



**Kalyani's
Knee & Shoulder
Clinic**

कल्याणी घुटना एवम कंधा क्लिनिक

Meniscus Injury

Knee Shock Absorber & Joint Protector

Patient Awareness | Knee Preservation & Arthroscopy Care

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What is a meniscus injury? The meniscus is a C-shaped fibrocartilage cushion between the thigh bone and shin bone. Each knee has a medial and lateral meniscus. A tear can cause pain, swelling and mechanical symptoms such as locking, catching or clicking.

Knee preservation focus: The meniscus is the knee's natural shock absorber. Preserving and repairing a repairable meniscus is strongly preferred because it helps protect cartilage, maintain knee integrity and reduce the risk of early arthritis.

Functions of the meniscus

- Acts as the main shock absorber between femur and tibia.
- Distributes body weight across the knee joint instead of allowing point loading.
- Protects joint cartilage from excessive stress and wear.
- Improves knee stability, especially during twisting and pivoting.
- Helps joint lubrication and smooth movement.
- Assists proprioception - the knee's sense of position and control.
- Maintains long-term knee integrity and supports healthy biomechanics.

Mode of injury

- Twisting injury with the foot planted, common in sports.
- Squatting, deep knee bending, sudden turn or pivot.
- Associated ACL injury, especially in young active patients.
- Direct trauma or high-energy injury in road traffic accidents.
- Degenerative tear in middle-aged or older patients with cartilage wear.
- Root tear can occur with sudden pain while rising from squat or minor twist.

Symptoms - especially mechanical

- Pain along the inner or outer joint line of the knee.
- Swelling after activity or within 24-48 hours after injury.
- Mechanical catching, clicking, clunking or painful snapping.
- Locking: inability to fully straighten or bend the knee.
- Giving way or feeling that something is stuck inside the knee.
- Pain during squatting, stairs, sitting cross-legged or twisting.
- Repeated effusion, stiffness and reduced sports confidence.

Examination and diagnosis

History: mechanism of injury, swelling timing, locking/catching, giving-way, sports demands and previous knee injuries.

Inspection: swelling, limp, quadriceps control, range of motion and ability to fully straighten the knee are checked.

Joint line tenderness: pain over the medial or lateral joint line is a common sign.

Meniscus tests: McMurray test, Thessaly test, Apley test and deep squat may reproduce pain or clicking.

Associated injury check: ACL, PCL, MCL, LCL/PLC stability and neurovascular status are assessed.

Imaging: X-rays assess bone and arthritis. MRI confirms tear pattern, root/ramp lesions, cartilage status and associated ligament injury.

Why meniscus preservation matters

Cartilage protection: removing too much meniscus increases contact pressure on cartilage.

Shock absorption: a healthy meniscus spreads load during walking, running and jumping.

Knee stability: posterior horn and root integrity are important for joint stability and load sharing.

Arthritis prevention: meniscus loss is linked with faster cartilage wear and earlier osteoarthritis.

Repair principle: if a tear is repairable, repair is preferred over removal whenever clinically suitable.

Treatment options

Non-operative / rehabilitation-based care

- Initial care: protection, rest, ice, compression, elevation and pain control.
- Physiotherapy to reduce swelling, restore full movement and rebuild quadriceps/hamstring strength.
- May suit small stable tears, degenerative tears without locking, low-demand patients or patients unfit for surgery.
- Activity modification, weight management and gradual return to walking/sport.
- Regular review is important if swelling, locking or mechanical symptoms persist.

Surgical care - repair whenever possible

- Meniscus repair is strongly preferred for repairable tears to preserve the knee's shock absorber.
- Arthroscopic keyhole surgery allows direct assessment and treatment of the tear.
- Repair is commonly considered for peripheral vascular tears, longitudinal/vertical tears, bucket-handle tears, root tears and selected ramp tears.
- Partial meniscectomy is reserved for non-repairable, unstable, frayed or complex tissue where repair is unlikely to heal.
- Associated ACL reconstruction often improves healing environment for repairable meniscus tears.

