

AccuReview
An Independent Review Organization
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DATE OF REVIEW: March 29, 2012

IRO CASE #:

DESCRIPTION OF THE SERVICE OR SERVICES IN DISPUTE:

Arthrodesis, Anterior Interbody, Including Disc Space Preparation, Discectomy, Osteophytectomy and Decompression of Spinal Cord and/or Nerve Roots; Cervical Below C2 (Anterior cervical discectomy and fusion C5-6 and C6-7 with 3 to 5 day length of stay (22551, 22845, and 22851))

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

This physician is a Board Certified Orthopedic Surgeon with over 40 years of experience.

REVIEW OUTCOME:

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

- Upheld _____ (Agree)
 Overturned (Disagree)
 Partially Overturned (Agree in part/Disagree in part)

Provide a description of the review outcome that clearly states whether or not medical necessity exists for each of the health care services in dispute.

INFORMATION PROVIDED TO THE IRO FOR REVIEW:

05-12-11: Five Views Cervical Spine interpreted by DO
05-19-11: MRI of Left Shoulder interpreted by MD
05-31-11: Electrodiagnostic Study of the left upper extremity interpreted by MD
06-08-11: MRI of Cervical Spine w/o contrast performed at Imaging Center
07-19-11: Initial Consultation at Nacogdoches Neurosurgery by MD
08-22-11: Office Visit by MD
08-25-11: Operative Report by MD
09-16-11: Peer Review by with MRIOA MD
12-21-11: Office Note by MD
01-24-12: UR performed by DO
01-26-12: UR performed by MD
02-27-12: Progress Notes by MD

PATIENT CLINICAL HISTORY [SUMMARY]:

This male was injured on xx/xx/xx while working on a he was pulling pipe or drill stem and had a sudden onset of left neck, left shoulder, left elbow pain, and left hand numbness. The claimant had several weeks of physical therapy with no improvement. In June/July of 2011, the claimant also fell off his porch at home and fractured his clavicle, which had to be surgically repaired. He also fractured his scapula at that time.

05-12-11: Five Views Cervical Spine interpreted by DO. Impression: Cervical muscle spasm. Probable, old C6 avulsion.

05-19-11: MRI of Left Shoulder interpreted by MD. Impression: 1. Tear of the rotator cuff is not identified. 2. Subtle increase in signal at the rotator cuff and subtle thickening of the rotator cuff as well as minimal fluid at level of subacromial/subdeltoid bursa, especially anteriorly. 3. The findings are subtle but suggestive of rotator cuff tendinopathy. As well, there is some signal at the rotator cuff which is presumably the result of "magic angle artifact".

05-31-11: Electrodiagnostic Study of the left upper extremity interpreted by MD. Impression: 1. Electrodiagnostic findings diagnostic of median neuropathy at the left wrist. (Left carpal tunnel syndrome, which is moderate to severe). 2. No findings diagnostic of left ulnar neuropathy at the elbow or the wrist or of left thoracic outlet syndrome. 3. No findings specifically diagnostic of left cervical nerve root injury/radiculopathy. The findings do not preclude nerve root irritation from disk protrusion or bony spurring without nerve root damage. Clinical correlation is recommended. Cervical MRI may be beneficial in looking for a structural lesion.

06-08-11: MRI of Cervical Spine w/o contrast performed at Imaging Center. Impression: 1. Mild canal stenosis at T3-4 on the basis of left paramedian disk herniation. 2. At C5-6, there is broad-based right paramedian/posterior disk bulge/herniation with relatively minimal canal and neural foraminal narrowing at

that level as discussed above. There is leftward neural foraminal narrowing at C6-7 which is at least mild in degree.

