

Notice of Independent Review Decision

**June 21, 2013**

**IRO CASE #:**

**DESCRIPTION OF THE SERVICE OR SERVICES IN DISPUTE:**

Cervical ACDF C5-6, C6-7 Spinal Instru Allograph Tongs 22551 22552 22845  
20931

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

The physician performing this review is Board Certified, American Board of Orthopedic Surgery. The physician has been in practice since 1998 and is licensed in Texas, Oklahoma, Minnesota and South Dakota.

**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 medical necessity exists for each of the health care services in dispute.

*Upon independent review, I find the previous adverse determination should be overturned.*

**INFORMATION PROVIDED TO THE IRO FOR REVIEW:**

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Records Received: 20 page fax 06/05/13 Texas Department of Insurance IRO request, 283 pages of documents received via fax on 05/22/13 URA response to disputed services including administrative and medical. 87 pages of documents received via fax on 06/05/13 Provider response to disputed services including administrative and medical. Dates of documents range from (DOI) to.

## **PATIENT CLINICAL HISTORY [SUMMARY]:**

is a now xx female with complaints of neck pain along with pain radiating into the right shoulder and arm. She reportedly rates her pain as high as an 8 on a 0 to 10 scale with numbness and tingling in both arms and weakness in her arms. It is obviously a very complicated case since the original injury on 05/26/09. According to the medical records, the patient's symptoms have progressively worsened with time. Her imaging studies show neural foraminal and spinal cord compression, and additionally, an EMG has shown radiculopathy, predominantly in the C6 distribution. Up until recently, the patient has not demonstrated motor weakness. However, more recent clinical examinations reveal motor weakness in both the C6 and C7 root distributions.

Medication management has been performed throughout the symptomatic time frame, including muscle relaxants, anti-inflammatory medications, and narcotic pain relievers.

Based on review of the medical records, it is apparent that the patient is suffering from cervical radiculopathy, now presenting with progressive motor weakness and EMG and imaging studies that corroborate the clinical picture.

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

Upon independent review, I find the previous adverse determination should be overturned. Recent examination findings reveal evidence of radiculopathy as evidenced by motor weakness of both the biceps and triceps on the most symptomatic left side. This is correlated with the previous imaging studies as well as the EMG evaluation performed by Dr. on 04/15/13. Imaging studies have shown previous evidence for both spinal cord and nerve compression. Previous evidence of motor weakness was lacking and appears to be the primary reason for previous adverse determination. With the presence now of correlative radicular findings, it is felt the patient's condition meets ODG guidelines for diskectomy and fusion.

The patient appears to meet all the above criteria for diskectomy, particularly in light of the more recently found motor weakness. Additionally, the guidelines

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include anterior cervical fusion as an option in combination with the anterior cervical discectomy for radiculopathy.

