

Anterior Cervical Disc Arthroplasty (ACDA) Pre-Operative Guide

What is Anterior Cervical Disc Arthroplasty (ACDA)?

Anterior cervical disc arthroplasty, also called cervical disc replacement, is a surgery performed through the front of your neck to relieve pressure on nerves in your cervical spine (neck). During the procedure, your surgeon will remove a damaged disc that is pressing on your spinal cord or nerve roots, and then replace it with an artificial disc that preserves motion at that level.[\[1\]](#)[\[2\]](#)

Unlike fusion surgery (ACDF), which eliminates motion by joining the bones together, disc replacement is designed to maintain the natural movement of your neck while relieving your symptoms.[\[3\]](#)

Why Do You Need This Surgery?

You may need cervical disc arthroplasty if you have:

- **Cervical radiculopathy** - pain, numbness, or weakness that travels down your arm because a nerve root is being pinched
- **Cervical myelopathy** - problems with balance, coordination, or hand function because your spinal cord is being compressed
- **Degenerative disc disease** - wear and tear of the discs in your neck causing chronic pain[\[2\]](#)

These conditions occur when discs in your neck break down over time, bone spurs develop, or discs bulge out and press on nerves or the spinal cord. When non-surgical treatments like physical therapy, medications, and injections don't provide enough relief, surgery may be recommended.

What Happens During the Surgery?

Your surgeon will make a small incision on the front or side of your neck. Through this approach, they will:

1. Carefully move aside your windpipe, esophagus (swallowing tube), and blood vessels to reach your spine
2. Remove the damaged disc that is pressing on your nerves
3. Prepare the bone surfaces above and below the disc space

4. Insert an artificial disc designed to allow motion while maintaining proper spacing between your vertebrae[\[1\]](#)

The artificial disc is typically made of metal and plastic components designed to mimic the natural movement of your cervical spine.

What Are the Benefits of Cervical Disc Arthroplasty?

Most patients experience significant improvement after disc replacement:

Clinical Outcomes:

- **Higher success rates:** Cervical disc arthroplasty shows higher rates of overall success and neurological success compared to fusion surgery[\[3\]\[4\]](#)
- **Pain relief:** Significant improvement in both neck and arm pain, with better pain scores than fusion at long-term follow-up[\[4\]\[5\]](#)
- **Improved function:** Notable improvement in neck disability and ability to perform daily activities[\[4\]\[5\]](#)
- **Patient satisfaction:** Higher rates of patient satisfaction and willingness to recommend the surgery compared to fusion[\[4\]](#)

Long-Term Advantages:

- **Motion preservation:** The artificial disc maintains movement at the operated level, with average range of motion of 7-10 degrees preserved for up to 20 years[\[3\]\[6\]](#)
- **Lower reoperation rates:** Significantly fewer secondary surgeries compared to fusion (3.6-4.7% vs. 7-9.4% at 10 years)[\[5\]\[7\]](#)
- **Reduced adjacent segment disease:** Lower rates of problems developing at the discs above or below your surgery compared to fusion[\[3\]\[4\]\[5\]\[6\]](#)
- **Fewer adverse events:** Significantly fewer overall adverse events at 10-year follow-up compared to fusion[\[5\]](#)

Recovery:

- **Return to driving:** Most patients return to driving within 12 days[\[8\]\[9\]](#)
- **Return to work:** Most patients return to work within 14 days[\[8\]\[9\]](#)

- **Return to sports:** Patients are able to return to their previous athletic activities, including professional and semi-professional sports[\[10\]](#)
- **Faster improvement:** Patients may achieve meaningful improvement in physical function faster than with fusion[\[11\]](#)

What Are the Risks and Complications?

