Stem Cell Care India

# OSTEOARTHRITIS STEM CELL TREATMENT

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# OSTEOARTHRITIS STEM CELL TREATMENT

Osteoarthritis is a painful problem with the joints, especially spine, hip, hand, knee, and foot. When you have arthritis simple everyday movements can hurt, such as climbing the stairs, walking a few steps, opening a door, and even combing your hair can be hard. The simplest way to elaborate arthritis is that it is the wear and tear of the cartilage of your joints.

Most commonly occurs in older people, but some young individuals may also suffer from it if they had joint injuries. Genetics and obesity are also reasons behind arthritis.

This type of arthritis is caused by the breakdown and eventual loss of the cartilage of one or more joints. Cartilage is a protein substance that serves as a "cushion" between the bones of the joints. It is also known as degenerative arthritis. Osteoarthritis is the most common among the 100 different types of arthritis conditions. Before age 45, osteoarthritis occurs more frequently in males. After age 55 years, it occurs more frequently in females. The body parts that are most commonly affected are the hands, feet, spine, and large weight-bearing joints, such as the hips and knees.

Primary osteoarthritis is cause due to aging. The water content of the cartilage increases and the protein makeup of cartilage degenerate as the body ages. The constant use of the joints over the years irritates and inflames the cartilage, causing joint pain and swelling. Over the time, cartilage begins to degenerate. In advanced cases, a total loss of the cartilage cushion between the bones of the joints occurs. Friction between the bones occurs due to the loss of cartilage cushion, which leads to pain and limitation of joint mobility. Inflammation of the cartilage can also stimulate new bone outgrowths to form around the joints.

Secondary osteoarthritis is caused by obesity, repeated trauma or surgery to the joint structures, abnormal joints at birth, gout, diabetes and other hormone disorders. Obesity causes osteoarthritis by mounting the mechanical stress on the cartilage. Crystal like deposits in the cartilage causes cartilage degeneration, and osteoarthritis. Uric acid crystals cause arthritis in gout, while calcium pyrophosphate crystals cause arthritis in pseudo gout. To solve your concerns, StemCellCareIndia offers promising osteoarthritis stem cell treatment in Delhi, India.

## Symptom

Symptoms of arthritis may range from mild to severe. Some of them are:

- Pain
- Stiffness
- Muscle weakness
- Swelling
- Deformed joints
- Reduced range of motion and loss of use of the joint
- Cracking and creaking
- Sleep problems

The symptoms of osteoarthritis may differ greatly from patient to patient. In spite of the dramatic degeneration of the joints obvious on x-rays, some people may have very few symptoms. Symptoms can also be irregular. It is not unusual for patients with osteoarthritis of the hands and knees to have years of pain-free intervals between symptoms.

Osteoarthritis of the knees is often linked with obesity or a history of frequent injury and/or joint surgery. Progressive cartilage deterioration of the knee joints can lead to malformation and outward curvature of the knees referred to as "bow legged." Patients with osteoarthritis can develop limp as well due to the weight bearing joints (like the knees). The limping can get worse as more cartilage degenerates.

Osteoarthritis of the fingers and the toes may have a genetic basis, and can be found in numerous women members of some families. This causes the formation of hard bony enlargements of the small joints of the fingers.

Osteoarthritis of the spine causes pain in the neck or low back. Bony spurs that form along the arthritic spine can bother spinal nerves, causing severe pain, numbness, and tingling of the affected parts of the body.

## Diagnosis

The recommend treatment of arthritis is based on your symptoms and by doing a physical exam. The tests include:

- A joint fluid study
- X-rays
- An arthroscopy

Other tests may include a urine test and one or more blood tests, such as:

- Complete blood count (CBC).
- Rheumatoid factor (RF).
- C-reactive protein (CRP).
- Sedimentation rate (sed rate).
- Antinuclear antibody (ANA).
- Chemistry screen.

# ABOUT STEM CELL

Stem cells are a fundamental part of life formation...We, humans are polymorphic characters with diverse shapes, sizes but with the same origin. All of us are made by the blending of two cells called the "ovum" and the "sperm cells". Thus only two cells are accountable for forming a whole organism. This conception has laid a foundation for the terrific era of "Regenerative Medicine". In this era, due to the enormous progressions in the cellular biology, we are on the threshold of reconnoitring "Biological solutions to Biological problems". These stem cells are unspecialized cells with an astonishing aptitude to self-renew and are adept of segregating into tissue specific cells of the body. When called for an action by the body at the time of damage these cell undergo division giving rise to one daughter cell and one ancestor cell which is an transitional committed cell type formed before it completelysegregate into specific cell type. Stem cells are classified by their potential to separate into other types of cells. The cataloging includes:

**TOTIPOTENT :** the aptitude to segregate into all possible cell types. Specimens are the zygote formed at egg fertilization and the first few cells that arise from the division of the zygote.

**PLURIPOTENT :** the aptitude to segregate into practically all cell categories. Specimens include embryonic stem cells and cells that are derived from the mesoderm, endoderm, and ectoderm germ layers that are formed in the commencement stages of embryonic stem cell differentiation.

