

A new method for healing hearts

September 29 2014, by Alexis Blue



(Medical Xpress)—A University of Arizona surgeon is exploring how amniotic tissue, with its anti-inflammatory and anti-scarring properties, may help prevent complications after heart surgery.

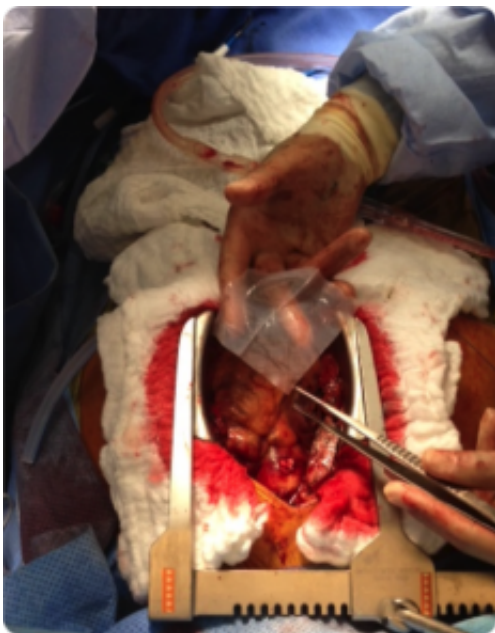
In a cutting-edge new clinical trial, the University of Arizona's Dr. Zain Khalpey is using tissue from the human placenta to help heal hearts after surgery.

Khalpey, a cardiothoracic surgeon, has been applying amniotic tissue, which has powerful anti-inflammatory and anti-scarring effects, to human hearts since last year.

He was the first in the world to practice the technique, which he says appears to significantly reduce risk for postsurgical complications such as atrial fibrillation, or [abnormal heart rhythm](#).

Between 27 and 40 percent of [heart](#) surgery patients develop postoperative atrial fibrillation, which reduces blood flow and increases the risk of stroke and other serious complications.

The [irregular heart rhythm](#) usually begins three to six days after surgery and is thought to be caused by postsurgical inflammation, said Khalpey, an associate professor in the UA Department of Surgery and surgical director of the Heart Transplant and Mechanical Circulatory Support Program at the UA Medical Center.



An amniotic membrane patch is applied during surgery.

In an effort to reduce inflammation – and thereby risk for atrial fibrillation – Khalpey applies an amniotic membrane patch to the area of the heart where the surgery was performed. The patch is made from the inner layer of the placenta, which supplies blood and nutrients to the baby in the womb, and is rich in anti-inflammatory proteins.

"This is an anti-inflammatory blanket that sits on top of the heart, and it basically cools it down," Khalpey said.

The technique seems to be working.

Early clinical results suggest that the patch may reduce the risk for postsurgical atrial fibrillation to less than 10 percent. Khalpey will explore the patch's effectiveness further in a new two-year clinical trial looking specifically at patients who have undergone coronary artery bypass surgery.

The patch, which is biodegradable and dissolves as the patient heals, also helps prevent scarring, which is especially helpful in long-term cardiac patients who may require additional surgeries in the future, Khalpey said.

The amniotic tissue comes from female donors who have had a caesarean birth. Since the tissue doesn't provoke the vigorous antibody response that transplanted organs do, immunosuppressant drugs aren't needed, Khalpey said.

Because of its anti-inflammatory and anti-scarring effects, amniotic tissue has been used by surgeons for years to promote healing of eye wounds and other surface wounds, especially diabetic wounds.

But it never had been used on hearts until now.

"With this patch," Khalpey said, "you are potentially minimizing postoperative [atrial fibrillation](#), which leads to a lower incidence of postoperative strokes, morbidity and mortality and eventually leads to shortening a patient's hospital stay."

Provided by University of Arizona

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