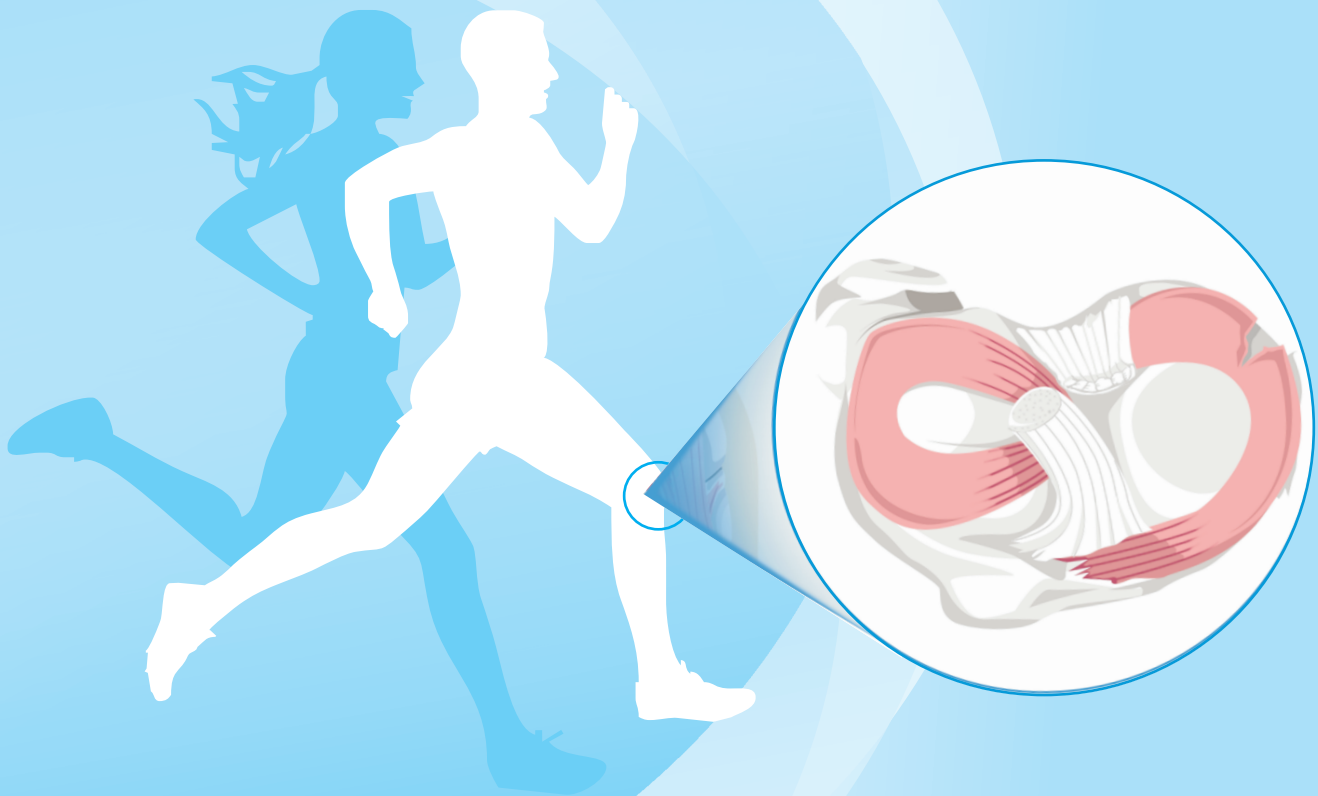




# THE ORTHOPAEDIC SPECIALITY CLINIC

A PATIENT'S GUIDE

## MENISCUS REPAIR

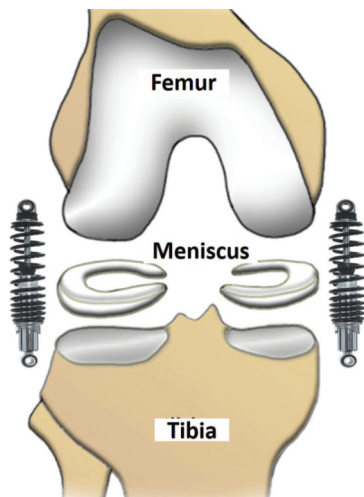
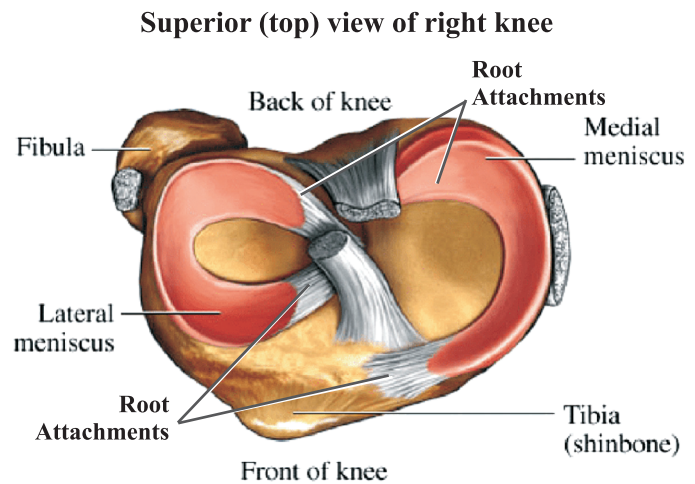


**DR. SACHIN TAPASVI**

M.S. (ORTH), D.N.B (ORTH), M.N.A.M.S, F.R.C.S. (Glasgow), A.F.A.O.A. (Australia)

## What is the Meniscus?

The meniscus is a cartilage disc, which is present in between the bones of the knee joint. There are two menisci in each knee – a medial (inner) and a lateral (outer) meniscus. When seen from the top, they are 'C' shaped and in cross-section, they appear like triangles. They are attached to the shin bone (tibia) at two ends, called the '**Roots**'. The rest of the tissue is attached to the joint capsule.



## What is the function of the Meniscus?

The most important function of the meniscus is shock-absorption. It acts like a cushion in between the joint surfaces and absorbs impact forces, thus reducing contact pressure of the '**cartilage**' (joint lining). The meniscus also increases the surface area for force transmission, thus reducing joint pressure. They also provide rotational stability to the knee joint. Another important function is that of joint nutrition, by improving the flow of joint fluid.