**MULTIPOTENT :** the aptitude to segregate into a closely related family of cells. Specimens include hematopoietic (adult) stem cells that can become red and white blood cells or platelets.

**OLIGOPOTENT :** the aptitude to segregate into a few cells. Specimens include (adult) lymphoid or myeloid stem cells.

## Types of Stem Cell

Stem cells can self-renew to make more stem cells or differentiate to form specialized cell types such as muscle cells, skin cells, nerve cells and fat cells. When a stem cell divides, three different cell types are formed having unique characteristics. Embryonic stem cell, Tissue or Adult stem cell, Induced pluripotent stem cell (iPSC)

Embryonic stem cells and adult stem cells have different abilities in the number and type of specialized cell types they can become. While embryonic stem cells can become many different types of cells in the body because it is pluripotent, adult stem cells can differentiate to form different cell types of the tissue of their origin only.

Induced Pluripotent Stem Cells (iPSCs) are genetically reprogrammed to express genes and factors vital for sustaining the unique properties of embryonic stem cells.

## Why Mesenchymal Stem Cell

Umbilical cord tissue epitomizes a unique, straightforwardly accessible and noncontroversial source of initial stem cells that can be willingly manipulated. Studies that have equated the properties of mesenchymal stem cells derived from cord tissue with those derived from adult sources (such as bone marrow) have exemplified some vital differences:

- Cord tissue: derived mesenchymal stem cells seem to lack some immune suppression properties equated with adult mesenchymal stem cells.
- Cord tissue: derived mesenchymal stem cells lack class II HLA, while adult mesenchymal stem cells express these antigens. This might be chiefly imperative in enabling the acceptance of transplanted mesenchymal stem cells.
- Cord tissue: derived mesenchymal stem cells also express an array and level of particular cytokines that are diverse from those expressed by adult mesenchymal stem cells.

Thus, as immature cells, mesenchymal stem cells extracted from cord tissues have better therapeutic potential than adult cells. Studies have also revealed that cord tissue i.e. derived mesenchymal stem cells seem to have superior in-vitro capacity for extension and shorter magnifying times; they can thus generate a bigger cell mass in fewer time than can be attained with adult stem cells. This property might be related to greater length of chromosomal telomeres, which have been found to condense with augmented rounds of cell division. This advocates that primitive mesenchymal stem cells have a greater aptitude to enlarge in culture than do adult mesenchymal stem cells, possibly owing to their relative youth.

## The promise and science of stem cells

Stem cells have three unique qualities which make them important for normal deterioration of the body. First, they are undifferentiated cells adept of giving rise to any tissue specific cells. Secondly, they are capable of lengthy self-renewal having limitless life span and thus upholding their number intact. Thirdly, they are able to elicit secretion of certain hormones and growth factors at the location if injury to enable damage repair.

These cells are able to regenerate damaged organ systems of the human body via formation of new cells within the system itself e.g. hematopoietic stem cells are adult stem cells refilling all blood cells. These stem cells hasten the production of blood cells by creating microenvironment beset with hormones and growth factors. Thus, in other words, stem cells are promising contenders for 3R's i.e. Repair, Regenerate and Rejuvenation.

For quite some time, scientists have examined the role these stem cells play in renewing the tissues of those systems. In the last decade, new path has been paved for the individuals who have lost hopefulness with the conventional treatment for hazardous and incapacitating diseases. Scientists have been able to derive stem cells in the laboratory that are not particular to specific organ systems. These stem cells are secluded from your own body to decrease the probabilities of rejection and other opportunistic infections after again putting back into your body. With the great relocation and homing capacity, these cells live in the targeted region to start the procedure of regulation.

## Adverse Reaction

We comprehend that patients might have apprehensions about adverse reactions to the treatment. Possible side-effects of stem cell therapy may differ from individual to individual; any complications depend upon the type of processes you are undergoing.

Side-effects experienced by our patients are consistent with predictable reactions for routine IV and LP injections. The most common reactions to the treatment are fever, headache, diarrhea, leg pain, vomiting and allergic reactions. Less than four percent of patients experience any of these signs.

The most common reactions to the stem cell treatment are:

## How do our stem cells work?

Stem cells, called the 'future of medicine' have remarkable qualities besides being the potential contenders for treating many fatal diseases. This unique quality of stem cells have left us to wonder "How can a group of cells; plunging from a single original cell is used to treat ailments?" Well, the answer lies in the mechanism of how stem cells work! Though the science does not have a thorough answer to this query, but surely it has a justification. There are lots of proofs from the gathered research and clinical data that these are the creator cells i.e. they have the ability to develop most of the cells of the body.

They are indistinguishable cells lying inactive in the body. At the time of wound, these cells are triggered by the convoluted molecular machinery and signaling mechanism, which will control their fate. In addition to being segregated to specialized cells thus renewing a tissue; these cells are also function as bricks. Bricks those are adept of excreting certain signals that bring the brick mason and general contractor to the overhaul. This phenomenon is called as peregrine effect. With the assistance of cell to cell signalling, these cells secrete certain chemicals such as growth factors, hormone, cytokines which act as regulatory devices to arrange the repair job. Intrinsic messaging between stem cells is fundamentally a key to activate sequence of cellular pathways thus mending the cells and acting as a stimulant to replace impaired cells. Thus giving rise to the most imperative advantage of stem cells i.e.3R's i.e. regeneration, repair and rejuvenation.

