

'Off-the-shelf' artificial blood vessels show promise

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They might be helpful for kidney failure patients on dialysis, animal study suggests.

(HealthDay)—Artificial blood vessels may one day reduce some complications of dialysis treatment in people with kidney failure, according to the results of early research in animals.

These so-called "off-the-shelf" blood vessels were implanted in the primates for six months and withstood frequent needle punctures, were not rejected by the immune system, remained free of blood clots, and were safely stored in a refrigerator for up to one year, the researchers said.

The findings were presented online Wednesday as part of the American Heart Association's Emerging Science Series. Based on the results, the researchers have started a clinical trial in Europe and have received U.S. [Food and Drug Administration](#) authorization for a clinical trial in the United States.

The [artificial blood vessels](#) are created by placing human aorta cells into a biodegradable mesh tube. The aorta is the largest artery in the human body. Within two months, a new blood vessel has developed and the mesh structure dissolves.

"Eventually, off-the-shelf blood vessel grafts might be used in kidney dialysis patients and potentially in many vascular procedures, such as bypassing blocked arteries in the legs, repairing vessel damage after trauma, or in [coronary bypass](#) operations," study lead author Shannon Dahl, co-founder and vice president of scientific operations at Humacyte, Inc., in Research Triangle Park, N.C., said in an [American Heart Association](#) news release.

Humacyte funded the study.

Before kidney failure patients begin dialysis, doctors surgically create a connection between an artery and a vein in the arm. But about half of [kidney patients](#) don't have healthy veins, so a synthetic blood vessel has to be used, Dahl explained.

These [synthetic blood](#) vessels have many complications and about half fail within a year, and the patients have to undergo surgery to replace them.

"The [new] artificial vessels had excellent resistance to obstruction and clotting and tolerated the repeated needle punctures required for dialysis," Dahl concluded in the news release.

Experts note that success in animal research often does not translate into success in human research. And the data and conclusions of unpublished research should be considered preliminary until published in a peer-reviewed journal.

More information: The National Kidney Foundation has more about [dialysis](#).

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