07-19-11: Initial Consultation by MD. It was reported the claimant was complaining of pain in his neck, shoulder, elbow and hand that was severe and debilitating. He constantly uses Icy Hot and other creams on his elbow. The claimant was currently taking Tylenol #3 which gave him some relief, gabapentin which gave him no relief, naproxen which gave him no relief, meloxicam which gave him no relief, and Vicodin which did give him some relief. On physical examination of his neck, he had increased pain with axial loading and lateral flexion to the left. The pain decreased with lateral flexion to the right as well as cervical traction. His left shoulder was swollen and bruised. Dr. tried to test for a winged scapula by having the claimant push against the wall, but there was so much swelling around the shoulder that he was unable to properly assess the left shoulder. His right arm strength was full and he was unable to test the left arm strength because of the fresh clavicle surgery and swelling in his shoulder. The left hand appeared to be a little weak over the carpal tunnel. He had a positive Tinel's sign and positive Phalen's sign on the left. The claimant did not have any pain to palpation of the ulnar nerve on the left. The claimant had tenderness of the tendon lateral to his elbow that was very consistent with tendonitis. He had positive Hoffmann's sign bilaterally. Deep tendon reflexes were ¼ at the brachioradialis bilaterally. Dr. noted the claimant had a CT scan of the cervical spine which showed a C5-6 posterior disk and osteophyte complex asymmetric to the right of midline with a right-sided paramedian posterior broad-based disk bulge herniation causing some mild canal narrowing, although only minimal, with some neural foraminal narrowing. At C6-7 uncovertebral hypertrophy to the left of midline with a little bit of left neural foraminal narrowing that appeared to be mild. At T3-4, he had some mild canal stenosis with a left paramedian disk herniation. Plan: 1. Physical therapy with traction for his neck. Therapy should consist of at least 6 weeks/3 times weekly specifically with cervical traction. 2. Referral to an orthopedic surgeon for the left elbow tendonitis. 3. Recommended decompression of the carpal tunnel with surgery.

08-22-11: Office Visit by MD. It was reported briefly that the claimant was still complaining of severe pain and numbness in his hand and arm in the C5-6, C6-7 nerve distribution. Dr. recommended a carpal tunnel release on the left and stated that since the claimant failed physical therapy and actually made him worse than better, that he would need a fusion at C5-6, C6-7.

08-25-11: Operative Report by, MD. Postoperative diagnosis: Left carpal tunnel syndrome. Procedure: Left carpal tunnel release.

09-16-11: Peer Review by with MRIoA MD. *1. Is the request for ACDF t o C5-6 and C6-7 with bone and plate including #63075, #63076, #22554, #22585, #22845, and #22851 x 3 medically necessary and appropriate?* No. Based on the clinical information submitted for this review and using the evidence-based, peer-reviewed guidelines, the request is not medically necessary. Radiculopathy

has not been objectively identified on either MRI or electrodiagnostic studies. The proposed fusion involves plate fixation. Therefore, the proposed request is not medically necessary at this time.

12-21-11: Office Note by MD that just simply states the claimant clearly wants to have surgery for the cervical herniated disk and that it has been denied by Worker's Compensation.

01-24-12: UR performed by DO. Rationale: In this case, there are no positive physical findings that correlate with the two levels being requested. The EMG is unremarkable regarding any cervical radiculopathy. Therefore, the request for the surgery is not medically necessary and an adverse determination is recommended. Regarding the hospital length of stay, the request for 3 to 5 days is in excess of the guidelines. According to the Official Disability Guidelines, for anterior cervical fusion, median stay is 1 day and mean is 2.2 days.

01-26-12: UR performed by MD. Rationale: Based on the Official Disability Guidelines, the patient may be a candidate for an anterior cervical discectomy and fusion if they have a history consistent with a radiculopathy, objective findings on examination, and radiographic findings such as MRI findings which correlate with the history and the examination. That is not the case here. First, the history is not clear at all that this patient has a radiculopathy. There is a history from 07/18/11 that the patient has left neck pain, left shoulder pain, and left elbow pain. It appears that the pain is in the joints. It is not clear that this patient has radicular pain i.e. pain radiating down the arm into the arm and forearm. It is not clear even if the patient has left arm pain and the exact distribution. There was no clear cut detailed history. In addition, there is an incomplete neurological examination. There was no examination in the past six months that detailed a complete motor examination or a complete sensory examination. There were no objective findings of a radiculopathy documented. Furthermore and very importantly, there was no nerve root compression on the MRI. If there was no nerve root compression on the MRI, there was nothing to decompress. This patient has very mild canal narrowing at C5-C6. That would not cause radicular pain. There was also a very mild narrowing of the left C6-C7 foramen. This would not cause nerve root compression and there was no nerve root compression documented. For the above reasons, the surgery is not indicated and the patient is not a surgical candidate. Medical necessity has not been established.

