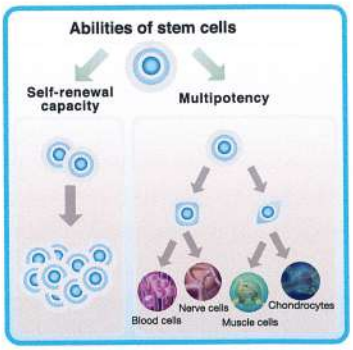
Treatment of osteoarthritis using cultured cells

The aim of regenerative medicine is to improve the quality of life (life quality and life design), diseases and injuries that modern Western medicine cannot cure.

What is Regenerative Medicine?

It is a medical treatment in which cells and tissues are transplanted to restore the function of organs and tissues in order to reproduce the lost functions when various organs and tissues are damaged due to injury or disease.

Humans originally have the ability to repair (restore) themselves. The cells that play an important role in the tissue regeneration process are “stem cells”. “Stem cells” are a group of cells that have the ability to multiply themselves unlimitedly (self-renewal capacity) and the ability to differentiate, or transform, into specific tissues (multipotent). By fully understanding and utilizing the abilities and properties of these cells, we will restore the self-renewal ability of living tissues to treat injuries and diseases. In the near future, various uses of these stem cells are expected.



What is the treatment of osteoarthritis?

Subcutaneous adipose tissue is aspirated in a short time from the patient's own abdomen, thighs and other parts of the body, and then the cells are separated and cultured. They are divided into several portions and stored frozen. They are thawed as needed and injected into the patient's affected joint to relieve inflammation and reduce (eliminate) pain. The injection also promotes repair and regeneration of the damaged part, slows or stops degeneration of the articular cartilage, and thus helps prolong the life of the joint for the future.

※This treatment is not health insurance treatment but is self-pay treatment (treatment at patient's own expense).

Special actions of adipose stem cells

- Anti-inflammatory action
- Anti-fibrotic action
- Angiogenic action
- Cell differentiation ability, etc.

Flow of treatment

01 Subcutaneous liposuction

The patient's own subcutaneous fat (usually the abdomen and thighs) is aspirated in a short time. The aspiration amount is about 10-30 grams.

02 Stem cell collection and culture — Cell Therapy Unit

Adipose-derived stem cells are separated from aspirated fat. Separation is carried out by a professional engineer in a completely sealed and clean environment, and culture is performed in an officially approved clean room such as a cell therapy unit (CTU) and related facility in our clinic to ensure a sufficient amount of cells.(See attachment)

03 Cell transplantation

Cell transplantation will be completed in about 1 hour on the day. (Day surgery)
We perform the operation in cooperation with the skilled transplant team (Department of Orthopedic Surgery, Kobe University School of Medicine).

Adipose-derived Stem Cell Bank Service

This is a service to preserve adipose-derived stem cells for future treatment.

Regenerative medicine related services by Sobajima Clinic

In September 2016, in collaboration with Professor Ryosuke Kuroda (Department of Orthopedic Surgery, Kobe University School of Medicine), Regenerative Medicine Center Sobajima Clinic has submitted a notification regarding "Regenerative Medicine Provision Plans of Type II" required in "Act on Ensuring Safety of Regenerative Medicine", to Kinki Regional Bureau of Health and Welfare, and it has been successfully accepted. This has permitted us to practice regenerative medicine for osteoarthritis using cell populations containing adipose tissue-derived regenerative (stem) cells.

Furthermore, by using the cell bank system, the extracted cells are divided into several parts and cryopreserved, allowing not only single administration at the time of extraction but also multiple administrations when needed later. This is the world's first attempt.

