Kalyani's Knee & Shoulder Clinic

कल्याणी घुटना एवम कंधा क्लिनिक

Massive Rotator Cuff Tear

Force Couple Loss & Decompensated Shoulder

Patient Awareness | Shoulder Preservation & Tendon Transfer

Appointments: 9554066663 | 9554066664 | 9219200378
Address: Umaraha Market, Varanasi

What is a massive rotator cuff tear? A massive rotator cuff tear is a large tear involving two or more cuff tendons, or a very large tear that may retract and become difficult to repair. The rotator cuff is essential for shoulder integrity: it keeps the humeral head centred in the socket and allows smooth, controlled elevation and rotation of the arm.

Shoulder preservation focus: Early diagnosis, correct assessment of repairability and timely treatment can protect remaining tendons, reduce pain, restore balance of shoulder muscles and delay decompensation, arthritis or the need for reverse shoulder replacement in suitable patients.

Contributing pathology

Loss of force couple: The cuff normally balances the deltoid and compresses the ball into the socket.

Superior migration: When the cuff fails, the deltoid may pull the humeral head upwards, causing impingement and weak elevation.

Decompensated shoulder: Loss of active elevation despite better passive movement is called pseudoparalysis.

External rotation deficit: Posterosuperior cuff failure causes lag signs and difficulty reaching outward.

Cuff tear arthropathy risk: Chronic massive tears may progress to arthritis, loss of mechanics and reduced function.

Common symptoms

- Pain over the shoulder or upper arm, often worse at night.
- Weakness while lifting the arm, combing hair, dressing or carrying weight.
- Pseudoparalysis: inability to actively raise the arm although passive movement is possible.
- Loss of external rotation: difficulty reaching outward or controlling the hand in space.
- Clicking, fatigue, cramping and loss of confidence with overhead activity.
- Progressive stiffness, shoulder imbalance and reduced daily function in chronic cases.

Examination and diagnosis

History: injury mechanism, duration, night pain, weakness, work/sport demands, previous injections or surgery.

Range of motion: active and passive elevation are compared; pseudoparalysis suggests decompensation.

Strength tests: supraspinatus, infraspinatus, teres minor and subscapularis are tested separately.

External rotation lag sign: a positive sign suggests posterosuperior cuff failure with inability to maintain external rotation.

Other signs: drop-arm test, hornblower sign, belly-press/lift-off tests, deltoid power and scapular compensation are assessed.

Imaging: X-rays assess arthritis, acromiohumeral interval and superior migration. Ultrasound or MRI defines tear size, retraction, fatty change and repairability.

Technical details

Repairability: depends on tendon mobility, retraction, muscle atrophy, fatty infiltration, tissue quality and arthritis.

Posterosuperior tear: supraspinatus + infraspinatus involvement commonly causes external rotation weakness and force couple imbalance.

Subscapularis status: anterior cuff integrity is checked because it affects treatment choice and shoulder balance.

Treatment goal: restore a centred shoulder, pain-free function and a stable muscle balance rather than only closing the tear on MRI.

When to seek early consultation

- Sudden inability to lift the arm after a fall or shoulder injury.
- Positive lag-type weakness, progressive loss of strength or pseudoparalysis.
- Persistent night pain despite medicines and physiotherapy.
- Known large cuff tear with worsening function or failed previous repair.
- Manual worker, active patient or sportsperson with disabling weakness.

Treatment options

Non-surgical / rehabilitation-based care

- Activity modification and avoidance of painful heavy overhead work initially.
- Pain control with medicines, ice/heat and injection in selected cases.
- Physiotherapy to improve scapular control, deltoid compensation, posture and remaining cuff strength.
- Useful for low-demand patients, poor surgical candidates or tears with tolerable symptoms.
- Regular review is important if weakness, pseudoparalysis or external rotation loss progresses.