## How and When does a meniscus tear?

Meniscus tears may happen in both younger and older people. The reasons are different for both age groups. At a younger age, a direct injury to knee is more likely to cause a tear. These 'traumatic' tears are more commonly associated with ligament tears or fractures and occur as a result of the force transmission from the impact to the meniscus. These tears are more like a 'clean cut' and amenable to repair.

Tears in middle-age or elderly individuals are usually of 'degenerative' origin. The quality of the meniscus tissue degrades with aging and such a meniscus can tear more easily, even while performing activities of daily living (such as getting up from a low chair or stepping on a high stool). Such tears are 'complex' and need to be approached differently.



**Traumatic fall and injury**



**Degenerative tear**

## What are the different tear patterns?

Various tear patterns have been described depending on the morphology of the tear.

### 1. Vertical/Longitudinal tear:

This tear is along the long axis of the meniscus. The tissue is split between an inner and an outer portion. This can progress to a 'Bucket Handle Tear'. These tears are more common with ACL tears.

### 2. Horizontal tear:

This tear is such that the meniscus is split in to a superior (upper) and an inferior (lower) portion. In this tear the meniscus opens up like a fish mouth. These are often associated with a small cyst at the back end of the tear.

### 3. Oblique tear:

This tear runs obliquely along the body of the meniscus.