02-27-12: Progress Notes by MD. It was reported that the claimant was having increased left arm pain and left elbow pain. His overall pain level was a 6 on a scale of 0-10. Nothing was reported to make it better, or worse. It was also reported that the claimant had gained over 30 pounds and was now also having back pain. The claimant was reported to have gotten a lawyer to help with his claim. On physical examination, the neck was supple with full range of motion, but with pain when turning to the left. Positive L'hermitte sign and increased pain with cervical traction. When testing strength, Deltoid was 5/5 bilaterally, Biceps was 5/5 bilaterally, Triceps was 5/5 bilaterally, and Hand Grip was 5/5 bilaterally.

Sensation was intact to light touch, pinprick and proprioception in the upper and lower extremities bilaterally. DTRs were ¼ bilaterally in the Biceps and Triceps. It was clearly noted he had no weakness or sensory loss, just pain in the neck radiating into the arm. Assessment: 1. Cervical radiculopathy. 2. Spinal Instability. Dr. noted: Persistent cervical radiculopathy, despite less than overwhelming MRI scan. From my exam where this patient has increased pain with cervical traction, he most likely has some element of cervical instability, most likely a torn annulus fibrosis at the C5/6 and C6/7 levels. The majority of patients in my clinic that have degenerative spine disease have decreased pain with manual traction, and they improve with physical therapy. A torn annulus fibrosis can be extremely painful as the sinovertebral nerve innervates the outer third of the annulus fibrosis, and traction is applied to that nerve with any movement of the neck. It is almost impossible to show a torn annulus in the cervical spine with anything less than a provocative test such as a discogram. An annular tear usually does not show up on a MRI, and will not show a positive response on an EMG. It usually will not show subluxation of any appreciable amount with flexion/extension films either. Plan: Refill Norco and C5/6 and C6/7 ACDF was recommended. If the insurance insists upon more objective evidence of injury, than a cervical discogram with Dr. was recommended.

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

The previous adverse determinations are upheld. The request for Arthrodesis, Anterior Interbody, Including Disc Space Preparation, Discectomy, Osteophyctomy and Decompression of Spinal Cord and/or Nerve Roots; Cervical Below C2 (Anterior cervical discectomy and fusion C5-6 and C6-7 with 3 to 5 day length of stay (22551, 22845, and 22851)) clearly does not meet ODG guidelines. There were no abnormal neurological findings on clinical exam, nor abnormal MRI findings. There was no thorough neurological exam documented that showed objective evidence of radiculopathy. The EMG showed Carpal Tunnel Syndrome only. Although traction is reported to make the pain worse, it is uncommon in nerve entrapment and is not an indication for surgery. As medical necessity has not been establish for the Anterior cervical discectomy and fusion at C5-6 and C6-7, the length of hospital stay is irrelevant. However, the request LOS would be in excess according to ODG which indicates for an anterior cervical fusion, median stay is 1 day and mean is 2.2 days.

ODG:

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. ([Trojanovich, 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. ([Peolsson, 2004](#)) ([Haden, 2005](#)) ([Peolsson, 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, gainful employment, higher preoperative NDI 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, litigation and workers' compensation. ([Anderson, 2009](#)) ([Peolsson, 2006](#)) ([Peolsson, 2003](#)) Patients who smoke have compromised fusion outcomes. ([Peolsson, 2008](#))

See [Plate fixation, cervical spine surgery](#). See also [Adjacent segment disease/degeneration](#) (fusion) & [Iliac crest donor-site pain treatment](#).

Use of Bone-morphogenetic protein (BMP): 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](#))

Bone-morphogenetic protein was used in approximately 25% of all spinal fusions nationally in 2006, with use associated with more frequent complications for anterior cervical fusions. No differences were seen for lumbar, thoracic, or posterior cervical procedures, but the use of BMP in anterior cervical fusion procedures was associated with a higher rate of complication occurrence (7.09% with BMP vs 4.68% without BMP) with the primary increases seen in wound-related complications (1.22% with vs 0.65% without) and dysphagia or hoarseness (4.35% with vs 2.45% without). ([Cahill-JAMA, 2009](#))

For hospital LOS after admission criteria are met, see [Hospital length of stay](#) (LOS).

