

## Novel Knee Repair Method Reduces Trauma

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By Liaw Wy-Cin

AN EXPERIMENTAL procedure to repair knee cartilage using stem cells has brought relief to 35 people here in the last three years.

Now Dr Kevin Lee, 37, from the division of adult reconstructive surgery at the National University Hospital, hopes to test it on 100 patients over the next two years to see if it is better than current methods. His method marries two techniques used in other parts of the world, but with some modifications.

Dr Lee's method, a day-surgery procedure that lasts about 1-1/2 hours, involves making holes with a tiny pick, through keyhole surgery, in the bone of a patient's knee which has been worn out by overuse.

This releases a type of stem cell from the bone marrow, which later grows into cartilage cells.

At the same time, he extracts bone marrow from an area near the hip. This is done to obtain stem cells, a type of master cell which can be grown into bone, fat or cartilage.

Three weeks later, the few hundred stem cells would have grown into over 10 million adult stem cells. These are injected into the patient's knee, together with a fluid which protects the cartilage cells from damage. The stem cells are able to home in on the area where there is missing cartilage. These cells then either become cartilage cells themselves, or stimulate surrounding cells to become cartilage cells.

It takes a few weeks for the stem cells to become cartilage cells and at least six months before the cells become mature cartilage.

Civil servant Wahida Mansor, 44, could climb the 12 storeys to her Jurong West flat several months after the procedure.

The mother of three said: 'In the past, after walking for a few hours, my knees would swell and it would be very uncomfortable. I was unable to sleep. Now I still can't jog, but at least I can sleep and do housework because it's not painful and doesn't swell.'

About 150 to 200 cartilage operations are done in Singapore a year. They are done by extracting cartilage cells, growing them in the lab and opening up the knee to transplant them.

An orthopaedic surgeon at Mount Elizabeth Medical Centre, Dr Yegappan Muthukaruppan, does about 10 such operations a year. Commenting on Dr Lee's method, he said: 'This is experimental currently, but I do believe this will be the way to go as it is minimally invasive.'

Dr Lee believes his method will be less traumatic for patients, saying: 'It's minimally invasive, with very small holes, not a big cut, so there will be less pain and where there is less pain, patients also recover faster.'

ACTIVE people in their 40s are no longer putting up with the pain and immobility caused by damaged cartilage in their knees.

They are instead checking into hospitals to get their problem surgically fixed.

The operation, an autologous cartilage transplant, involves harvesting a small amount of their cartilage or connective tissue, growing this in a laboratory till there are millions of cells, and then implanting this in their bad knees.

The National University Hospital (NUH) has done more than 100 such transplants since 2000.

Demand for this treatment is growing, with two or three operations done every month here.

The surgery is like having an infusion of fresh cartilage to patch up 'potholes' in the tissue, which could have come from contact sports or other injuries.

The patient's pain from this problem comes from the holes leaving nerve ends in the bone exposed.

Patients are always given painkillers as the first line of treatment. But if these do not work, and the person wishes to continue playing sports, an autologous transplant of cartilage is now a viable option. Since the cartilage is harvested from the patient himself, the risk of rejection is zero.

However, this is not a treatment surgeons offer older people, who are mostly given total knee replacements.