### 4. Radial tear:

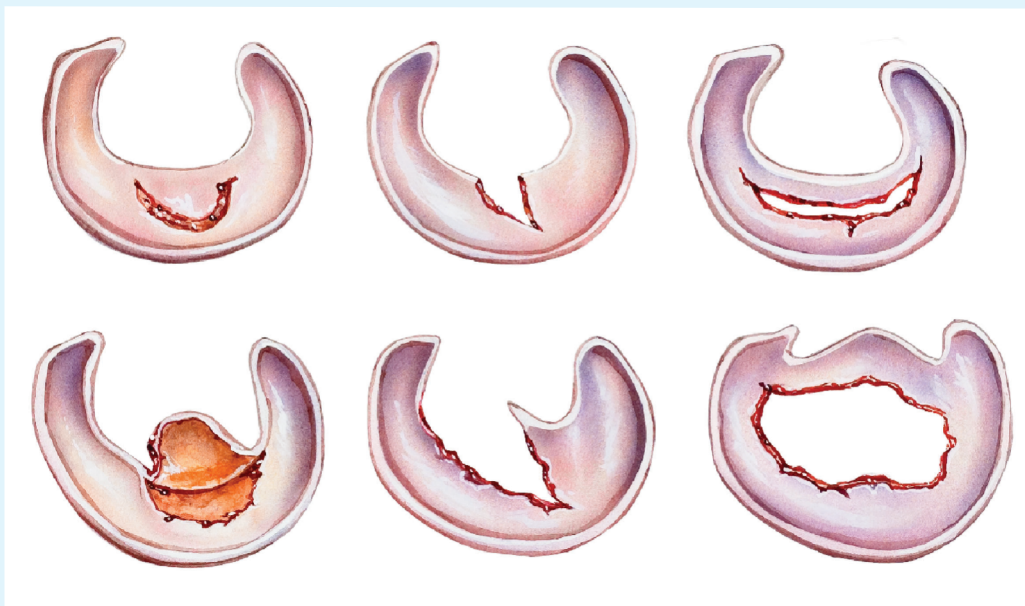
This tear is perpendicular to the long axis of the meniscus causing complete loss of function of the meniscus. These tear patterns are most devastating since the meniscus loses all its functional capacity.

### 5. Complex tear:

This tear is a combination of the above tear patterns. These tears typically happen in degenerative knees or after neglected trauma.

### 6. Root tear:

In this tear pattern, the attachment of the meniscus to the bone is torn. The meniscus loses its anchor to the bone and this leads to complete loss of function. After this tear, the meniscus slowly starts getting pushed out of the joint, thereby allowing the femur and tibia to rub against each other.



**Meniscus Tear Patterns**

## What happens when the meniscus tears?

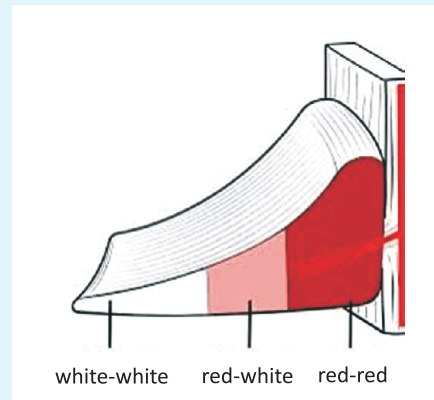
A tear of the meniscus basically robs the knee of its function. The most important consequence is that the pressure on the cartilage increases. This leads to increased loads on the joint cartilage and progression of arthritis. 'Radial Tears' or 'Root Tears' are the more serious types of tears. A tear, which gets trapped between the joint surfaces, leads to locking of the knee. The 'Bucket Handle Tear' or the 'Flap Tear' are more likely to produce locking. Some instability is possible after a meniscus tear and is due to the loss of stabilizing function of the meniscus.

## Can the meniscus heal naturally?

Most tissues in the human body which heal naturally, do so because of robust blood supply. The meniscus has poor blood supply, which is restricted only to the outer one-third area. This lack of adequate blood supply is responsible for the meniscus tear to have a poor healing potential. The second factor impeding the healing of the meniscus is lack of stability. The meniscus is in continuous motion with the knee joint. Thus, the torn edges cannot co-apt for them to heal, even if the blood supply is present.

## What happens if you choose not to get the meniscus treated surgically?

The precarious blood supply of the meniscus is divided into a red-red zone (good blood supply), red-white zone (borderline blood supply) and white-white zone (no blood supply). Due to this reason, meniscus tears usually do not heal themselves, unless they are very small and in the red-red zone.