Flow of using adipose-derived stem cell bank

Aspiration and culture of adipose-derived stem cells

After our full explanation and the patient understanding, first of all, we will aspirate the patient subcutaneous fat (from the abdomen, thighs, etc.). The aspirated subcutaneous fat is then collected by the specialized staff for stem cell collection in the cell therapy unit (CTU) and related facility in our clinic, and the cells sufficiently obtained by the culture operation are preserved under ultra-low temperature storage (minus 150 ° C or less) until use. In addition, we will make preparations for when necessary while explaining (updating) clinical research trends and clinical application status to our patients who have preserved their cells.

Adipose-derived stem cell preservation

The cells obtained by culture are divided into several pieces and preserved. By dividing them into several doses, it will be possible for the patient to receive regenerative medicine using his own adipose-derived stem cells for various treatments in the future.We will regularly provide a state-of-the-art information on regenerative medicine using adipose-derived stem cells to members who use the adipose-derived stem cell bank service.

Please feel free to contact us

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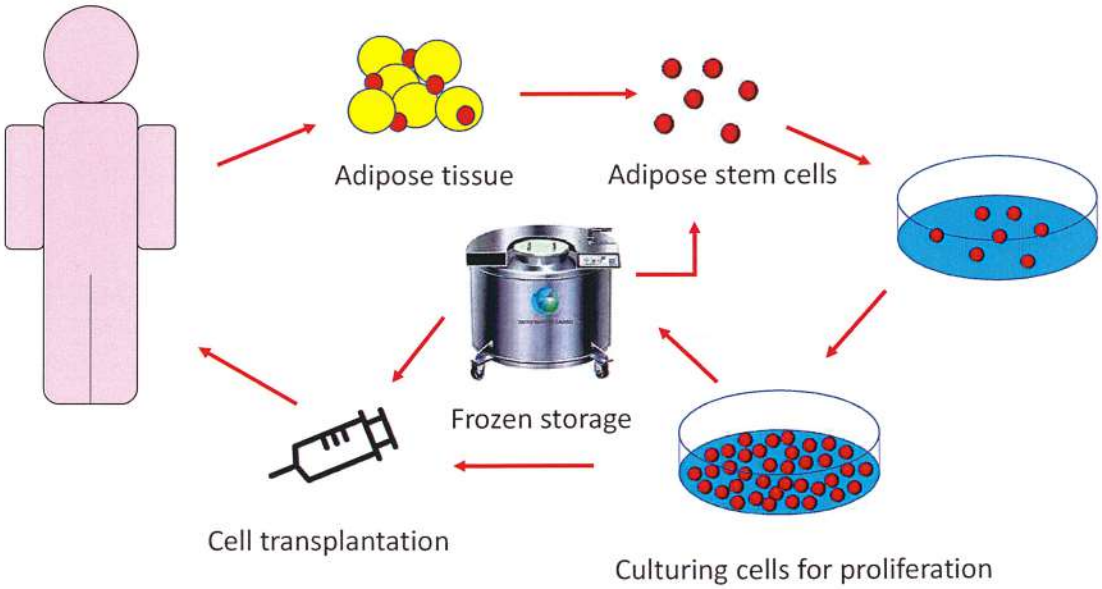
About Cell Culture

"Adipose-derived stem cells (ADSCs)" are present in the subcutaneous adipose tissue of the abdomen, thigh, and other parts of the body. They can be produced in large numbers by culturing under appropriate conditions.

In this treatment, adipose-derived stem cells are collected from aspirated subcutaneous adipose tissue and cultured for proliferation.

The growth rate varies among cells from different people but the duration of culture is typically about 2 months. After culture, the obtained cells are stored by freezing at -160℃ until needed so that they can be used for treatment in a timely manner.



STEP 1	STEP 2	STEP 3
Collection	Culture	Transplantation
Stem cells are collected from adipose tissue.	The collected stem cells (ADSCs) are cultured in a dedicated facility to produce 100-300 times more cells.	The cultured stem cells (ADSCs) are frozen and stored, and thawed whenever needed for treatment.

Cell growth over time

Cells increase in number over time. The growth rate varies among cells from different people.