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Calgarian receives first live shoulder cartilage transplant

CALGARY – Twenty years of Alberta-based research into tissue preservation has culminated in the first documented transplant of living cartilage into a shoulder.

Dr. Mark Heard transplanted the live cartilage into the shoulder of Jim Chebib during a groundbreaking, two-hour procedure at the Banff Springs Mineral Hospital in March.

“The surgery restores the joint structure and function, preventing or at least delaying the need for more shoulder surgery,” says Dr. Heard.

Cartilage is the connective tissue found in many parts of the body. The cartilage in joints cushions and protects the bones and creates nearly frictionless movement. However, since cartilage contains no nerve endings or blood supply, it cannot heal on its own if damaged.

To date, there have been limited treatment options with no long-term success for patients with cartilage injuries in their joints.

However, a team of surgeons and researchers at the McCaig Institute for Bone and Joint Health in Calgary has spent two decades working with different sources of cartilage and methods of preservation. They’ve identified a medium that keeps cartilage cells alive for 30 days and developed protocols around how to do this.

This research could have significant impact on patients requiring cartilage transplant.

“We have longer time frames to screen tissue, match donors with suitable recipients and schedule surgeries,” says Dr. Norman Schachar, program director of the Joint Transplantation Program, Faculty of Medicine, University of Calgary.

“With this 30-day time frame, we can confirm that at the time of surgery, approximately 90 per cent or greater of the cells in the cartilage are alive and ensure there is no bacterial contamination of the graft or diseases present in it. We also have more time to ensure the donor tissue is carefully matched to the recipient. The result is a nearly seamless healing of the joint as the new tissue is incorporated into the existing bone.”

Chebib, 45, says the surgery has restored full movement in a shoulder that had dislocated eight times in five years due to cartilage damage. An avid soccer player, he expects to return to the pitch in September.

“It’s neat to be a part of it,” Chebib says of the procedure.

“It sounded like a good solution because it’s all natural and, really, I was happy to have the surgery so I could play soccer healthy again.”

Dr. Heard has several more patients currently awaiting the same procedure, which is part of an ongoing pilot project. Researchers and surgeons hope the same technique can be used for live tissue transplants in other joints.

He credits southern Alberta's strong partnerships between the medical, research and tissue donation communities for developing this breakthrough.

"We have a team of surgical experts and researchers who could show the effectiveness of the procedures, as well as the funding and facilities to offer this treatment as options for patients. The Joint Transplantation Program is directly linked to the Southern Alberta Organ and Tissue Donation Program, so there is a local, safe supply of tissue to transplant," says Dr. Heard.

"This innovation is a true team effort — and the McCaig Institute is on the forefront of this development."

Alberta Health Services is the provincial health authority responsible for planning and delivering health supports and services for more than 3.7 million adults and children living in Alberta. Its mission is to provide a patient-focused, quality health system that is accessible and sustainable for all Albertans.

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