



Multivessel Minimally Invasive Coronary Bypass With Aortic Crossclamp. Experience With 40 First Patients

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Background:

Minimally invasive coronary revascularization (MICS-CABG) has been performed for over 20 years; however, their technical complexity, steep learning curves and absence of training programs explain the weak acceptance of these techniques. Multivessel coronary pathology consists of an extra challenge for a complete revascularization in a minimally invasive setup. Cardiopulmonary bypass with cardiac cardioplegic arrest gives the possibility to a minimally invasive full coronary revascularization despite the complexity of coronary lesions. The aim of this abstract is to report our experience with multivessel MICS-CABGs with aortic crossclamp on our 40 first consecutive patients.

Methods:

All patients who benefited from a scheduled multivessel MICS-CABG with aortic crossclamp in our hospital, from February 2022 to November 2023 (n=40) were identified. Baseline demographics, peri, postoperative and laboratory data were extracted from each patient’s medical records. The 30 days results were reported..

Results:

We started our minimal invasive coronary artery program on July 2018. However, difficulty addressing every coronary pathology in a minimally invasive off pump operation motivated us to adopt femorofemoral cardiopulmonary bypass and aortic crossclamp for patients with multivessel MICS-CABGs. The first 5 patients were operated on using a right thoracoscopic approach for aortic crossclamp. For the remaining 35 we adopted the TCRAT (Total Coronary Revascularization via Left Thoracotomy) technique with aortic crossclamp from the left. The average number of coronary anastomoses was 3,5 +/- 0,75, with aortic cross-clamp time 126 +/- 25min and total extracorporeal circulation (ECC) 166 +/- 36min. In 34/40 patients a full arterial MICS-CABG was performed most of the times using the LIMA and the radial artery. One Major Adverse Cardiac Event (MACE) was observed which was a death at postoperative day 9 due to pneumonia infection. Twenty-two patients were operated through the 3rd intercostal space and 18 from the fourth. Left internal mammary artery was harvested either thoracoscopically or for under direct view regarding patient’s anatomy.

Conclusion:

