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Ostrich arteries bring bypass hope: Japan scientists

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Scientists in Japan have used ostrich blood vessels to create a viable bypass in pigs, raising hopes of easier and more effective artery transplants for heart patients.

The team found they could harvest blood vessels from the bird's long neck and use them to construct artificial pathways that are up to 30 centimetres (12 inches) long and as little as two millimetres (0.08 inches) in diametre.

Conventional substitutes—taken from dead human donors, animals or made of synthetic fibres or resins—need to be at least double that in order to prevent problems with clotting.

Chief researcher Tetsuji Yamaoka said the arteries, which carry blood to the ostrich's head, are processed and lined with clot-preventing molecules on a nano scale.

"Ostriches are good as they provide a stable supply of narrow and long vessels," said Yamaoka, who heads the Biomedical Engineering Department of the National Cerebral and Cardiovascular Centre in Suita, western Japan.

Researchers at Yamaoka's laboratory used the new vessel in femoral artery bypass operations in five miniature pigs, bridging large arteries in their right and left thighs.

They confirmed the new vessel allowed blood to flow smoothly without the use of clot-prevention agents, Yamaoka said this week, calling it the world's first success in small-diametre, long bypass operations in animals.

There have been bypass operations using short artificial vessels in small animals such as rats, Yamaoka said.

"But vessels must be narrow and long to be used in humans," he said, adding at least 10 centimetres would be needed for human heart operations and 20 centimetres for legs.

Surgeons could cut the new vessel to size for specific operations, making it unnecessary to take blood vessels from elsewhere in the patient's body.

Yamaoka's team aims to start clinical tests in three years.