ODG -TWC

*ODG Treatment*

*Integrated Treatment/Disability Duration Guidelines*

**Neck and Upper Back (Acute & Chronic)**

<p>Discectomy-laminectomy-laminoplasty</p>	<p>Recommended as an option if there is a radiographically demonstrated abnormality to support clinical findings consistent with one of the following: (1) Progression of myelopathy or focal motor deficit; (2) Intractable radicular pain in the presence of documented clinical and radiographic findings; or (3) Presence of spinal instability when performed in conjunction with stabilization. (See <a href="#">Fusion, anterior cervical.</a>) Surgery is not recommended for disc herniation in a patient with non-specific symptoms and no physical signs. In addition, although surgery for spondylosis and radiculopathy may offer some short term benefit, non-operative treatment with PT can provide similar improvement in pain and function at 12-16 months for patients without progressive neurologic deficits or instability. (<a href="#">Persson, 1997</a>) The American Academy of Orthopaedic Surgeons has recommended that an anterior approach is appropriate when there is evidence of radiculopathy, and/or when there is evidence of central location and there is any degree of segmental kyphosis. A posterior approach has been suggested by the same group when there is evidence of lateral soft disc herniations with predominate arm pain and for caudal lesions in large, short-necked individuals. (<a href="#">Albert, 1999</a>) The overall goals of cervical surgery should be decompression, restoration of alignment, and stability. (<a href="#">Jacobs-Cochrane, 2004</a>) (<a href="#">Dowd, 1999</a>) (<a href="#">Colorado, 2001</a>) In terms of posterior procedures, there does not appear to be sufficient evidence to support the use of laminoplasty versus laminectomy based on outcomes or post-operative morbidity. Research has indicated that as many as 60% of patients who received laminoplasty had posterior neck and shoulder girdle pain post-operatively (versus 25% in the laminectomy group). (<a href="#">Hosono, 1996</a>) (<a href="#">Heller, 2001</a>) Some authors continue to prefer laminoplasty to anterior spinal decompression and fusion (for myelopathy due to disc herniation) as they feel the risk of chronic neck pain is less troublesome than the risk of bone graft complications and/or adjacent spondylosis that can be found with the fusion procedure. (<a href="#">Sakaura, 2005</a>) It is not clear from the evidence that long-term outcomes are improved with the surgical treatment of cervical radiculopathy compared with nonoperative measures. However, relatively rapid and substantial relief of pain and impairment in the short term (6-12 weeks after surgery) after surgical treatment appears to have been reliably achieved. (<a href="#">Haldeman, 2008</a>)</p> <p><i>Late deterioration:</i> Has been found with both anterior and posterior approaches. (<a href="#">Rao, 2006</a>) With the anterior approach, recurrent symptoms have been found secondary to deterioration of the adjacent segment, inadequate decompression at the time of the initial surgery, pseudoarthrosis, graft or implant failure, and/or continued growth of osteophytes. With the posterior approach, recurrent symptoms have been found secondary to development of kyphosis, instability, spread of ossification of the posterior longitudinal ligament, and development of stenosis at new levels. In a study based on 932,009 hospital discharges associated with cervical spine surgery,</p>
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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](#))

*Pre-operative evaluation:*

*MRI:* This is a very sensitive test for radicular disorders but has a lower negative predictive value. Disc bulges have been found in one study in 52% of subjects and protrusions in 27% without back pain. At age 60 years, 93% of subjects in one study had disc degeneration/bulges on MRI. ([Boden, 1990](#))

*EMG:* Optional for cervical surgery. See [Electromyography](#).

## **ODG Indications for Surgery<sup>™</sup> -- 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

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	<p>week trial of conservative care.</p> <p>For hospital LOS after admission criteria are met, see <a href="#">Hospital length of stay</a> (LOS).</p>
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<p>Fusion, anterior cervical</p>	<p>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 <a href="#">Discectomy/laminectomy/laminoplasty</a>.) 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. (<a href="#">Bertalanffy, 1988</a>) (<a href="#">Savolainen, 1998</a>) (<a href="#">Donaldson, 2002</a>) (<a href="#">Rosenorn, 1983</a>) 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. (<a href="#">Bambakidis, 2005</a>) Conservative anterior cervical fusion techniques appear to be equally effective compared to techniques using allografts, plates or cages. (<a href="#">Savolainen, 1998</a>) (<a href="#">Dowd, 1999</a>) (<a href="#">Colorado, 2001</a>) (<a href="#">Fouyas-Cochrane, 2002</a>) (<a href="#">Goffin, 2003</a>) Cervical fusion may demonstrate good results in appropriately chosen patients with cervical spondylosis and axial neck pain. (<a href="#">Wieser, 2007</a>) 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:</p> <p><i>(1) Anterior cervical discectomy compared to anterior cervical discectomy with interbody fusion with a bone graft or substitute:</i></p> <p>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. (<a href="#">Jacobs-Cochrane, 2004</a>) (<a href="#">Abd-Alrahman, 1999</a>) (<a href="#">Dowd, 1999</a>) (<a href="#">Martins, 1976</a>) (<a href="#">van den Bent, 1996</a>) (<a href="#">Savolainen, 1998</a>) One disadvantage of fusion appears to be abnormal kinematic strain on adjacent spinal levels. (<a href="#">Ragab, 2006</a>) (<a href="#">Eck, 2002</a>) (<a href="#">Matsunaga, 1999</a>) (<a href="#">Katsuura, 2001</a>) The advantage of fusion appears to be a decreased rate of</p>
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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*

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## *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](#)) ([Poelsson, 2007](#)) ([Hwang, 2007](#)) See also [Laryngoscopy](#) (screening for recurrent laryngeal nerve injury prior to revision ACDF).

*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

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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).

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## 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)