ELIZABETH STEPHENS: My name is Elizabeth Stevens, and I am a pediatric and congenital cardiac surgeon at Mayo Clinic. Today I'll be covering coronary unroofing procedure for anomalous aortic origin of the coronary arteries. In this video, we demonstrate the surgical technique of coronary unroofing for anomalous aortic origin of the coronary artery. Here the chest is open. You can see the aorta superiorly and the right ventricle inferiorly.

Right now we're working around the aorta. We proceed to put the patient on the heart-lung machine and then stop the heart. They aorta is being opened and we are identifying the ostia, or openings, of the coronary arteries. And the anomalous coronary is difficult to visualize but is identified using a probe. You can see it is close, almost under the area where the aortic valve attaches, or the post.

Now the unroofing begins. Fine scissors are inserted into the coronary to identify the direction of the coronary artery, and then the tissue or roof above the coronary artery is cut. This leaves a ridge of tissue on either side of the coronary artery that is then tacked down with multiple fine sutures. This process is continued with the roof being cut and the sutures being placed on either side.

We have gone past the place where the aortic valve attaches and are continuing into the right sinus. In this case, this is the normal sinus from which the coronary artery arises. As you can see, the coronary is still continuing within the wall itself, parallel to the aorta. This unroofing is continued until the artery dives away from the wall into the myocardium. At this point, the coronary has been completely unroofed.

Shown here as the final result. You can see the coronary has a wide-open ostia, or hole, for unobstructed blood flow. In this case, because of the coronary course the aortic valve attachment, or post, is at risk for drooping down and leading to aortic regurgitation. So we place an additional stitch to stabilize that post, which is the blue stitch on the right being held by the instrument. We then closed they aorta, putting down the last knots here, and proceed to take the patient off the heart-lung machine. Shown here, the heart is starting to beat again.