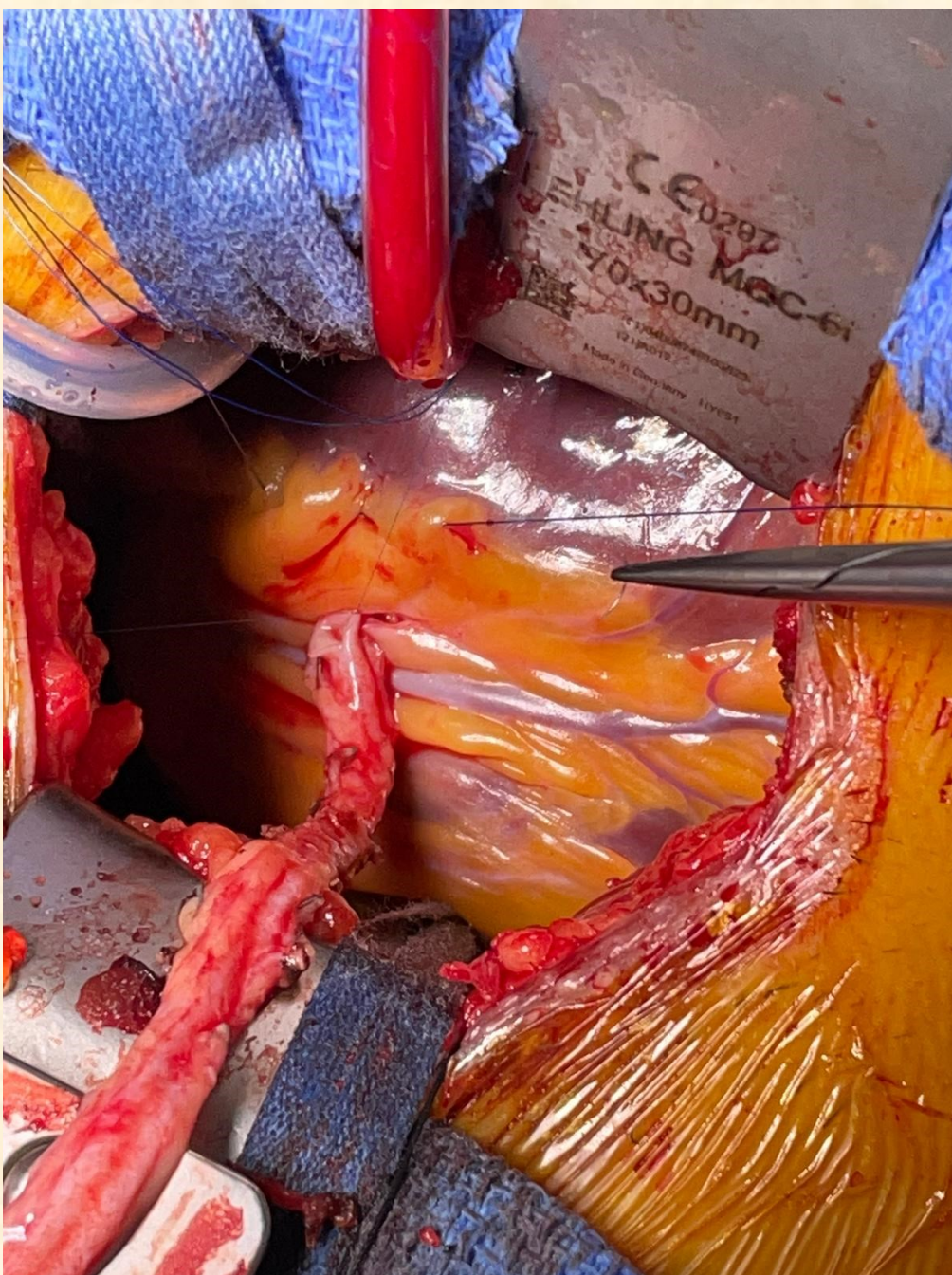
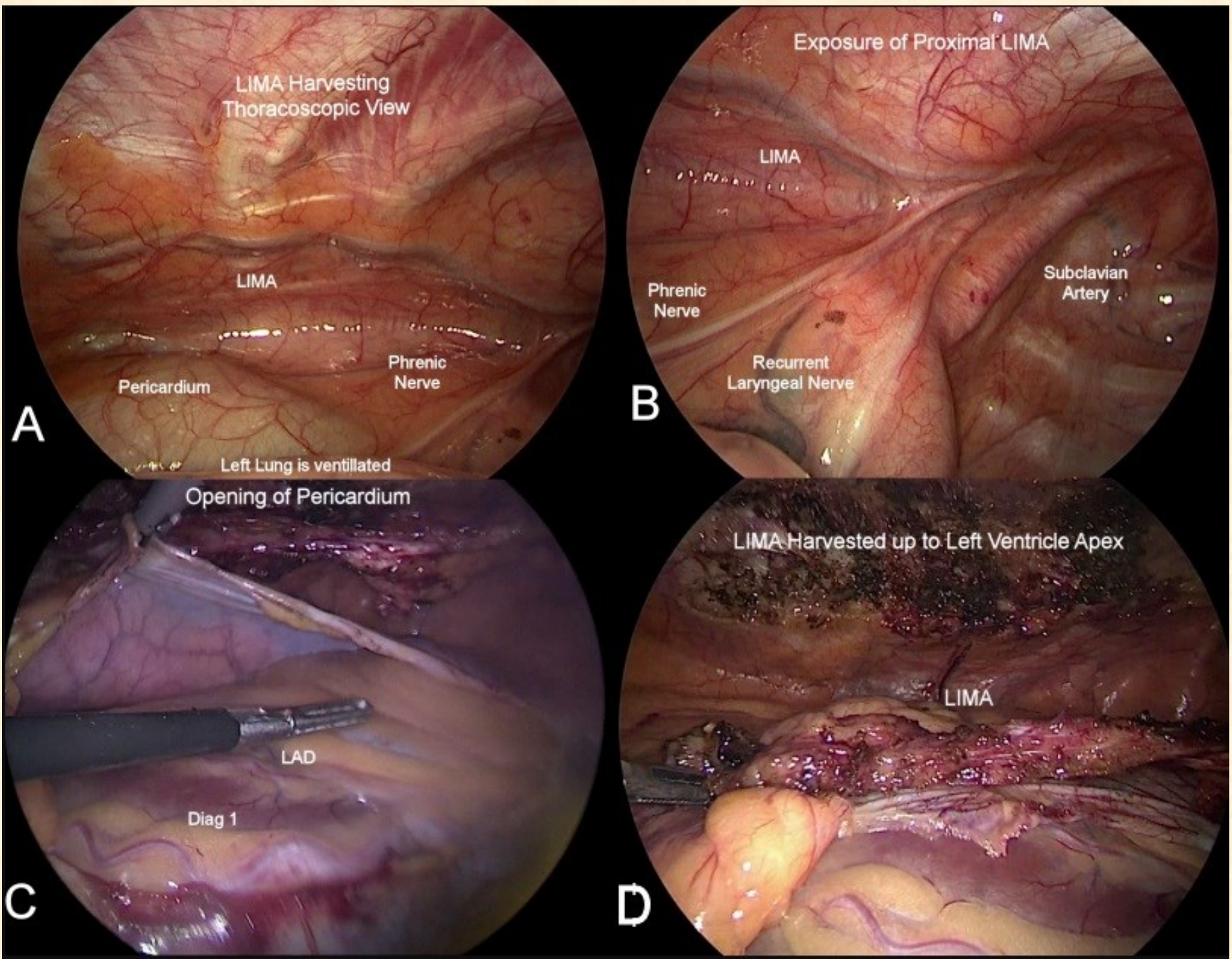
Multivessel MICS-CABG is a technically demanding operation. ECC and heart cardioplegic arrest expand MICS-CABGs indications to almost every patient..

