

# Understanding Cervical Disc Replacement

## A Comprehensive Patient Guide

### What is Cervical Disc Replacement?

Cervical disc replacement, also known as **cervical arthroplasty**, is a motion-preserving surgical procedure designed to treat degenerative disc disease in the neck. Unlike traditional fusion surgery that eliminates motion between vertebrae, disc replacement maintains your natural neck movement whilst relieving pain and neurological symptoms.

Your cervical spine consists of seven vertebrae (C1-C7) in your neck, with intervertebral discs acting as shock absorbers between vertebrae C2 through C7. When these discs degenerate due to age, wear, or injury, they can cause significant pain and potentially compress nearby nerves or the spinal cord.

### Key Benefits of Cervical Disc Replacement:

- Preserves natural neck motion and flexibility
- Reduces adjacent segment degeneration by more than 50%
- Faster recovery compared to fusion surgery
- Superior long-term patient satisfaction rates (80-90%)
- Maintains normal spinal biomechanics
- Reduced need for re-operations compared to fusion

### Am I a Candidate for Cervical Disc Replacement?

#### Ideal Candidates Include Patients With:

- Chronic neck pain, cervical radiculopathy, or myelopathy
- Degenerative disc disease causing intractable symptoms
- Failed conservative treatment including rest, medications, physical therapy, and steroid injections
- Preserved disc height (typically  $\geq 3$ -4mm)
- Maintained motion on flexion-extension X-rays
- Good bone density (no significant osteoporosis)
- Realistic expectations about surgical outcomes

#### You May NOT Be Suitable If You Have:

- Age under 16 years (skeletally immature)
- Significant osteoporosis (reduced bone density)
- Active spinal infection or advanced malignancy
- Abnormal motion ( $>3.5$ mm translation) or instability on flexion-extension X-rays
- Severe facet joint degeneration with loss of mobility
- Significantly reduced disc height ( $<3$ -4mm)
- Kyphotic or scoliotic spine deformity
- Neck pain primarily due to facet arthropathy

- Known allergy to implant materials

### **Age Considerations:**

While age alone doesn't disqualify you, the procedure is typically recommended for younger patients who will benefit most from long-term motion preservation.

## **What to Expect: The Evaluation Process**

### **Your Initial Consultation Will Include:**

1. **Medical History Review:** Detailed discussion of your symptoms, previous treatments, and medical conditions
2. **Physical Examination:** Comprehensive neurological testing to assess strength, sensation, and reflexes
3. **Imaging Review:** Analysis of your MRI with oblique views, CT scans, and flexion-extension X-rays
4. **Treatment Discussion:** Exploration of surgical and non-surgical options

### **Advanced Imaging Requirements:**

- **MRI with 45° oblique views:** Essential for visualising disc anatomy, nerve roots, and spinal cord
- **Flexion-extension X-rays:** Required to estimate mobility of the affected segment
- **CT scans:** When detailed bone anatomy evaluation is needed
- **Additional studies:** EMG, nerve conduction tests, or diagnostic nerve blocks may be needed if multiple levels are involved

### **Conservative Treatment Prerequisites:**

Before considering surgery, you must demonstrate failure of comprehensive non-surgical management including:

- Rest and activity modification
- Anti-inflammatory medications and pain management
- Physical therapy and gentle exercises
- Spinal nerve root injections with local anaesthetic or steroids when appropriate

This ensures surgery is reserved for patients who truly need surgical intervention.

## **Understanding the Surgical Procedure**

### **Preparation:**

- Surgery is performed under general anaesthesia
- You'll be positioned lying on your back with neck in neutral position
- The procedure typically takes 1 hour for uncomplicated cases
- Sequential compression stockings are fitted to prevent blood clots

### **The Anterior Cervical Approach:**

1. **Incision:** Small incision made slightly off midline in natural neck crease
2. **Exposure:** Careful dissection between neck structures without cutting muscles
3. **Level confirmation:** X-ray fluoroscopy to confirm correct disc level
4. **Discectomy:** Complete removal of damaged disc material using specialised instruments
5. **Decompression:** Relief of pressure on nerves and spinal cord, removal of bone spurs if needed
6. **Implant placement:** Insertion of appropriately sized artificial disc prosthesis
7. **Closure:** Wound closure with absorbable sutures and sterile dressing