**Normal Knee**



**Untreated  
Meniscus Tear  
Progressing to  
Arthritis**

If you choose not to get the meniscus treated surgically, it is likely that the torn meniscus will not heal by itself. The torn meniscus renders the knee unstable and also allows for harmful forces to act on the joint surfaces. This leads to two consequences—

1. The meniscus tear worsens and progresses in size, thereby increasing the incidence of locking and instability. In chronic tears, cysts may develop around the torn meniscus due to seepage of the joint fluid.
2. Arthritis of the knee would set in rapidly in such an unstable knee.



## **What are the surgical treatment options?**

There are two options for the surgical treatment of a torn meniscus :

**1.**

**Meniscectomy  
(resection or removal  
of the torn tissue) -  
traditional or older method**

**2.**

**Meniscus repair -  
current modern technique**

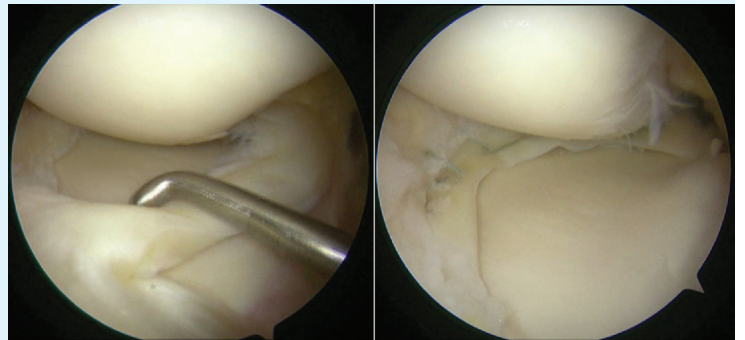
## **What is meniscus resection (meniscectomy) and what are its consequences?**

Meniscectomy is a surgery to remove a part of the meniscus tissue which is either irreparable due to poor quality of tissue or pattern of tear. The loose pieces are removed, trying to save as much of the meniscus tissue as possible. Very small or peripheral meniscus resections do not affect the knee as much as removal of greater amounts of meniscus which lead to increased joint contact pressure.

Over a period of time, the cartilage, which is ill adapted for such harmful forces begins to break down and degenerate. This leads to arthritis, which causes persistent pain in the knee and deformity. A meniscectomized knee also has reduced stability and puts extra load on the ligaments.

## **What is meniscus repair?**

Meniscus repair is an arthroscopic surgery where the torn ends of the meniscus are stitched to facilitate healing. A meniscus repair basically stabilizes the tear and healing takes place from the "growth factors" present in the blood.



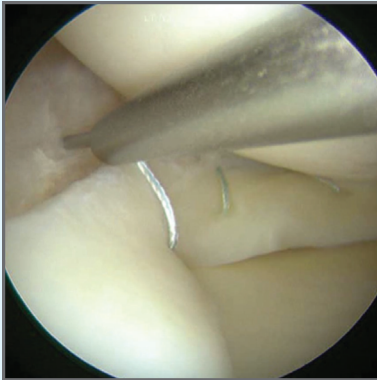
**A meniscus is repaired using nonabsorbable sutures which hold the tear tissue till the healing process is complete.**

**The arthroscopic technique of meniscus repair will depend on the tear configuration and is performed by any one of the 4 techniques:**

### **a) Inside-out repair:**

In this technique, needles, which are loaded with sutures, are passed across the tear from inside the joint to outside. A small incision is made on the skin outside to tie the knots.

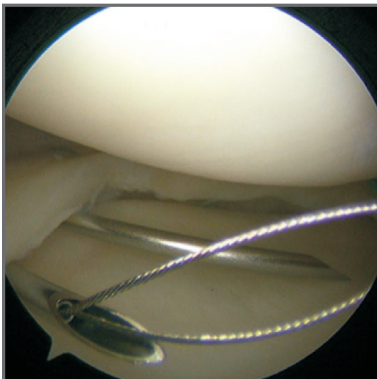
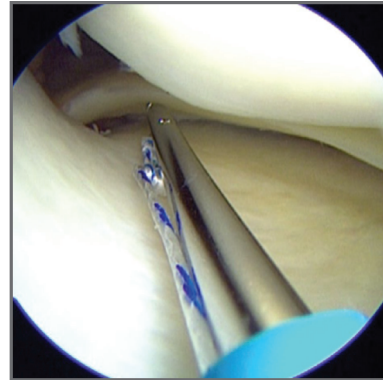
#### **Inside Out Repair**



### **b) All-Inside repair:**

This technique of repair involves the use of commercially available devices that carry non metallic anchors loaded with sutures, which hold the torn meniscus in place.

