, myelopathy](#).
- (3) *Fusion with autograft with plate fixation versus allograft with plate fixation, Single level:* A recent retrospective review of patients who received allograft with plate fixation versus autograft with plate fixation at a single level found fusion rates in 100% versus 90.3% respectively. This was not statistically significant. Satisfactory outcomes were noted in all non-union patients. ([Samartzis, 2005](#))
- (4) *Fusion with different types of autograft:* The Cochrane review did not find evidence that a vertebral body graft was superior to an iliac crest graft. ([McGuire, 1994](#))
- (5) *Fusion with autograft versus fusion with autograft and additional instrumentation:*
Plate Fixation: In single-level surgery there is limited evidence that there is any difference between the use of plates and fusion with autograft in terms of union rates. For two-level surgery, there was moderate evidence that there was more improvement in arm pain for patients treated with a plate than for those without a plate. Fusion rate is improved with plating in multi-level surgery. ([Wright, 2007](#)) See [Plate fixation, cervical spine surgery](#).
Cage: Donor site pain may be decreased with the use of a cage rather than a plate, but donor site pain was

not presented in a standardized manner. At two years pseudoarthrosis rate has been found to be lower in the fusion group (15%) versus the cage group (44%). A six-year follow-up of the same study group revealed no significant difference in outcome variables between the two treatment groups (both groups had pain relief). In the subgroup of patients with the cage who attained fusion, the overall outcome was better than with fusion alone. Patients treated with cage instrumentation have less segmental kyphosis and better-preserved disc height. This only appears to affect outcome in a positive way in cage patients that achieve fusion (versus cage patients with pseudoarthrosis). ([Poelsson, 2007](#)) ([Varuch, 2002](#)) ([Hacker 2000](#)) See also [Adjacent segment disease/degeneration](#) (fusion).

(6) *Fusion with allograft alone versus with allograft and additional instrumentation:*

Plate Fixation: Retrospective studies indicate high levels of pseudoarthrosis rates (as high as 20% for one-level and 50% for two-level procedures) using allograft alone. In a recent comparative retrospective study examining fusion rate with plating, successful fusion was achieved in 96% of single-level cases and 91% of two-level procedures. This could be compared to a previous retrospective study by the same authors of non-plated cases that achieved successful fusion in 90% of single-level procedures and 72% of two-level procedures. ([Kaiser, 2002](#)) ([Martin, 1999](#)) See [Plate fixation, cervical spine surgery](#).

Complications:

Collapse of the grafted bone and loss of cervical lordosis: collapse of grafted bone has been found to be less likely in plated groups for patients with multiple-level fusion. Plating has been found to maintain cervical lordosis in both multi-level and one-level procedures. ([Troyanovich, 2002](#)) ([Herrmann, 2004](#)) ([Katsuura, 1996](#)) The significance on outcome of kyphosis or loss of cervical lordosis in terms of prediction of clinical outcome remains under investigation. ([Poelsson, 2004](#)) ([Haden, 2005](#)) ([Poelsson, 2007](#)) ([Hwang, 2007](#))

Pseudoarthrosis: This is recognized as an etiology of continued cervical pain and unsatisfactory outcome. Treatment options include a revision anterior approach vs. a posterior approach. Regardless of approach, there is a high rate of continued moderate to severe pain even after solid fusion is achieved. ([Kuhns, 2005](#)) ([Mummaneni, 2004](#)) ([Coric, 1997](#))

Anterior versus posterior fusion: In a study based on 932,009 hospital discharges associated with cervical spine surgery, anterior fusions were shown to have a much lower rate of complications compared to posterior fusions, with the overall percent of cases with complications being 2.40% for anterior decompression, 3.44% for anterior fusion, and 10.49% for posterior fusion. ([Wang, 2007](#))

Predictors of outcome of ACDF: Predictors of good outcome include non-smoking, a pre-operative lower pain level, soft disc disease, disease in one level, greater segmental kyphosis pre-operatively, radicular pain without additional neck or lumbar pain, short duration of symptoms, younger age, no use of analgesics, and normal ratings on biopsychosocial tests such as the Distress and Risk Assessment Method (DRAM). Predictors of poor outcomes include non-specific neck pain, psychological distress, psychosomatic problems and poor general health. ([Poelsson, 2006](#)) ([Poelsson, 2003](#)) See [Plate fixation, cervical spine surgery](#). See also [Adjacent segment disease/degeneration](#) (fusion) & [Iliac crest donor-site pain treatment](#).

Note: FDA informed healthcare professionals of reports of life-threatening complications associated with recombinant human Bone Morphogenetic Protein (rhBMP) when used in the cervical spine for spinal fusion. The safety and effectiveness of rhBMP in the cervical spine have not been demonstrated, and these products are not approved for this use. These complications were associated with swelling of neck and throat tissue, which resulted in compression of the airway and/or neurological structures in the neck. ([FDA MedWatch, 2008](#))

A DESCRIPTION AND THE SOURCE OF THE SCREENING CRITERIA OR OTHER CLINICAL BASIS USED TO MAKE THE DECISION:

The Official Disability Guidelines, 11th edition, The Work Loss Data Institute