Like all surgeries, cervical disc arthroplasty carries some risks. Overall, disc replacement has **fewer adverse events than fusion surgery** at long-term follow-up.[\[4\]](#)[\[5\]](#)

Common complications (similar to fusion surgery):

- **Difficulty swallowing (dysphagia):** Occurs in approximately 3-9% of patients. This usually improves within a few weeks.[\[12\]](#)[\[13\]](#)
- **Hoarseness or voice changes (dysphonia):** Occurs in approximately 0-3% of patients due to temporary irritation of the nerve that controls your vocal cords. This typically resolves on its own.[\[12\]](#)[\[13\]](#)
- **Neck pain:** Persistent or recurrent neck pain is reported as a reason for revision in approximately 15-24% of cases requiring reoperation[\[14\]](#)

Specific to disc replacement:

- **Heterotopic ossification (bone formation around the implant):** This is the most common long-term finding after disc replacement
 - Overall incidence: 50-70% at 5-10 years, increasing to 70-92% at 10 years[\[15\]](#)[\[16\]](#)[\[17\]](#)[\[18\]](#)
 - Severe ossification (limiting motion): 22-37% at 10 years[\[16\]](#)[\[19\]](#)
 - **Important:** Even when bone forms around the implant, most patients maintain good motion and clinical outcomes are not negatively affected[\[15\]](#)[\[17\]](#)[\[18\]](#)
 - Male sex is a risk factor for developing heterotopic ossification[\[18\]](#)
 - Taking Celebrex (celecoxib) after surgery may help reduce the risk of bone formation
- **Implant migration (movement):** Occurs in approximately 21-26% of revision cases, though the overall revision rate is low[\[14\]](#)
- **Device-related complications:** Vary by implant type but overall revision rates remain low at 2-4%[\[9\]](#)[\[14\]](#)

Less common complications (occur in less than 1-2% of patients):

- Worsening of nerve symptoms
- Spinal fluid leak
- Infection
- Esophageal injury
- Vascular injury
- Implant malposition or loosening[\[12\]](#)[\[15\]](#)

Very rare complications:

- Death (approximately 0.1% or 1 in 1,000 patients)

Long-term considerations:

- **Adjacent segment disease:** Occurs at significantly lower rates than fusion (approximately 7% at mid-term follow-up)[\[4\]](#)[\[7\]](#)
- **Need for revision surgery:** Overall, about 2-4% of patients require another surgery at some point, which is lower than fusion[\[5\]](#)[\[7\]](#)[\[9\]](#)

Important factors that may affect your candidacy:

Cervical disc arthroplasty is best suited for patients with:

- One- or two-level disc disease (most evidence supports this)[\[2\]](#)
- Adequate bone quality
- No significant spinal instability
- No severe facet joint arthritis
- Preserved disc height (at least 50% remaining)[\[20\]](#)
- No active infection

Your surgeon will determine if you are a good candidate based on your specific condition.[\[2\]](#)[\[21\]](#)

What to Expect for Recovery

Hospital stay: Most patients go home the same day or stay one night in the hospital.

Recovery timeline:

- **First 2-6 weeks:** Most rapid improvement in pain and function
- **6 weeks to 3 months:** Continued gradual improvement
- **After 3-4 months:** Symptoms typically reach a stable level

Activity restrictions: You'll have some temporary restrictions on lifting, bending, and twisting to protect your healing while the implant settles into position.

Medication: Your surgeon may prescribe Celebrex (celecoxib) to help reduce the risk of bone formation around the implant. Take this exactly as prescribed.

Physical therapy: Gentle range of motion exercises starting early after surgery are safe and encouraged.

What You Can Do to Improve Your Outcome

- **Stop smoking:** Smoking can increase complications and affect healing
- **Follow activity restrictions:** This protects your implant while it settles into position
- **Take medications as prescribed:** Especially Celebrex if prescribed to reduce bone formation
- **Attend physical therapy:** If recommended by your surgeon
- **Keep all follow-up appointments:** So your surgeon can monitor your healing and implant function

Final Thoughts

Cervical disc arthroplasty is a well-established, safe, and effective procedure for treating cervical spine problems. The evidence shows that disc replacement provides **equal or superior outcomes compared to fusion**, with the added benefits of motion preservation, lower rates of adjacent segment disease, and fewer reoperations. While heterotopic ossification (bone formation) is common, it typically does not affect clinical outcomes. Your surgical team will work with you to minimize risks and optimize your recovery.

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