



Allogenic Mesenchymal Stem Cells

Knee Osteoarthritis

What is Knee Osteoarthritis (OA) ?¹

Knee Osteoarthritis is the most common type of arthritis.

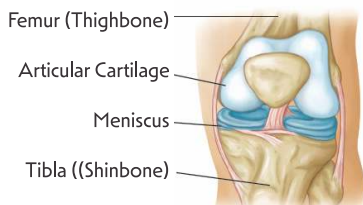
A healthy knee joint easily bends and straightens because of a smooth, slippery tissue called articular cartilage. This substance covers, protects, and cushions the ends of the leg bones that form your knee.

Between your bones, two c-shaped pieces of meniscal cartilage act as "shock absorber" to cushion your knee joint. Osteoarthritis causes cartilage to wear away.

How it happens? Osteoarthritis occurs over time. When the cartilage wears away, it becomes frayed and rough. Moving the knee joint becomes painful, accompanied by stiffness.

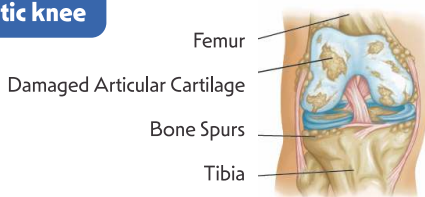
If the cartilage wears away completely, it can result in bone rubbing on bone. To make up for the lost cartilage the damaged bones may start to grow outward and form painful spurs.

A healthy knee



Symptoms: Pain and stiffness are the most common symptoms of Knee Osteoarthritis. Symptoms tend to be worse in the morning or after a period of inactivity.

An osteoarthritic knee



Treatment journey in knee OA^{2*}

Supportive treatment:

Simple painkillers, external applications, supplements



Mild OA*

Life style modifications:

Education, weight loss, exercise, lifestyle changes as advised by the doctor



Simple non-surgical options:

Prescribed oral painkillers, corticosteroid injections, physiotherapy, supporting devices



Disease progression

Advanced non-surgical options:

Intra-articular injections



Surgical options:

Repair/partial or total joint replacement



Severe OA*

Being progressive in nature, OA* can eventually lead to disability. The symptoms usually become more severe, more frequent, and more debilitating with time. The rate of disease progression varies from person to person.⁹

The current treatment options for Grade 2 & 3 Knee OA focus on reducing pain and disability, but they may not be capable of treating the root cause of disease. Thus, there is the need for a more dependable and restorative approach that focuses on treating the root cause of knee OA*, i.e. damage of the joint cartilage.

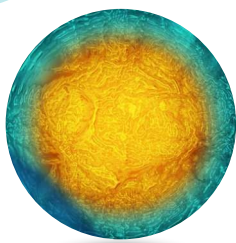
What is Mesenchymal stem cells



A first-in-class, standardized, off-the-shelf, stem cell therapy, approved by the Drugs Controller General of India (DCGI)³

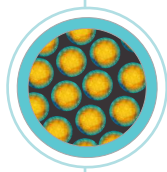
Mesenchymal stem cells: Intra-articular administration in patients with Grade II and Grade III Knee OA^{3 *}

What are stem cells ?⁴



Stem cells are raw materials of the body from which all other cells are formed. These cells are not only capable of multiplying by dividing into daughter cells, but also into specialized cells like cartilage cells, bone cells, and muscle cells. This ability to generate new cell types is not present in any other cell in the body

Advantages of Mesenchymal stem cells⁵



Easy to obtain, as they are found in abundance

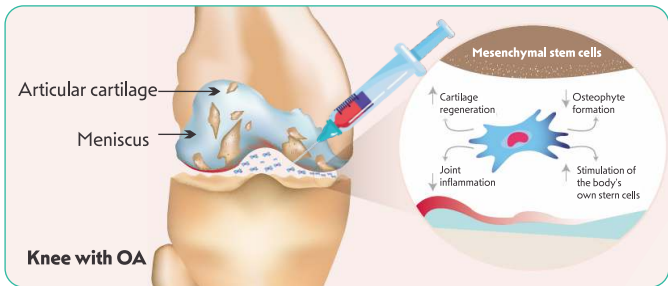
Have the ability to convert into several different cell types

No ethical issues, as they are ethically sourced from healthy adult bone marrow⁵






How Mesenchymal stem cells helps treat knee OA? *

Mesenchymal stem cells offers to clinically preserve & protect the knee joint cartilage. As depicted in the figure, these cells help to:⁶

- ↓ Decrease the joint pain and stiffness
- 🏠 Stimulate the body's own cells to repair & preserve the cartilage tissue
- ↑ Improve physical function



How Mesenchymal stem cells are prepared? ⁷

-  Mesenchymal stem cells is a ready to use product.
-  Mesenchymal stem cells is obtained from a cell bank made by isolating, culturing & pooling the stem cells from the bone marrow aspirates of 3 healthy donors.
-  Mesenchymal stem cells is then cryopreserved.
-  After stringent quality checks, the final Mesenchymal stem cells vial is cryoshipped for delivery at -185°C to -196°C .
-  Once the Mesenchymal stem cells vial is delivered, your doctor will follow a standard protocol to administer it.

Getting ready for your Mesenchymal stem cells injection

You will need to get admitted to the hospital the day before getting your Mesenchymal stem cells injection and will be discharged on the next day.

Mesenchymal stem cells leaves the manufacturing facility using specialized cryochain (cold chain) logistics.

Before your doctor actually injects Mesenchymal stem cells into your joint, you may watch him preparing the injection. The entire process has been illustrated below for your knowledge and understanding:⁷

Mesenchymal stem cells is stored



The cryoshipper is received at your doctor's clinic/hospital



Wearing cryogenic gloves, the cryoshipper will be opened.



The temperature will be checked on the data logger to ensure product stability



The Mesenchymal stem cells vial will be retrieved from the vial box.



The canister stand will be removed.



The lid of the cryoshipper will be opened.



The Mesenchymal stem cells vial will be thawed to bring it to room temperature



1 ml of a solution called Plasmalyte-A will be drawn into a syringe.



This will be injected into the Mesenchymal stem cells vial

Finally, your doctor will inject Mesenchymal stem cells into your knee joint with Hyaluronic acid

Mesenchymal stem cells post injection care precautions:⁸

0-3 Days Post Injection

Do's	Don'ts
Rest for 24 hours after the injection, except for washroom breaks.	Avoid overstraining or prolonged weight-bearing activities & kneeling for 72 hours after the injection.
Apply only a cold pack, if required, on the injection area.	Do not take any medicines unless specified by your doctor.
You may take a bath with lukewarm water after 24 hours.	Avoid massaging or applying a hot pack/ hard press over the injection area.
Stay hydrated & drink plenty of water. Eat your regular food, preferably a healthy diet rich in vitamins, minerals, & antioxidants.	Do not take a bath with very hot water.
	Avoid smoking/tobacco and drinking alcohol. (The intake of alcohol & tobacco affects tissue, reduces oxygen levels in the blood, and slows down the stem cell activity)

3-14 Days Post Injection

Do's	Don'ts
You can gradually get back to your regular activities and exercise.	Avoid smoking & consuming any alcoholic beverages in the first 7 days.

Note: Kindly contact your doctor for any further information/ advice. To monitor your progress, make periodic follow-ups with your doctor. Physical activity should follow the rehabilitation plan recommended by the doctor.

Allogenic Mesenchymal Stem Cells



For any further queries consult
Doctor

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*Osteoarthritis MSCs - Mesenchymal Stem Cells

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