Anaortic Technique in Off-Pump Coronary Artery Bypass Surgery

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Introduction: Techniques of coronary artery revascularisation on the beating heart have evolved with an attempt to reduce the potential deleterious effects of extracorporeal circulation. It is of particular value in those with a calcified or atheromatous ascending aorta. Total arterial revascularisation is ideal. Case report: We describe a case of 66-year-old male patient, previously suffered mild cerebrovascular incident, scheduled for myocardial revascularisation of double coronary disease with Left main stenosis. Method: Sternotomy was done in standard fashion. Both mammary artery were harvested and distal anastomoses were made in standard fashion by Prolen 8/0. For local stabilisation Medtronic Octopus vacuum stabiliser was used. Discussion: Feasibility to perform arterial revascularisation by using off-pump aorta no-touch technique (anaortic technique) on the patient previously suffered stroke and with increased risk of the same complication was presented. This technique is recommended whenever technically feasible. Key words: cerebrovascular incident, coronary disease, stenosis, anaortic technique.

CASE REPORT

1. INTRODUCTION

Coronary revascularisation using cardiopulmonary bypass remains the gold standard treatment for coronary artery disease. Over the past decade, techniques of revascularisation on the beating heart without the use of cardiopulmonary bypass (off-pump surgery) have evolved with an attempt to reduce the potential deleterious effects of extracorporeal circulation (1). Stroke remains one of the most devastating complications of cardiac surgery. The left internal thoracic artery to the left anterior descending artery and saphenous vein graft to other vessels remains the standard operation today. Off-pump coronary artery bypass grafting provides equivalent results in routine patients but is of particular value in those with a calcified or atheromatous ascending aorta. Bilateral internal thoracic arteries are better than one internal thoracic artery, especially in the 10-20 year time frame. Multiple arterial grafting and total arterial grafting, facilitated by the use of bilateral internal thoracic arteries are consistently associated with even further improvements in symptoms and prognosis with survival greater than 90% at 10 years despite increase in patient age and co morbidities in recent series. Advocates of off-pump coronary revascularisation (OPCAB) maintain that postoperative neurologic morbidity is reduced by avoiding aortic cannulation and cross-clamping, and by eliminating the systemic effects of cardiopulmonary bypass (2). Contemporary randomised studies consistently show superior patience for arterial grafts over saphenous vein grafting. In summary, the left anterior descending artery is essential; two or more arterial grafts are preferable, especially to the left anterior descending and the circumflex, and total arterial revascularisation is ideal (3).

This case report is attempting to contribute to thesis that anaortic technique in off pump coronary artery bypass surgery is connected with less complication caused by on-pump surgery and is feasible, safe and with same postoperative outcomes, with benefit of less risk for stroke, especially for patients with higher risk for neurologic deficit after surgery.

2. CASE REPORT

We describe a case of a 66-year-old male patient scheduled for myocardial revascularisation of double coronary disease with Left main stenosis. Coronary angiogram was performed and revealed as follows: Left main stenosis of 50%, Left anterior descending artery 40% stenosis of proximal segment and...
was used. Both coronaries are proximally snared with Pro- len 6/0 stich, and clear operative field was obtained by CO2 blower. Complete heparinisation was achieved by 5000 i.u. of Heparin prior to starting distal anastomosis sewing. Intracorona- ary shunts were not used, and distal anastomoses were made in standard fashion by Prolen 8/0. Right internal thoracic artery (RIMA) was anastomosed to mid part of LAD, and Left in- ternal thoracic artery to proximal part of CX (Figure 1). After finishing of distal anastomosis Proflowetry was performed and flows thorughout grafts were: RIMA – LAD 10 ml/min, LIMA – CX 21 ml/min. (Figure 2).

Protamin conversion was following and standard chest closure procedure was done (with total procedure duration of 3.5 hours), and thereafter transferr to the ICU was done, where he was treated by ICU protocol. Except prolonged drain- age, because of preoperative use of Clopidogrel, and short episode of cardiac rithm disturbance presented as atrial fibrillation which was succesfully converted to sinus rithm by Amiodaron infusion, no other cardiac event has occurred during ICU stay. No signs of myocardial ischemia was noticed in ECG, which was recorded twice daily. Chest tubes were removed after drainage ceased, on third post-operative day. Total retransfusion was 800ml. Three doses of fresh frozen plasma and one unit of blood were given. Average value of early morning hematocrit during ICU stay was 35.15.

During the third post op day, the patient was tranferred to the department where he was treated by standard medical protocol with beta blockers, ACE inhibitors, antiagregation medications – ASA, Low weight heparin, and per os Amiodaron. While on the department he was hemodynamically stable, in si- nus rithm. Control chest X-ray find- ings were with no signs of pneumonia or significant pleural effusion. Wounds healing was satisfactory with no signs of inflammation. On the day of discharge, from department, laboratory find- ings were: Glucosis: 4.90; Na: 140; K: 3.7; CRP: 83.20; WBC: 7.42; RBC: 4.30; HGB: 130; HTC: 0.388; PLT: 221; ECG: Sinus rithm, f: 54 bpm with no signs of ischemia or conductance disturbance (Figure 3).

4. DISCUSSION

In this case report, feasibility to perform arterial revascularisation by using off-pump aorta no thouch technique (anaortic technique) on the patient with previously suffered stroke and with increased risk of the same complication was presented. Off-pump coronary ar-tery surgery is associated with a low inci- dence of perioperative stroke. Completing the surgical procedure without manipulating the ascending aorta in any way (“anaortic” technique) of- fers additional neurological protection and should be the goal in all suitable off-pump coronary cases (2). Avoiding partial aortic clamping during off- pump coronary artery bypass grafting provides superior neurologic outcome. The results are reproducible and irre- spective of the severity of aortic disease or the method of aortic screening. This technique is recommended whenever technically feasible (4).

Off-pump coronary revascularisation (OPCAB) maintain that post-operative neurologic morbidity is reduced by avoiding aortic cannulation and cross-clamping. Bilateral internal thoracic ar-teries are better than one internal tho- racic artery. Off-pump aorta no-touch technique (anaortic technique) on the patient with previously suffering stroke and with increased risk of the same complication along surgery was faesible and safe to perform aiming to reduce this the most serious complication af- ter CAGB surgery.

REFERENCES