Meniscus repair: surgical details

Arthroscopic assessment: small keyhole portals are used to inspect medial/lateral meniscus, cartilage, ACL/PCL and tear pattern.

Freshening the tear: the torn edges are prepared to stimulate healing while preserving maximum meniscus tissue.

Reduction: displaced tears such as bucket-handle tears are reduced back into position.

Suture fixation: special meniscal sutures, anchors or devices are used to hold the tear until healing.

Root repair: root tears may need a bone tunnel and strong sutures to restore the meniscus hoop-stress function.

Post-op protection: brace, weight-bearing limits and restricted flexion may be advised depending on tear and repair type.

Types of meniscus repair techniques

Technique	How it is done	Best suited for
Inside-out repair	Sutures are passed from inside the joint to outside through a small incision.	Strong fixation; useful for many body/posterior horn tears.
Outside-in repair	Needles/sutures are passed from outside into the joint.	Often useful for anterior horn and mid-body tears.
All-inside repair	Preloaded devices placed entirely arthroscopically inside the joint.	Common for posterior horn/body tears; less extra incision.
Meniscus root repair	Sutures passed through meniscus root and fixed through tibial tunnel or anchor.	Restores hoop stress and load sharing in root tears.
Ramp lesion repair	Posteromedial meniscocapsular tear repair, often with ACL injury.	Improves stability and reduces persistent instability symptoms.
Hybrid repair	Combination of techniques used according to tear pattern.	Allows stronger and more customised repair.

Useful classification for patient understanding

Tear type	Meaning	Usual approach
Stable small tear	Small tear without locking or displacement.	Rehabilitation and observation in selected cases.
Vertical / longitudinal tear	Tear along the length of meniscus, often repairable if peripheral.	Arthroscopic meniscus repair if symptomatic/unstable.
Bucket-handle tear	Large displaced tear that can block knee motion.	Urgent specialist review; reduction and repair when possible.
Radial tear	Tear across meniscus fibres; may disrupt load sharing.	Repair for selected tears, especially near root; partial trimming only if not repairable.
Root tear	Meniscus attachment pulls off, causing loss of hoop stress.	Root repair is often recommended if suitable.
Degenerative complex tear	Wear-related frayed tear, often with arthritis.	Rehab, medicines, activity modification; surgery only for selected mechanical symptoms.

Repair vs removal: patient message

Why repair is important

- Preserves the knee's natural shock absorber.
- Maintains hoop stress and load distribution.
- Protects cartilage and helps preserve knee integrity.
- May reduce risk of early osteoarthritis compared with excessive meniscus removal.
- Especially important in young, active and ligament-injured knees.

When removal may be needed

- Tear is badly frayed, degenerative or not repairable.
- Torn fragment is unstable and causing persistent mechanical symptoms.
- Tissue quality or blood supply is poor and healing chance is low.
- Only the unstable portion is removed; maximum healthy meniscus is preserved.

Rehabilitation after meniscus repair

Phase	Main goals	Progression depends on
Early phase	Protect repair, control swelling, regain safe range of motion.	Weight-bearing and flexion limits depend on tear/repair type.
Strength phase	Quadriceps/hamstring strength, hip control and normal walking.	No swelling, good motion and surgeon/physio guidance.
Functional phase	Balance, step-down control, light jogging progression if allowed.	Healing time, strength symmetry and movement quality.
Return phase	Sport-specific drills, squatting, pivoting and confidence training.	Objective testing and surgeon/physio clearance.

Key message: The meniscus is not a useless torn tissue - it is a vital shock absorber and knee protector. Whenever possible, saving and repairing the meniscus is better for long-term knee health.

Kalyani's Knee & Shoulder Clinic

For meniscus injury, knee locking, sports injury, meniscus repair, arthroscopy and rehabilitation guidance

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Note: This handout is for patient education only. Final diagnosis and treatment should be individualised after orthopaedic consultation, clinical examination and appropriate imaging. Content reviewed with AAOS/NHS patient guidance and current meniscus preservation principles.