ODG Indications for Surgery™ -- Discectomy/laminectomy (excluding fractures):

Washington State has published guidelines for cervical surgery for the entrapment of a single nerve root and/or multiple nerve roots. ([Washington, 2004](#)) Their recommendations require the presence of all of the following criteria prior to surgery for each nerve root that has been planned for intervention (but ODG does not agree with the EMG requirement):

A. There must be evidence of radicular pain and sensory symptoms in a cervical distribution that correlate with the involved cervical level or presence of a positive Spurling test.

B. There should be evidence of motor deficit or reflex changes or positive EMG findings that correlate with the cervical level. *Note:* Despite what the Washington State guidelines say, ODG recommends that EMG is optional if there is other evidence of motor deficit or reflex changes. EMG is useful in cases where clinical findings are unclear, there is a discrepancy in imaging, or to identify other etiologies of symptoms such as metabolic (diabetes/thyroid) or peripheral pathology (such as carpal tunnel). For more information, see [EMG](#).

C. An abnormal imaging (CT/myelogram and/or MRI) study must show positive findings that correlate with nerve root involvement that is found with the previous objective physical and/or diagnostic findings. If there is no evidence of sensory, motor, reflex or EMG changes, confirmatory selective nerve root blocks may be substituted if these blocks correlate with the imaging study. The block should produce pain in the abnormal nerve root and provide at least 75% pain relief for the duration of the local anesthetic.

D. Etiologies of pain such as metabolic sources (diabetes/thyroid disease) non-structural radiculopathies (inflammatory, malignant or motor neuron disease), and/or peripheral sources (carpal tunnel syndrome) should be addressed prior to cervical surgical procedures.

E. There must be evidence that the patient has received and failed at least a 6-8 week trial of conservative care.

For hospital LOS after admission criteria are met, see [Hospital length of stay](#) (LOS).

ODG hospital length of stay (LOS) guidelines:

Discectomy/ Corpectomy (*icd 80.51 - Excision of intervertebral disc*)

Actual data -- median 1 day; mean 2.1 days (± 0.0); discharges 109,057; charges (mean) \$26,219

Best practice target (no complications) -- 1 day

Laminectomy (*icd 03.09 - Laminectomy/laminotomy for decompression of spinal nerve root*)

Actual data -- median 2 days; mean 3.5 days (± 0.1); discharges 100,600; charges (mean) \$34,978

Best practice target (no complications) -- 1 day

Cervical Fusion, Anterior (*81.02 -- Other cervical fusion, anterior technique*)

Actual data -- median 1 day; mean 2.2 days (± 0.1); discharges 161,761; charges (mean) \$50,653

Best practice target (no complications) -- 1 days

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

- ACOEM- AMERICAN COLLEGE OF OCCUPATIONAL & ENVIRONMENTAL MEDICINE UM KNOWLEDGEBASE**
- AHCPR- AGENCY FOR HEALTHCARE RESEARCH & QUALITY GUIDELINES**
- DWC- DIVISION OF WORKERS COMPENSATION POLICIES OR GUIDELINES**
- EUROPEAN GUIDELINES FOR MANAGEMENT OF CHRONIC LOW BACK PAIN**
- INTERQUAL CRITERIA**
- MEDICAL JUDGEMENT, CLINICAL EXPERIENCE AND EXPERTISE IN ACCORDANCE WITH ACCEPTED MEDICAL STANDARDS**
- MERCY CENTER CONSENSUS CONFERENCE GUIDELINES**
- MILLIMAN CARE GUIDELINES**
- ODG- OFFICIAL DISABILITY GUIDELINES & TREATMENT GUIDELINES**
- PRESSLEY REED, THE MEDICAL DISABILITY ADVISOR**
- TEXAS GUIDELINES FOR CHIROPRACTIC QUALITY ASSURANCE & PRACTICE PARAMETERS**
- TEXAS TACADA GUIDELINES**
- TMF SCREENING CRITERIA MANUAL**
- PEER REVIEWED NATIONALLY ACCEPTED MEDICAL LITERATURE (PROVIDE A DESCRIPTION)**
- OTHER EVIDENCE BASED, SCIENTIFICALLY VALID, OUTCOME FOCUSED GUIDELINES (PROVIDE A DESCRIPTION)**