Animation of Totally Endoscopic Coronary Artery Bypass (TECAB) Surgery

To view the accompanying video of this transcript, go to: http://www.uchospitals.edu/specialties/heart/services/coronary-artery-disease/bypass/tecab.html

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Unlike traditional bypass surgery in which the sternum is cut and spread open, in a TECAB procedure, the surgeon manipulates a highly advanced robotic tool and makes only tiny incisions. The robot's narrow arms and precise movement allow us to enter through the side of the chest, which is actually much closer to the heart than if we opened up the chest.

Once inside, we use ports to pass materials into the chest. The internal mammary artery is prepared by placing clamps and then partially cut open. We generally use mammary arteries, as they are among the most durable vessels in the body, and much better suited to withstand blood pressure over time than vein grafts.

U-clips are placed in the artery, and a stabilizer is placed over the beating heart to minimize movement. We temporarily close the coronary artery. The mammary artery is then brought to the heart, where it is attached to the coronary artery. The sewing is completed, creating a new bypass.

Now the obstructions are released, and a special Doppler probe measures the flow of the newly formed bypass to determine the success of the procedure. The heart continues to beat during the entire surgery, and no heart-lung bypass machine is required. When the patient recovers, only a few small scars remain.

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