***Though stem cells are trivial, but they are indeed very smart...***

## How and where is the therapy done?

You have taken the right decision of getting treatment done at StemCellCareIndia and so you will be informed about the time and date on which you have to meet our representative. Our representative will take you to the expert at the hospital for a thorough consultation after which you might undergo radiology and/or pathology tests if mandatory. Once the test outcomes are back, the specialist will discuss your treatment modalities in depth. You are cheered to ask as many queries as you want to; feel entirely confident not just about the treatment but also about the surgeon and the hospital. All the treatments will be done under the medical investigation of the most amazing healthcare specialists such as neurologists, anaesthetists, neurosurgeons, cardiologists, orthopaedic doctor, radiologists and paediatricians. The hospitals are of topmost standards and a devoted team of exceedingly skilled physicians, patient counsellors and nurses looks after the patients. Furthermore, we offer other facilities for our outstation patients like travel help, hotel booking, transport, visa support etc.

## Exclusion Criteria

- Hemoglobin below or equal to 10
- Patients with inherited blood disorders
- Denial to offer signed informed agreement
- Patient had medical surgery within six weeks before treatment initialization
- Pregnant or breast feeding females
- Severe cachexia and malnourishment
- Patients with negotiated immunity
- Positive serology for other communicable ailments.

## Inclusion Criteria

- 18 years and older; If less than 18, parental sanction is needed
- Patients without chronic ailment
- Patient providing written agreement to receive treatment

## The whole medical process at SCCI involves 4 steps:

- Gathering of Umbilical Cord Tissue & Maternal Blood
- QC Testing (Infectious ailment screening + Sterility Testing)
- Processing of Mesenchymal Stem Cell — P2 Final Product
- Stem cell implantation
- Post treatment care

Stem cell therapy is executed consistent with the ideologies of good manufacturing practice together with the most cutting-edge technologies and the finest medical standards that are available. The hazards associated with the adult stem cell therapy are almost insignificant. The therapy embraces the use of patient's own cells so the risk of rejection merely does not exist, which might be conceivable in case if a donor is used. Contingent upon the assessment the source of stem cells will be decided. It can either be bone marrow or adipose tissue. In some particular cases, we can offer stem cells gained from both the sources but the decision will exclusively be taken by the treating surgeon.

## Quality standards

We run each client a Third Party Certificate (from a globally accredited lab) for the cell count and feasibility of the cells that we process from the allergenic mesenchymal stem cell certificate of Analysis (COA).

It is now a recognized fact that by harnessing the healing power of stem cells, it may be able to reverse impaired tissues back to normal function. With this in mind, StemCellCareIndia has embarked on a mission to cultivate safe and effective protocols for therapeutic applications, thus making widespread stem cell therapy accessible and economical, with a high success rate to improve the quality of life, for those in need.

All batches of stem cells at StemCellCareIndia undergo final testing before they are sanctioned for clinical application. During this procedure, they are tested for potency by cell counting and feasibility assessment. The purity of the stem cells is confirmed by differentiation assay, sterility testing and testing for the presence or absence of CD markers. The comprehensive quality control assessment also takes account of tests for mycoplasma, endotoxins and karyotyping. Once the stem cells are believedto be safe, each unit is considered fit-to-be outfor therapy.

## Stem cell implantation

Stem cells can be implanted in following ways such as:

- Intravenous Administration
- Intrathecal Administration (Lumbar Puncture)
- Intramuscular Administration
- Intra-arterial Administration via catheter
- Intravitreal Infusion
- Retrobulbar Infusion of cells
- Liberation Angioplasty for Multiple Sclerosis CCSVI
- Intra-Dermal Administration

## Postoperative care

The stem cell therapy does not damagingly affect patients in any way. Generally, the patients are permitted to leave after few hours after the completion of the stem cell treatment. A 24-hour patient hotline number is there for any inquiries after their discharge. The concerned physicians or surgeons of the clinic also stay in contact with their corresponding patients through telephone or email. By doing this, they can get the precise feedback about their progress and also suggest further recovery if required. Say for example, in case of a diabetic patient, after hearing about the patient's present symptoms, the concerned doctor can recommend the needed dosage of insulin.

## Treatment disclaimer

It is an imperative fact to comprehend that stem cell treatment in every prospect has the ability to diminish symptoms of numerous diseases. It also has the aptitude of ceasing several degenerative procedures, but one should also know that this treatment may not work for all kinds of patients. StemCellCareIndia does not have the right of forecasting or warranting the success of this treatment.

In harmony to the current condition of a patient, the medical team of StemCellCareIndia might propose the stem cell transplantation or may even withdraw the treatment under abnormal situations. However, in any case, the approval of the patient is a must. Keeping the patient's current health condition and unforeseen health hazards in mind, the medical staff might propose an alternative stem cell transplantation process. In exceptional situations, they may entirely cancel the treatment.

# CONTACT US

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