Coronary Dome Arterial Rebuilding, Original Coronary Total Endarterectomy Technique. Surgical Aspects and Late Outcome

Edvin Prifti[2], Massimo Bonacchi[1], Gabriele Giunti[1], Francesco Battaglia[1], Klodian Krakulli[2], Merita Zeka[2], Arben Baboci[2], Altin Veshti[2], Edlira Rruci[2], Elisabetta Caprara[3], Georges Popoff[3]

[1]*Division of Cardiac Surgery, Policlinico Careggi, Italy*
[2]*Division of Cardiac Surgery, University Hospital Center of Tirana, Albania*
[3]*Division of Cardiac Surgery, Villa Maria Beatrice Hospital, Italy*

Objectives:
The increasing referral of patients with diffusely diseased coronary arteries for revascularization has renewed interest in coronary endarterectomy (EA).Here we present our experience with an original total arterial reconstruction technique for coronary EA.

Materials and Methods:
Between 2000-2012, 439 consecutive patients (307 men, mean age 59.5±12.3years) underwent an original EA called "coronary dome arterial rebuilding". Following extensive arteriotomy (mean 4.4±0.7cm for the LAD, 3±0.6 cm for the OM and 3.2±0.7cm for the RCA) and atheroma remotion, the dome of the coronary artery was reconstructed with an adequate flap graft of IMA, vein or radial artery. The remaining part of the native endarteromized artery forms a posterior gutter giving the origins of collaterals branches. 9 of patients underwent coronary EA in multiple distributions. Mean 2.2±0.3 arterial grafts/patient were employed. 53% patients underwent total arterial myocardial revascularization. The mean follow-up was 45±23months.

Results:
Hospital mortality was 3.6% (n=16). Twenty (4.5%) patients had a perioperative myocardial infarction (MI), of whom 11 in the territory of the endarterectomized vessel. Multiple logistic regression analysis identified prolonged AoX time and EF<30% as independent predictors of perioperative death and MI (OR=2.6, CI=1.87-3.9,p<0.001; OR=1.2,CI=1.05-1.39,p<0.01, respectively). Within one year after surgery all patients ergometric test and 80% underwent coronary angiography. In symptomatic patients (n=33,), re-catheterization showed a progression of disease in the non endarterectomized vessels and/or in the vein grafts, and 100% patency in bypass grafts to endarterectomized vessels. Cumulative actuarial survival at 7 years was 96.3% and free-event cumulative survival was 93%. The Cox model revealed the LVEF<35% (p=0.016), age>70 years (p=0.025), NYHA grade>III(p=0.0019), non TAMR(p=0.002) and the preoperative presence of more than one ischemic area(p<0.001) as strong predictors for poor overall cumulative free-event survival.

Conclusions:
This technique enhances the probability to achieve a complete and arterial revascularization in patients with an unfavorable anatomical substrate with acceptable operative risk and good long-term results.