

# Technical option for temporary coronary clamping in off pump coronary surgery

*Opção técnica para pinçamento coronariano temporário em cirurgia de revascularização do miocárdio sem circulação extracorpórea*

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## STUDY POPULATION CHARACTERISTICS

Male patient, 58 years old, born in Duque de Caxias, RJ, with hypertension and type II diabetes for 5 years under clinical control, and with recent onset of angina symptoms. Risk stratification performed for coronary artery disease through exercise stress-testing, which proved to be positive for ischemia with low workload.

Cinecoronarioangiography was performed. It showed severe lesions in the proximal and middle third of the anterior interventricular branch with a large diagonal branch among the lesions and an obstructed circumflex branch in its middle third without filling by collateral branches. Ventriculography showed moderate anteroapical hypokinesia with mild global dysfunction.

Coronary artery bypass grafting was the surgery of choice due to the severity and complexity of coronary artery disease in diabetic patients with left ventricular dysfunction.

During the performance of preoperative tests, It was verified the presence of changes in serum creatinine (1.7

mg/dL), although the patient maintains good urine output. Transthoracic echocardiography confirmed mild left ventricular dysfunction (LVEF: 0.5).

Revascularization of both anterior interventricular branch and diagonal branch was scheduled in the surgical orders, without the use of cardiopulmonary bypass (CPB) in order to reduce the risk of acute renal failure [1], other morbidities and mortality [2]. We have also chosen to use the double-graft skeletonized internal thoracic artery, preferring a total arterial surgery, due to its best long-term results and low morbidity [3-6].

## SURGICAL TECHNIQUE

Median transsternal thoracotomy, followed by an inverted-T pericardiectomy and dissection of both internal thoracic arteries in a stlectomized fashion using a low-voltage electrode knife, smooth handling with withdrawing using a fine vascular clamp and small titanium Ligaclip in all branches and opening of both pleurae.

**THE VIDEO REFERRING TO THE TEXT IS LOCATED AT THE RBCCV WEBSITE - <http://www.rbccv.org.br/video/v25n1/>**

The study was carried out at Hospital Universitário Clementino Fraga Filho – Federal University of Rio de Janeiro. Rio de Janeiro, RJ, Brazil.

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Repair suture in the posterior pericardium between superior and left inferior pulmonary veins was carried out in order to handle the heart with minimal haemodynamic instability. It has been performed therapeutic administration of systemic heparin (2 mg/kg); ACT was maintained > 250 seconds. Coronary stabilization was performed with an Octopus suction stabilizer device (Medtronic GmbH, Dusseldorf, Germany).

We chose a Y-composite graft (end-to-side anastomosis of the right internal thoracic artery to the in situ left internal thoracic artery graft), because RITA did not reach the diagonal branch. The anastomosis was performed with continuous 8-0 polypropylene suture thread.

After the heart has been positioned and stabilization of the anterior interventricular branch has been achieved, an adequate exposure of the artery has been accomplished. We cut the epicardium near the coronary branch of left and right side and proximal to the dissected segment, thus closing the anterior interventricular branch with a bulldog forceps occluding blood flow temporarily. Using a scalpel blade #11, we performed a longitudinal arteriotomy, placing the appropriate intracoronary shunt (1.5 mm in this case) withdrawing the bulldog forceps, thus, restoring blood flow.

Then, we performed an end-to-side anastomosis of the left internal thoracic artery to the anterior interventricular branch using continuous 7-0 polypropylene suture thread. When the anastomosis was nearly its completion, the shunt was removed, and we replaced the bulldog forceps keeping it until the end of the anastomosis, thus maintaining surgical field bloodless. We repeated the procedure at the anastomosis of the composite graft of the right internal thoracic artery to the diagonal branch.

After revascularization was completed, we administered protamine with heparin at a 1:1 ratio and the surgery was completed in the ordinary way.

The completion of coronary clamping with a bulldog forceps is less traumatic and more practical than that performed with coronary occlusion with transient suture.

The use of intracoronary shunt technique is controversial due to the risk of endothelial damage, but it is advocated by many to avoid intraoperative ischemia [7-9].

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