Coronary Artery Bypass Grafting Associated Endarterectomy In Three-vessel Coronary Artery Disease. Factors Influencing The Early Morbidity And Mortality: Initial Experience

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INTRODUCTION:
After the first report of the coronary endarterectomy by Bailey et al (1,2), the preference for this surgical procedure has decreased due to the increased morbidity and mortality rates (1-12). The groups of Johnson, Cooley, Jacoub and Minale coincide to report an increased incidence in post operative myocardial infarction and mortality rates (3,8,9), but in patients with total or subtotal large coronary artery obstructions in which there is no possibility to receive a conduit as graft for myocardial revascularization in an area of viable ischemic myocardium the need of an endarterectomy overtakes its disadvantages (1-12). The present report evaluates the factors influencing early morbidity and mortality in our initial experience with this procedure associated to coronary artery bypass grafting.

PATIENTS AND METHODS:

PATIENTS:
114 patients with three vessels coronary artery disease (CAD) undergone coronary artery bypass grafting (CABG) in whom coronary endarterectomy was performed between 1990-2000 in the Cardiovascular Center of Villa Clara.

THORACIC APPROACH:
Median sternotomy in all patients (100%)

MYOCARDIAL PROTECTION:
Atenolol: 100 mg. Im the morning of the surgery, moderated systemic hypothermia and cardioplegic arrest with intermittent cold crystalloid cardioplegia administered antegradely (through the aortic root) and retrogradely (through the coronary sinus)

ARTERIAL CANNULATION:
Distal ascending aorta in all patients (100%)

VENOUS CANNULATION:
With a unique two steps cannula placed through the right atrial appendix in all patients (100%).

LEFT VENTRICULAR DECOMPRESSION:
Through the aortic root cannula

INDICATIONS FOR CORONARY ENDARTHERECTOMY:
TECHNIQUE FOR CORONARY ENDARTERECTOMY:
Once the heart has been arrested and entirely decompressed, the coronary arteriotomy is performed an distally widened to expose the lesion in its complete length, otherwise is to perform two coronary arteriotomy, the first at its proximal extremity and the other one at its distal extremity, with the aid of a dissector clamp the cleavage way between the
adventitial and medial layers is achieved, then the lesion is
dissected completely and extracted from the coronary artery,
in the second technique the cleavage way is reached
proximally and distally with the aid of the dissector clamp
and the lesion is then disattached and tracted out gently
through the proximal arteriotomy, after the atheromatous
plaque has been extracted from the coronary artery the
vessel is reconstructed with a venous patch or enlarging the
distal extremity of a venous graft to be anastomosed to the
wide arteriotomy, a conduit for CABG is Anastomosed to an
opening in the venous patch to perform revascularization.

Preoperative data appear in table 1.

Legend: COPD: Chronic obstructive pulmonary disease,
NYHA: New York Heart Association, LVEF: Left
ventricular ejection fraction, LVEDP: Left ventricular end
diastolic pressure, LMCAD: Left main coronary artery
disease

VARIABLES STUDIED:
Coronary arteries endarterectomized, unique and multiple
endarterectomies, CABG/ coronary endarterectomy,
coronary endarterectomy/ patient, early postoperative
complications, hospital mortality and factors influencing
morbidity and mortality.

STATISTIC STUDY:
Total, subtotal and mean number, percentages, and X2
distribution.

RESULTS:
From a total number of 114 patients, 222 endarterectomies
were performed, the most frequently approached coronary
system was the right coronary with 114 endarterectomies
(52,17%), followed by 84 on the left anterior descending
(37,83%) and 24 on the circumflex (10,8%), all patients
were undergone triple coronary artery bypass grafting
(CABG) or more, CABG 3 was the most frequent (48
patients; 42,10%) (table 2), but hospital mortality
significantly increased when 6 or more than coronary artery
bypass grafts were performed, 84 patients were undergone
multiple coronary endarterectomy; 60 of them double
(52,63%) and 24 triple (21,05%), the number of
endarterectomy/ patient was 1,94.

DISCUSSION:
Coronary endarterectomy is a surgical procedure indicated in
large, total or subtotal coronary artery lesions (1-12), there
are two patients categories: in one of them unstable angina
pectoris is refractory to the medical treatment, exists
adequate LVEF, with viable myocardium and large, total or
subtotal coronary artery lesions are angiographically
demonstrated, in the other category such coronary artery
lesions are not angiographically demonstrated and the
indication of coronary endarterectomy is detected at the time
of coronary arteriotomy, anyway these lesions are
inappropriate for receiving a coronary bypass graft (CABG)
unless previous endarterectomy is performed.

Currently between 5 and 20% of patients undergone
coronary artery bypass grafting require coronary
endarterectomy. The most frequently approached coronary
system is the right one, followed by the left anterior
descending and the circumflex (3-9). Minale et al. have
reported the same frequency order with 60% for right
coronary artery system (RCAS), 23% for left anterior
descending (LAD) and 17% for circumflex system (Cx) (9).
According to Livesay et al. from the Texas Heart Institute,
reported an 83% for RCAS, 9% for LAD and 4% for Cx
(6,7.). Hospital morbidity increases post CABG with
endarterectomy, postoperative myocardial infarction is the
most frequent complication dependent on this procedure
(1-12), Qureshi et al. reported a 12% incidence (7),
Brenowitz et al. from Milwaukee obtained a 5,6% incidence
when CABG was performed without endarterectomy and a
6,5%, when endarterectomy was associated to CABG
multiple coronary endarterectomy morbidity and hospital
mortality rates significantly increases; this author also reported a 4% mortality for patients undergone CABG without endarterectomy; 6.3% for those who were undergone CABG with unique coronary artery endarterectomy and 10.4% for the group of patients undergone CABG and multiple coronary artery endarterectomy (4.5). Livesay et al. reported lower hospital mortality rates; 2.6% for patients undergone CABG without coronary endarterectomy and 4.4% for those who received CABG with endarterectomy (6). The need of this procedure indicates high-complexity coronary artery lesions, a group of high-risk patients in whom CABG is not possible unless previous coronary endarterectomy is performed and morbidity and hospital mortality rates increases in comparison with CABG without endarterectomy (1-12). In our modest series the results were similar to those from the other consulted series.

References

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