Understanding Lumbar Disc Replacement

A Comprehensive Patient Guide

What is Lumbar Disc Replacement?

Lumbar disc replacement, also known as **lumbar arthroplasty**, is a motion-preserving surgical procedure designed to treat degenerative disc disease in the lower back. Unlike traditional fusion surgery that eliminates motion between vertebrae, disc replacement maintains your natural lumbar movement whilst relieving pain and restoring function.

Your lumbar spine consists of five vertebrae (L1-L5) in your lower back, with intervertebral discs acting as shock absorbers between each level. The lumbar discs bear the weight of the whole body and are much larger than discs in the neck or thoracic spine. When these discs degenerate due to age, wear, genetics, or trauma, they can cause significant back pain and potentially compress nearby nerves.

Key Benefits of Lumbar Disc Replacement:

- Preserves natural back motion and flexibility
- Reduces adjacent segment degeneration by more than 50%
- Superior patient outcomes compared to fusion surgery
- Higher patient satisfaction rates
- Reduced need for re-operations
- Maintains normal spinal biomechanics and load distribution

Goals of Lumbar Disc Replacement:

- Reduction of back and radicular leg pain
- Medication reduction
- Prevention of disc and facet joint degeneration
- Improved posture, lower back and leg function
- Improved work and recreational capacity
- Improved quality of life
- Return to normal activities

Am I a Candidate for Lumbar Disc Replacement?

Ideal Candidates Include Patients With:

- Chronic back pain and lumbar radiculopathy from disc-related causes
- Failed comprehensive conservative treatment (typically 6+ months)
- Intractable radicular leg pain and neurological deficits
- Preserved disc mobility on flexion-extension X-rays
- Adequate bone density for implant fixation
- Absence of significant facet joint degeneration
- Realistic expectations about surgical outcomes

You May Also Be Considered If You Have:

- Symptomatic adjacent segment disease above or below previous fusion
- Single-level degenerative disc disease suitable for motion preservation
- Age and general health appropriate for major surgery
- Failed previous non-surgical treatments including medications, therapy, and injections

You Are NOT Suitable If You Have:

- Age under 16 years (skeletally immature)
- Significant osteoporosis (reduced bone density)
- Active spinal infection or advanced malignancy
- Abnormal motion with spondylolisthesis 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 requiring correction
- High pelvic incidence (>65°) associated with facet arthropathy
- Impaired motion due to conditions like ankylosing spondylitis
- Certain vascular anomalies making anterior approach unsafe

Understanding Your Evaluation Process

Your Initial Consultation Will Include:

1. **Detailed Medical History**: Discussion of pain patterns, previous treatments, work history, and impact on daily life
2. **Comprehensive Physical Examination**: Assessment of back and leg strength, sensation, reflexes, and movement
3. **Imaging Review**: Analysis of MRI, CT scans, X-rays, and dynamic studies
4. **Treatment Discussion**: Exploration of all options including non-surgical alternatives

Advanced Imaging Requirements:

- **MRI lumbar spine**: Essential for evaluating disc degeneration and nerve compression
- **Flexion-extension X-rays**: Required to assess segmental mobility of affected level
- **SPECT-CT**: May be needed to rule out inflammation in facet and sacroiliac joints
- **Vascular imaging**: CT angiography to assess individual vascular anatomy for surgical planning

Additional Diagnostic Studies:
If imaging shows problems with multiple levels, additional testing may include:

- Clinical correlation and neurophysiological testing (EMG, nerve conduction tests)
- Diagnostic nerve blocks to identify the primary pain generator
- Provocative discography when disc as pain source needs confirmation

Conservative Treatment Prerequisites:
All non-surgical options must be exhausted before considering surgery:

- Rest and appropriate activity modifications
- Medications including anti-inflammatory drugs
- Physical therapy and structured exercise programs
- Spinal nerve root injections with local anaesthetic or steroids when appropriate

Understanding the Surgical Procedure

Pre-operative Preparation:

- Assessment of general health and fitness for general anaesthesia
- Discussion of medications with surgeon and anaesthetist
- Smoking cessation if applicable (essential for healing)
- Fasting requirements (typically 8 hours before surgery)
- Vascular surgeon assessment to confirm suitability for anterior approach

