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# Total Shoulder Replacement

A **reverse total shoulder replacement (RTSR)** is a surgical procedure used primarily for patients with **massive rotator cuff tears, arthritis, or complex fractures** that make a standard shoulder replacement ineffective. This technique **reverses the ball-and-socket structure of the shoulder joint**, allowing the deltoid muscle (instead of the damaged rotator cuff) to power arm movement.

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## Surgery Process

### 1. Preoperative Preparation

- **Medical Evaluation:** Blood work, imaging (X-rays, MRI, or CT scan).
- **Medications:** Blood thinners may need to be paused.
- **Anesthesia:** General anesthesia (sometimes combined with a nerve block for pain control).
- **Fasting:** No food or drink after midnight before surgery.

### 2. Surgery (Lasts 1–2 Hours)

- **Incision:** A 4–6 inch incision is made on the front of the shoulder.
- **Bone Preparation:**
  - The **humeral head (ball)** is removed.
  - The **glenoid socket** is reshaped and fitted with a **metal ball (glenosphere)**.
  - A **metal stem with a plastic socket** is inserted into the upper arm bone.
- **Implant Securing:** Components are cemented or press-fitted.
- **Closure:** Sutures or staples are placed, and the arm is secured in a sling.

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## Recovery Course

1. Immediate Postoperative (Many patients can go home the same day as surgery; some may stay overnight in the hospital)

- **Pain Control:** Medications and a **nerve block** (which can last 12–24 hours).
- **Sling Usage:** Required **24/7 for 4–6 weeks** (except for exercises and hygiene).
- **Early Passive Motion:**
  - **Physical therapy (PT)** begins **within 24 hours** with **gentle, assisted movement**.
  - No **active lifting, pushing, or weight-bearing** on the arm.

## 2. Weeks 1–6 (Healing & Gentle Movement)

- **PT Goals:** Maintain range of motion (ROM) and prevent stiffness.
  - **Exercises (Passive Only):**
    - Pendulum exercises (gentle shoulder circles).
    - Assisted forward arm raises (using the non-surgical arm or therapist).
  - **Restrictions:**
    - ✗ No lifting anything heavier than a coffee cup.
    - ✗ No reaching behind the back or sudden arm movements.
    - ✗ No leaning on the arm or pushing off with the hand.
  - **Sleeping Position:**
    - Recliner or propped-up pillows to prevent rolling onto the shoulder.
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## 3. Weeks 6–12 (Active Motion & Strengthening)

- **Gradual Active Motion:**
    - Start using the arm **without assistance** for simple tasks.
    - PT includes **active-assisted range of motion (AAROM)** exercises.
  - **Light Strengthening:**
    - Resistance bands, light weights (1–2 lbs).
    - Shoulder blade stabilization exercises.
  - **Sling Discontinuation:** Around **6 weeks**, but varies by surgeon.
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## 4. Months 3–6 (Strength & Function)

- **Increased Use of Arm:**
    - Lifting **up to 10 lbs** for daily activities.
    - More advanced **resistance training** in PT.
  - **Return to Activities:**
    - **Driving** (typically 8–12 weeks).
    - Light household tasks, dressing, grooming independently.
  - **Continued Strengthening:**
    - Focus on deltoid and scapular muscles for shoulder control.
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## 5. Full Recovery (6+ Months)

- Most patients regain **functional use of the arm** with limitations in **overhead strength and extreme rotation**.
  - **Sports/Work:**
    - Golf, swimming, light tennis at **4–6 months**.
    - Heavy lifting/manual labor may take **up to a year** or be permanently restricted.
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## Potential Risks

- **Infection, Dislocation, or Implant Loosening**
- **Nerve Injury** (temporary numbness or weakness)
- **Limited Range of Motion** (cannot fully reach overhead or behind)


## Exercise Program After Reverse Total Shoulder Replacement (RTSR)

A structured rehabilitation program is essential for **regaining mobility, strength, and function** after a **reverse total shoulder replacement (RTSR)**. Since RTSR alters shoulder mechanics (relying more on the deltoid than the rotator cuff), rehab focuses on **deltoid activation, shoulder stability, and gradual strengthening**.