Central Message:

The use of cardiopulmonary bypass with aortic crossclamp can expand indications of MICS-CABGs to almost every patient, regardless of the complexity of the coronary anatomy.

Keywords:

EACAB, MICS-CABG, TCRAT



Multivessel MICS-CABG with aortic crossclamp (n= 40)			
Age in years, median (IQR)	65,7 (58,9- 70,4)	Hypercholesterolemia	35/40 (87,5)
BMI, median (IQR)	27,1 (25,2- 31,7)	Preoperative AF, n (%)	0
Male Gender, n (%)	34/40 (85)	Chronic Lung Disease, n (%)	1/40 (2,5)
Euroscore II, median (IQR)	1,2 (0,9- 1,8)	Cerebrovascular accident, n	3/40 (7,5)
Creatinine clearance, median (IQR) (ml/min)	71,4 (62,6- 93,4)	Recent myocardial infarction, n (%)	7/40 (17,5)
Dialysis, n (%)	1/40 (2,5)	Elective surgery, n (%)	30/40 (75)
Diabetes, n (%)	19/40 (52,5)	NYHA III or IV, n (%)	7/40 (7,5)
Tobacco history, n (%)	22/40 (55)	Good LVEF (>50%), n (%)	27/40 (67,5)
Hypertension, n (%)	29/40 (72,5)	Reoperation, n (%)	0

Multivessel MICS-CABG with aortic crossclamp (n= 40)			
Number of distal anastomoses, median (IQR) (min)	3 (3- 4)	Full Arterial CABG, n (%)	34/40 (85)
Hybrid Revascularization, n (%)	1/40 (2,5)	Need for transfusion, n (%)	18/40 (45)
Conversion to sternotomy, n (%)	0	New onset postoperative AF, n (%)	7/40 (82,5)
ECC duration, median (IQR) (min)	164,5 (145,5- 191,5)	Reoperation for bleeding, n (%)	1/40 (2,5)
Cross Clamp Time, median (IQR) (min)	121,5 (103,8- 143)	Target vessel revascularization in hospital, n (%)	0
Postoperative length of stay, median (IQR) (days)	8 (7-9)	Postoperative intubation time, median (IQR) (hours)	9 (6- 16)
Intensive Care Unit length of stay, median (IQR) (hours)	65,5 (41,3- 89)	Myocardial Infarction in hospital, n (%)	0
Stroke, in hospital	0	Mortality in hospital, n	1/40 (2,5)
Drain output at 24h, median	610 (400- 932,5)	MACE in hospital, n (%)	2/40 (5)