The Anterior Lumbar Approach:
Lumbar arthroplasty is performed via the anterior approach, which offers several advantages:

- Avoids splitting large back muscles
- Prevents scar formation around spinal nerves
- Allows complete removal of damaged disc material
- Enables placement of large-footprint implant
- Preserves muscles that maintain spinal posture and stability
- Permits direct decompression of nerve roots from the front

Surgical Steps:

1. **Patient positioning**: Face-up on operating table with monitoring systems
2. **Vascular collaboration**: Experienced vascular surgeon assists with exposure
3. **Approach selection**: Left or right side approach based on level and anatomy
4. **Vascular mobilisation**: Careful movement of aorta, vena cava, and iliac vessels
5. **Disc exposure**: Access to the target disc space
6. **Complete discectomy**: Removal of all degenerated disc material
7. **Endplate preparation**: Careful preparation for optimal implant fit
8. **Neural decompression**: Relief of pressure on nerve roots
9. **Implant placement**: Insertion and positioning of artificial disc
10. **Closure**: Multi-layer wound closure

Types of Artificial Lumbar Discs:
Modern lumbar disc implants vary in design and materials:

- **Charité**: First FDA-approved device with mobile polyethylene core
- **ProDisc-L**: Ball-and-socket design with polyethylene centre
- **LP-ESP (Elastic Spine Pad)**: Advanced viscoelastic design mimicking natural disc properties
- **Other devices**: Various designs with different articulation and fixation methods

The surgeon selects the most appropriate implant based on your anatomy, bone quality, and clinical needs.

Recovery and What to Expect

Hospital Stay:

- Typically 3-4 nights depending on progress
- Monitoring of neurological function and vascular status
- Early mobilisation encouraged within hours of surgery
- Pain management with multimodal approach
- No lumbar brace usually required

First Days at Home:

- Avoid lifting weights over 2kg initially
- No strenuous or repetitive activities that may affect the back
- Regular short walks and gentle stretching recommended
- Healthy diet to support healing
- Adequate rest while maintaining mobility

Recovery Timeline:

- **Pain improvement**: Usually moderate post-operative pain that subsides within 7-14 days
- **Mobilisation**: Progressive increase in walking and activities
- **Work return**: Light work within weeks, physical work may require months
- **Full recovery**: May take several months, with continued improvement possible

Expected Outcomes:
Based on comprehensive studies and Dr Aliashkevich's extensive experience:

- Significant reduction in back and leg pain in most patients
- Improved function and quality of life
- High patient satisfaction rates
- Maintained lumbar mobility
- Reduced risk of adjacent segment problems compared to fusion

Potential Risks and Complications

General Surgical Risks:

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

Approach-Related Risks:
Due to the anterior surgical approach:

- Injury to major vessels (aorta, vena cava, iliac vessels)
- Bowel or ureter injury
- **Retrograde ejaculation** in males (occurs into bladder rather than normally)
- Incisional hernia formation

- Ileus (temporary slowing of bowel movements)

Implant-Related Complications:

- Instability or implant migration/subsidence
- Spontaneous fusion (heterotopic ossification)
- Material failure or adverse reaction to implant
- Adjacent segment disease (though significantly reduced vs fusion)
- Need for revision surgery

Neurological Risks:

- Injury to spinal structures, nerves, or nerve roots
- Cerebrospinal fluid leakage
- Ongoing or worsening pain
- Weakness, paralysis, or numbness
- Bladder, bowel, or sexual problems

Risk Factors:
Certain factors may increase complication risk:

- Poor general health, diabetes, chronic medical conditions
- Smoking (significantly increases all risks)
- Obesity and chronic pain conditions
- Advanced pre-existing degenerative disease
- Long-term use of steroids or strong painkillers

Risk Minimisation:
Dr Aliashkevich performs procedures with an experienced vascular surgeon to minimise vessel-related risks. The natural range of movements in the lumbar spine results in extremely low likelihood of implant-related complications compared to other joint replacements.