### **Types of Artificial Cervical Discs Available:**

Modern cervical disc implants are available in variable shapes, sizes, heights, and articulation types:

- **Metal-on-polyethylene designs:** Such as ProDisc-C, Discover, Secure-C
- **Metal-on-metal devices:** Including Prestige ST and LP models
- **Elastic/viscoelastic implants:** Such as M6, Freedom, and CP-ESP designs that more closely mimic natural disc properties

The choice of implant depends on your specific anatomy, bone quality, and surgeon preference based on clinical evidence.

### **Recovery and What to Expect**

#### **Hospital Stay:**

- Typically 1-2 nights for observation
- Neurological monitoring to ensure preserved function
- Pain management with multimodal approach
- Early mobilisation encouraged within hours of surgery
- No neck collar usually required

#### **First 6 Weeks (Early Recovery):**

- Avoid lifting weights over 2-3kg initially
- Gradual return to light activities
- Driving when off narcotic medications and comfortable with neck movement
- Return to light work typically within a few weeks
- Physical therapy may begin the day after surgery

#### **6 Weeks to 3 Months (Progressive Recovery):**

- Most activity restrictions lifted after 6-week evaluation
- Progressive strengthening and exercise programs
- Return to more demanding activities varies by individual
- Continued improvement in symptoms

#### **Long-term Recovery (3+ Months):**

- Continued improvement may occur over several months
- Regular follow-up appointments to monitor progress
- Return to normal activities in most patients
- Neuropathic and myelopathic symptoms improve with time

#### **Expected Outcomes:**

- 80-90% of patients experience significant improvement
- Patient satisfaction rates consistently high
- Preserved neck motion throughout life
- Reduced risk of adjacent segment disease compared to fusion

## Potential Risks and Complications

### General Surgical Risks:

- Excessive blood loss requiring transfusion
- Infection (superficial or deep)
- Adverse reaction to medications
- Deep venous thrombosis or pulmonary embolism
- Heart attack, stroke, or other unpredictable complications

### Procedure-Specific Risks:

- **Temporary voice changes:** Hoarseness is common and usually resolves within days to weeks
- **Temporary swallowing difficulty:** Mild difficulty common for first few days
- **Nerve injury:** Risk of spinal cord, nerve root, or recurrent laryngeal nerve injury
- **Vascular injury:** Damage to blood vessels, trachea, or oesophagus
- **CSF leakage:** Cerebrospinal fluid leak requiring repair

### Implant-Related Complications:

- **Migration or subsidence:** Implant movement from original position
- **Spontaneous fusion:** Heterotopic ossification around implant
- **Material failure:** Wear or mechanical problems with implant components
- **Adjacent segment disease:** Though significantly reduced compared to fusion

### Risk Factors That May Increase Complications:

- Poor general health, diabetes, chronic medical conditions
- Smoking (significantly increases all risks)
- Multi-level surgery when performed
- Advanced pre-existing degenerative disease
- Long-term steroid or painkiller use

### When to Seek Immediate Medical Attention:

- New or worsening arm weakness or numbness
- Severe neck pain different from expected post-operative discomfort
- Signs of infection (fever, wound drainage, increasing redness)
- Difficulty swallowing that doesn't improve
- Shortness of breath or chest pain

## Preparing for Your Surgery

### Medical Optimisation (Several Weeks Before):

- Complete smoking cessation (essential for healing)
- Optimise management of diabetes, blood pressure, and other medical conditions
- Complete any required medical clearances
- Review all medications with your surgeon and anaesthetist

### Conservative Treatment Documentation:

Ensure you have completed appropriate non-surgical management including:

- Adequate trial of anti-inflammatory medications
- Structured physical therapy program
- Injection therapy if clinically indicated
- Activity modifications and ergonomic adjustments

**Home Preparation:**

- Arrange time off work (typically a few weeks)
- Organise assistance with household tasks and transportation
- Prepare recovery area at home
- Stock up on easy-to-prepare, nutritious meals