Surgical / shoulder-preserving options

- Arthroscopic repair or partial repair when tissue is mobile and repairable.
- Biceps procedure, debridement, subacromial decompression or tuberoplasty in selected patients.
- Superior capsular reconstruction or balloon spacer in selected cases depending on surgeon judgement.
- Tendon transfer for irreparable posterosuperior tears with loss of external rotation but limited arthritis.
- Reverse shoulder replacement may be considered for older patients with cuff tear arthropathy, pseudoparalysis and arthritis.

Lower trapezius transfer: when considered

Lower trapezius transfer is a tendon transfer option for selected patients with irreparable posterosuperior rotator cuff tears, painful external rotation weakness, positive external rotation lag and minimal glenohumeral arthritis. It aims to restore the posterior force couple and improve external rotation by using a muscle with a line of pull similar to the infraspinatus.

Step	Surgical step	Purpose / key point
1	**Patient selection and planning**	Confirm irreparable posterosuperior tear, external rotation deficit and minimal arthritis.
2	**Diagnostic arthroscopy**	Assess cartilage, biceps, subscapularis, cuff mobility and associated pathology.
3	**Release and partial repair if possible**	Mobilise remaining cuff; repair repairable tissue to improve the force couple.
4	**Prepare greater tuberosity footprint**	Create a bleeding bone bed where the graft will be fixed.
5	**Posterior incision and exposure**	Expose the lower trapezius insertion along the medial scapular spine.
6	**Identify and protect nerves**	Protect the spinal accessory nerve and avoid excessive medial dissection.
7	**Harvest lower trapezius tendon**	Detach the tendon safely with adequate length and prepare it for augmentation.
8	**Graft extension/augmentation**	Attach Achilles allograft or suitable graft extension to bridge to the tuberosity.
9	**Graft passage and fixation**	Pass graft into the subacromial space and fix it to the tuberosity.
10	**Tensioning and rehab plan**	Tension in functional external rotation/abduction; protect with sling and staged physiotherapy.

Useful classification for patient understanding

Pattern	Meaning	Usual approach
Repairable large tear	Large tear but tendon can be mobilised to bone.	Arthroscopic repair or partial repair with rehab.
Irreparable posterosuperior tear	Supraspinatus/infraspinatus cannot be repaired reliably.	Tendon transfer, SCR/other options or reverse replacement depending on age and arthritis.
Pseudoparalysis	Cannot actively elevate arm despite passive movement.	Specialist assessment; treatment depends on arthritis, deltoid and cuff status.
External rotation loss	Positive external rotation lag or hornblower sign.	Lower trapezius transfer may be considered in selected patients.
Cuff tear arthropathy	Massive cuff tear with arthritis/superior migration.	Reverse shoulder replacement often considered in appropriate patients.

Rehabilitation and return to activity

Phase	Main goals	Progression depends on
Protection phase	Sling, protect repair/transfer, pain control and hand/elbow movement.	Procedure type, fixation and surgeon protocol.
Motion phase	Gentle assisted motion without overloading the transfer.	Healing, stiffness and pain response.
Strength phase	Deltoid, scapular stabilisers and gradual cuff/transfer strengthening.	Strength control and absence of pain flare.
Return phase	Work, driving, gym and sport-specific progression.	Functional testing and surgeon/physio clearance.

How treatment protects shoulder integrity

A functioning rotator cuff is central to shoulder integrity. It keeps the ball centred, balances the deltoid, prevents abnormal superior migration and allows controlled elevation and rotation. Treatment of a massive cuff tear aims to reduce pain, restore a balanced force couple where possible, improve strength and prevent progression to a decompensated shoulder.

Problem pattern	Typical approach	Patient goal
Painful but compensated tear	Physiotherapy, pain control, activity modification; repair if suitable.	Pain relief and maintained function.
Pseudoparalysis	Assess repairability, arthritis, deltoid and cuff balance.	Recover elevation if possible.
External rotation lag	Consider tendon transfer such as lower trapezius transfer in selected cases.	Improve hand positioning and external rotation.
Cuff tear arthropathy	Reverse shoulder replacement may be best when arthritis and cuff failure are advanced.	Reliable pain relief and elevation.

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For massive rotator cuff tear, pseudoparalysis, tendon transfer, shoulder arthroscopy and rehabilitation guidance

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