Preparing for Your Surgery

Medical Optimisation:

- Complete smoking cessation (essential - may cancel surgery if continued)
- Optimise diabetes, blood pressure, and other medical conditions
- Complete any required medical clearances
- Medication review and adjustment as needed

Physical Preparation:

- Maintain fitness within limitations of your condition
- Weight management if applicable
- Continue appropriate exercises as recommended
- Avoid activities that significantly worsen symptoms

Home and Work Arrangements:

- Plan for several weeks off work (varies by occupation)
- Arrange assistance with household tasks and transportation
- Prepare recovery environment at home

- Organise child care or other family responsibilities

Financial Planning:

- Understand Medicare coverage and any private insurance benefits
- Confirm costs and payment arrangements
- Plan for time off work and any income implications

Medicare and Private Insurance Coverage

Medicare Coverage:
Lumbar disc replacement is covered by Medicare Australia for eligible patients meeting specific criteria outlined in MBS protocols. Based on current item 51130, coverage applies to patients who:

- Have not had prior spinal fusion surgery at the same lumbar level
- Do not have vertebral osteoporosis
- Have failed conservative therapy

Current Limitations:

- **Single-level procedures only** - Two-level disc replacement not covered by Medicare or private health insurance
- In exceptional circumstances, insurances may consider some funding
- Two-level disease often addressed by hybrid procedure (one disc replaced, another fused)

Private Health Insurance:
Most comprehensive policies provide good coverage for:

- Hospital accommodation and surgical services
- Prosthetic device (artificial disc) costs
- Basic rehabilitation services
- Gap payments may apply for surgeon and anaesthetist fees

Frequently Asked Questions

Q: How long will my artificial disc last?
A: Modern lumbar disc implants are designed to last for decades. The natural range of movements and stresses in the lumbar spine are actually less demanding than in hip and knee joints, resulting in very low likelihood of implant complications.

Q: Can I have MRI scans after surgery?
A: Yes, metallic components may produce some artefacts on MRI but should not be considered a contraindication for scanning when medically necessary.

Q: What activities will I be able to do after recovery?
A: Most patients can return to desired activities including work, recreation, and sports. Individual assessment is needed for high-impact or contact activities.

Q: How does disc replacement compare to fusion?
A: Multiple studies show superior patient outcomes, higher satisfaction rates, reduced re-operation rates, fewer complications, and reduced costs with lumbar arthroplasty compared to fusion in properly selected candidates.

Q: What if I need two levels treated?
A: While two-level replacement is not covered by Medicare, hybrid procedures combining disc replacement at one level with fusion at another level may be appropriate for some patients.

Q: What happens if complications occur?
A: While complications are rare, comprehensive post-operative care and monitoring help identify and address any issues promptly. Revision surgery is possible if needed, though uncommon with modern techniques and implants.

Long-term Considerations

Advantages of Motion-Preserving Surgery:

- Maintaining natural back mobility
- Reducing chances of adjacent segment degeneration
- Reduced need for re-operations
- Eliminating problems with bone graft harvesting
- No risk of pseudoarthrosis (failure of bone fusion)
- No need to wait for solid fusion to occur

Dr Aliashkevich's Recommendation:
As a strong advocate for motion-preserving spinal surgery with extensive experience in lumbar arthroplasty since 2012, Dr Aliashkevich recommends considering lumbar disc replacement as the preferred choice over fusion. When single-level arthroplasty is not feasible, hybrid procedures combining disc replacement with fusion at different levels may be considered.

Long-term Outcomes:
Studies demonstrate that lumbar disc replacement reduces the chances of symptomatic adjacent segment degeneration by more than 50% compared to fusion, providing lasting benefits for spinal health.

Contact and Follow-up

Post-operative Care:
Regular follow-up appointments are essential for monitoring progress and ensuring optimal outcomes. Dr Aliashkevich will arrange appropriate follow-up at 6 weeks to plan ongoing care and assess individual prospects for recovery and return to work.

When to Seek Help:
Contact your healthcare team promptly if you experience concerning symptoms or have questions about your recovery. Early communication helps ensure the best possible outcomes.

Remember: Lumbar disc replacement offers significant advantages over fusion surgery in appropriately selected patients. The procedure aims to restore function while preserving natural spinal motion, leading to superior long-term outcomes and patient satisfaction.

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.