

Robotic Totally Endoscopic Coronary Bypass solutions in a future without Endowrist stabilizer - Coronary Anastomosis

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BACKGROUND: Robotic coronary artery bypass grafting has been mostly limited to internal mammary artery harvest followed by a minithoracotomy for handsewn anastomosis. The major limitation has been absence of Endowrist robotic coronary stabilizer. In this presentation we demonstrate robot-sewn anastomosis while stabilizing the heart with MIS instruments.

METHODS: This video presentation illustrates robotic sewn anastomosis of the in-situ internal mammary artery utilizing Minimally invasive surgery (MIS) coronary stabilizer with the da Vinci Xi surgical robot in a Totally Endoscopic Coronary Artery Bypass (TECAB) procedure. After the positioning of the stabilizer and exposure of the coronary artery, the anastomosis can be safely created replicating previously published techniques. The number 11 blade is modified using a red rubber catheter and a silk string to create the initial coronary arteriotomy, rest of the steps can be performed using currently available robotic tools. This video presentation highlights the steps of the anastomosis, starting with placement and tightening of the saddle-loop, using a modified beaver blade and robotic scissors for coronary arteriotomy and insertion of intracoronary shunt. The anastomosis can then be created, starting on the right side and coming around the heel and toe of the anastomosis towards the left side. The shunt is then removed and the sutures are tied using robotic instruments.

RESULTS: A TECAB was performed using the latest iteration of da vinci Xi surgical robot platform. Robotic platform allows for accurate maneuvers and meticulous handling of delicate structures to perform intricate procedures with greater finesse and precision.

CONCLUSIONS: TECAB can be safely performed using alternative tools within the existing skill set of a cardiac surgeon.

