

SHOULDER ARTHRITIS

Anatomic Total Shoulder Replacement

An operation designed to treat advanced shoulder arthritis when the rotator cuff tendons remain functional.

An anatomic total shoulder replacement is an operation designed to treat advanced shoulder arthritis when the rotator cuff tendons remain functional.

The procedure replaces the worn surfaces of the shoulder while preserving the normal anatomy of the joint: the humeral head is replaced with a metal ball and the glenoid, or socket, is resurfaced with a polyethylene component.

When is an anatomic shoulder replacement recommended?

The most common indication is advanced glenohumeral osteoarthritis causing:

- ✚ Persistent shoulder pain, particularly pain at night
- ✚ Progressive stiffness and loss of movement
- ✚ Difficulty with everyday activities, work, exercise or recreation
- ✚ Significant joint-space loss and deformity on X-ray or CT
- ✚ Symptoms that have not responded adequately to non-operative treatment

An anatomic replacement works best when the rotator cuff is intact and functioning.

Other less common indications can include inflammatory arthritis, post-traumatic arthritis and selected cases of avascular necrosis.

How is the operation performed?

The operation is generally performed through a deltopectoral approach at the front of the shoulder.

To safely enter the joint, the subscapularis tendon is temporarily released. This can be performed using either:

- ✚ subscapularis peel, where the tendon is carefully released from the humerus and repaired at the end of the operation; or
- ✚ lesser tuberosity osteotomy, where a small wafer of bone with the attached subscapularis tendon is released and subsequently repaired back to bone.

Both techniques are well-established methods of managing the subscapularis during shoulder replacement. Published comparative evidence has not demonstrated a major difference in overall patient-reported outcomes between the two approaches.

The damaged humeral head is removed and replaced with either a stemless or stemmed humeral component.

A stemless replacement fixes within the upper humerus and preserves more of the patient's native bone. It can be an excellent option when bone quality and anatomy are suitable.

A stemmed replacement extends farther into the humeral canal and remains a reliable option, particularly where bone quality, anatomy or deformity makes a stemmed implant preferable.

Modern studies have shown excellent results with both stemmed and stemless anatomic replacements, with no clear clinically important difference in functional scores in appropriately selected patients.

The arthritic glenoid is then prepared and resurfaced, generally using an all-polyethylene socket component.

What result can I expect?

The major goals of an anatomic shoulder replacement are:

- ✦ Reliable relief of arthritic pain
- ✦ Restoration of smooth shoulder movement
- ✦ Improved strength and function
- ✦ Return to normal day-to-day activities and many recreational activities

When the rotator cuff is healthy and the shoulder is appropriately reconstructed, an anatomic replacement can provide excellent movement.

The ideal result is therefore a comfortable shoulder with near-normal functional movement, allowing activities such as reaching overhead, dressing, grooming, driving, sleeping comfortably and performing most normal recreational activities.

The shoulder may not feel completely identical to a native, uninjured shoulder, and heavy repetitive loading or high-impact activities are generally discouraged to maximise the longevity of the replacement.

Recovery timeline

Recovery after an anatomic total shoulder replacement is gradual and varies between patients.

First 2 weeks

- ✦ The arm is supported in a sling.
- ✦ Pain and swelling gradually settle.
- ✦ Hand, wrist and elbow movement is encouraged.
- ✦ Gentle shoulder exercises are commenced according to the rehabilitation protocol.
- ✦ Wound review is usually performed at approximately 2 weeks.

2–6 weeks

- ✦ The sling is generally continued for approximately 6 weeks.
- ✦ Protected passive and assisted shoulder movement progresses.
- ✦ The main priorities are healing of the subscapularis repair or lesser tuberosity osteotomy and restoration of safe shoulder movement.
- ✦ Heavy lifting, pushing, pulling and active resisted internal rotation are avoided.

6–12 weeks

- ✦ The sling is usually discontinued.
- ✦ Active shoulder movement is gradually restored.
- ✦ Physiotherapy focuses on range of motion, scapular control and progressive strengthening.
- ✦ Strengthening is introduced gradually once the subscapularis repair has healed sufficiently.

3–6 months

- Strength, endurance and shoulder control continue to improve.
- Most patients are performing normal daily activities comfortably.
- Recreational activities can progressively resume depending on strength, movement and individual recovery.

6–12 months

- Improvement can continue for up to 12 months or longer.
- Strength, confidence and range of motion often continue to improve well beyond the early postoperative period.

Risks and possible complications

Shoulder replacement is generally a reliable operation, but all surgery carries potential risks.

These include:

- Infection
- Bleeding or haematoma
- Stiffness
- Persistent pain
- Nerve injury
- Blood vessel injury
- Blood clots
- Anaesthetic complications
- Fracture around the implant
- Instability or dislocation
- Subscapularis failure
- Failure of a lesser tuberosity osteotomy to unite
- Rotator cuff failure developing over time
- Loosening or wear of the glenoid component
- Implant wear or loosening
- Periprosthetic fracture
- Need for further surgery or revision shoulder replacement

Late rotator cuff failure is particularly important following an anatomic shoulder replacement because the replacement relies on a functioning rotator cuff to maintain normal shoulder mechanics.

Return to activity

Return to activity is gradual and depends on healing, strength and movement.

As a general guide:

- Desk-based work: often 2–4 weeks
- Driving: usually around 6 weeks, once out of the sling and able to safely control the vehicle
- Light household activities: approximately 6–8 weeks
- Light strengthening: commonly begins around 8–12 weeks
- Gym-based exercise: progresses from approximately 3 months

- ♣ Golf: often begins with putting and chipping at approximately 3 months, progressing towards a full swing by approximately 4–6 months
- ♣ Swimming: often around 3–4 months once strength and movement permit
- ♣ Tennis and racquet sports: usually approximately 4–6 months depending on recovery
- ♣ Manual work: frequently 3–6 months depending on physical demands

Low-impact recreational activities are generally encouraged.

Heavy repetitive overhead lifting, maximal weightlifting and high-impact activities are usually discouraged because excessive loading may increase wear and reduce the longevity of the replacement.

The goal is not simply to return to activity quickly, but to protect the reconstruction while achieving the best possible long-term function.