**Final Preparations:**

- Don't eat or drink at least 8 hours before scheduled surgery
- Take only approved medications on surgery day
- Wear comfortable, loose-fitting clothes
- Leave jewellery and valuables at home

**Medicare and Private Health Insurance**

**Australian Medicare Coverage:**

Cervical disc replacement has been covered by Medicare since 2011 for eligible patients meeting specific criteria:

- Single-level symptomatic degenerative disc disease
- Failed conservative therapy
- No prior spinal surgery at the same cervical level
- Skeletally mature patients
- Absence of vertebral osteoporosis

**Current Limitations:**

- Single-level procedures only (multi-level not covered by Medicare)
- Can be used with fusion at another level (hybrid procedures)
- May be used for symptomatic adjacent segment disease above or below previous fusion

**Private Health Insurance:**

Most comprehensive private health insurance policies cover cervical disc replacement:

- Hospital accommodation and surgical services typically well covered
- Prosthetic device (artificial disc) usually fully covered
- Surgeon and anaesthetist fees may have gap payments
- Check with your insurer about specific coverage and any pre-approval requirements

**Typical Costs:**

Costs vary significantly based on surgeon, hospital, and insurance coverage. Discuss all anticipated costs during your consultation to understand your financial responsibilities.

## Frequently Asked Questions

### **Q: How long will my artificial disc last?**

A: Modern cervical disc implants are designed to last decades. The likelihood of implant-related complications is extremely low because the natural range of movements and stresses in the cervical spine are significantly less than in other joints like hip and knee.

### **Q: Will I set off metal detectors?**

A: Some cervical disc implants may trigger sensitive security scanners. You'll receive an implant identification card to present when travelling.

### **Q: Can I have MRI scans after surgery?**

A: Yes, most modern cervical disc implants are MRI-compatible, though the metallic components may produce some distortions (artefacts) on images. This should not be considered a contraindication for scanning.

### **Q: What if I need another neck operation in the future?**

A: Cervical disc replacement doesn't prevent future procedures if needed. However, the reduced adjacent segment disease rate means you're much less likely to need additional surgery compared to fusion.

### **Q: How soon can I return to normal activities?**

A: Most patients can return to normal activities and light work within a few weeks of surgery. The timeline varies based on individual healing, occupation demands, and specific activities.

### **Q: What happens if my artificial disc fails?**

A: While uncommon with modern devices, implant problems can sometimes occur. Revision surgery may involve implant replacement or conversion to fusion if necessary.

### **Q: Can both cervical and lumbar discs be replaced?**

A: In appropriate candidates, both cervical and lumbar disc replacement can be considered, though this would typically be staged procedures rather than simultaneous surgery.

## Long-term Considerations

### **Maintaining Your Results:**

- Continue regular exercise and physical therapy as recommended
- Maintain good posture and ergonomic practices
- Follow up regularly with your surgeon for monitoring
- Report any new or concerning symptoms promptly

### **Activity Guidelines:**

Most activities can be resumed without restriction, though individual assessment may be needed for:

- High-impact or contact sports
- Activities requiring extreme neck positions
- Occupational demands with specific neck stress patterns

### **Follow-up Schedule:**

- 24 hours: X-rays to confirm implant position
- 6 weeks: Clinical evaluation and activity progression
- Long-term: Annual or as-needed follow-up for monitoring

## **Contact Information and Follow-up**

### **Routine Follow-up:**

Regular appointments are essential for monitoring your progress and ensuring optimal outcomes. Your surgeon will provide specific instructions for follow-up care.

### **Questions or Concerns:**

Don't hesitate to contact your surgical team with any questions about your recovery or concerns about symptoms. Early communication helps ensure optimal outcomes.

**Remember:** Cervical disc replacement is a well-established procedure with excellent outcomes in appropriately selected patients. Dr Aliashkevich recommends considering cervical disc replacement as the preferred choice over fusion, with hybrid procedures (combining disc replacement and fusion at different levels) considered when single-level arthroplasty is not feasible.

*This information is provided for educational purposes and should not replace professional medical advice. Always consult with your healthcare provider regarding your specific condition and treatment options.*