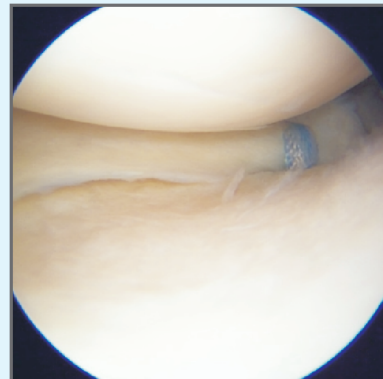
#### **All Inside Repair**



#### **Outside In Repair**

### **c) Outside-In repair:**

The sutures for repairing the meniscus are passed from outside the joint to the inside, across the tear. A small incision is made on the outside to tie the knots.



#### **Trans Tibial Repair**

### **d) Transtibial repair:**

This repair technique is used when the meniscus is torn off from its attachment in the bone in a 'Root tear'. A special device is used to pass stitches through the meniscus and these sutures are pulled through a drill hole in the shin bone, to be tied to a button.

## When is the best time to repair a meniscus?

A meniscus tear is best repaired as early as possible. There is no definitive time frame, but a tear is ideally repaired in the first 3-4 weeks or so. Older tears tend to become sclerosed (hard) and complex in nature (tissues becomes shredded), and these are not easily amenable to repair. Tears, which cause locking of the knee, must be treated even more urgently. The chance that a repaired meniscus would eventually heal is higher if this golden window of opportunity is utilised.

## What is the Rehabilitation after meniscus repair?

The rehabilitation protocol after meniscus repair depends on the site and size of repair, as well as on any concomitant cartilage or ligament surgery. Weight bearing restrictions apply if the tear is large in size or situated in the peripheral area at the back of the knee (Ramp Lesion).

During the first 3 weeks, knee bending upto

90 degrees is allowed. However, the patient must abstain from deep flexion activities in the loaded knee, while squatting or using an Indian style toilet / latrine in the early months of repair. Icing the knee with a cryocuff device and exercises to activate the quadriceps muscle are important in the early phase of rehab. Strength training and balance development are prioritized as per the protocol for any ligament surgery, which is performed simultaneously.



**Cryocuff**

## When can you go back to work or play after the meniscus repair?

Meniscus repair surgery would usually involve stay in the hospital for a day or less. One can be up and about on the same day and manage activities of daily living independently. Your rehab program will commence in the hospital itself and will be continued at home. Return to work is allowed once you are able to walk with full weight bearing and achieve adequate muscle control in your quadriceps. Return to play after a meniscus repair can be allowed 3 months after the repair.

- Sports Injuries & Arthritis
- Advanced Knee / Shoulder Arthroscopy
- Primary / Revision Joint Replacement
- Joint Preservation

# THE ORTHOPAEDIC SPECIALITY CLINIC

**DR. SACHIN TAPASVI**

M.S. (ORTH), D.N.B (ORTH), M.N.A.M.S, F.R.C.S. (Glasgow), A.F.A.O.A. (Australia)

For appointments :

**89284 05250, 89831 05250 ( 9 AM to 8 PM )**

---

Send your reports on Whatsapp : **70583 40760**

In case of any EMERGENCY call : **91750 18871**

**Fergusson College Road :**

16, Status Chambers, 4th Floor,  
Wrangler Paranjpe Lane,  
Lane Adjacent to Hotel Vaishali,  
Off. Fergusson College Road,  
Pune - 411 004

**Camp Clinic :**

2, Tehmi Terrace,  
Next to Ruby Hall Clinic,  
Lane Before Gold Field Plaza,  
Sassoon Road,  
Pune - 411 001



Patient education initiative by "Tapasvi Charitable and Medical Center"