## Rehab Timeline & Goals

Phase	Timeframe	Primary Goals
<b>Phase 1</b> (Protection & Mobility)	Weeks 1–6	Protect the joint, restore passive motion, prevent stiffness.
<b>Phase 2</b> (Early Strengthening)	Weeks 6–12	Activate deltoid, improve functional movement.
<b>Phase 3</b> (Advanced Strength)	Months 3–4	Strengthen shoulder and improve endurance.
<b>Phase 4</b> (Full Activity)	4–6 Months	Restore full strength and return to daily activities.


### Phase 1: Weeks 1–6 (Protection & Passive Motion)

 **Goals:** Protect the surgical site, reduce pain/swelling, regain passive range of motion (ROM).

 **Restrictions:**


- **Sling:** Worn full-time for 4 weeks (except during exercise or hygiene).
- **No lifting, pushing, or active shoulder movement.**
- **Limit external rotation & extension (to avoid stress on the implant).**

 **Exercises (3–5x/day, 10 reps each, PASSIVE ONLY):**

 **Pendulum Exercises** – Let the arm hang and move in circles.

 **Passive Forward Flexion (Assisted by Unaffected Arm)** – Gently lift the arm with assistance.

 **Passive External Rotation (With Stick or PT Assistance)** – Gently rotate arm outward within a pain-free range.

 **Elbow, Wrist & Hand Movements** – To prevent stiffness in the lower arm.

 **Activity Tips:**

- Walk daily to maintain circulation.
- Keep the shoulder **supported when sleeping** (use pillows).

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### Phase 2: Weeks 6–12 (Early Strengthening & Active Motion)


 **Goals:** Begin **active motion**, strengthen **deltoid and periscapular muscles** (since the rotator cuff no longer stabilizes the shoulder).

 **Restrictions:**

- Avoid lifting over 2-5 lbs.
- No overhead lifting.

 **Exercises (2–3x/day, 10-15 reps each):**

-  **Active Assisted Shoulder Flexion (Use Good Arm to Assist).**
-  **Active Assisted External Rotation (With a Stick or Towel).**
-  **Scapular Squeeze (Pull Shoulder Blades Together).**
-  **Isometric Deltoid Activation (Gentle Shoulder Press Against a Wall).**

 **Functional Activities:** Start using the arm for **light daily tasks** (dressing, eating).


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### Phase 3: Months 3–4 (Advanced Strength & Functional Use)


 **Goals:** Improve strength, endurance, and functional use of the arm.

 **Restrictions:**

- Avoid sudden, forceful movements.
- Gradually increase resistance (light weights, bands).


 **Strengthening Exercises (3–4x/week, 12–15 reps each):**

-  **Resisted Shoulder Flexion (Theraband or Light Weights).**
-  **Resisted Shoulder External Rotation (Light Resistance Band).**
-  **Lateral Raises (Small Dumbbell, Keep Below Shoulder Height).**
-  **Bicep Curls (With Light Dumbbells).**
-  **Wall Push-Ups (Gentle Strengthening).**

 **Daily Use:** Start using the arm for **more complex activities** like cooking, light lifting.

#### Phase 4: 4–6 Months (Full Activity & Long-Term Strengthening)

 **Goals:** Restore full function, **return to low-impact activities (golf, swimming, light gym work).**

 **Avoid:** Heavy lifting, contact sports, or activities that place high stress on the shoulder joint.


 **Maintenance Strengthening (3x/week, 15 reps each):**

 **Standing Shoulder Press (Very Light Weights).**

 **Resisted Internal & External Rotation (Bands).**

 **Upright Rows (Light Weights, Below Shoulder Level).**

 **Scapular Stabilization Drills (Rows, Face Pulls).**

 **Low-Impact Cardio (Elliptical, Swimming).**

 **Lifetime Precautions:**

- Avoid heavy overhead lifting.
- Focus on **deltoid & scapular strength** to maintain function.
- Low-impact sports are OK; avoid **high-contact** activities.