



Minimally Invasive Coronary Artery Surgery

MEHMET KAYA

Cardiac Surgeon, Department of Cardiovascular Surgery, Heart Center, Almoosa Specialist Hospital, Saudi Arabia. Email: xxxxx@gmail.com

Received: January 03, 2022; Accepted: January 13, 2022; Published: January 14, 2022

Commentary

First minimally invasive coronary artery surgery (MiCAS) was released by Benetti in 1995 [1]. MIDCAB has recently regained popularity in order to decrease the surgical burden such as less blood usage, infection rate, hospitalization, etc. [2,3]. This editorial letter focuses on the current perspective behind MiCAS with multivessel revascularization.

Conventionally, coronary artery bypass grafting (CABG) is performed via full sternotomy. MiCAS was released a couple of decades ago but it is still not dominant all across the world due to concern over intraoperative conversion to sternotomy, anastomosis time and anastomotic patency rate, non-homogen clinical outcomes, requiring specialized instrumentation and cost. Another issue is the learning curve regarding MiCAS.

MiCAS may technically have some disadvantages related to both internal mammary arteries (IMA) harvesting, reaching all coronary arteries and proximal anastomosis compared to the conventional surgery. It can be managed these difficult aspects of MiCAS by using a camera for IMA harvesting, some surgical techniques and most novel instruments such as endoscopic clip applicators, needle holders and so on. In addition to this, following the learning curve period, it can be done the same as conventional surgery.

Based on the patient's features and surgeon's preference, aortic bypass, usage of double IMA, full arterial revascularization and beating heart bypass can be done by MiCAS surgery. In other words, MiCAS can be modified by nearly all cardiac surgery modalities by adding other minimally invasive coronary surgery approaches. However, surgeons and dedicated clinics should address some points of MiCAS such as length of harvested IMA, suitability of proximal anastomosis, reaching all vessels without difficulty in order to make it reproducible, learnable and straightforward.

Patients with coronary artery disease may have other

arterial system atherosclerosis including femoral artery, abdominal aorta etc. For this reason, the role of computed tomography in pre-procedural planning of minimally invasive cardiac procedures should be acknowledged [4]. In other words, retrograde aortic perfusion during MIDCAB may be associated with a higher incidence of neurological events [5]. CT scan is also valuable in pre-operative evaluation for ascending aorta localization. Right sided ascending aorta can make the stage of proximal anastomosis more challenging.

Another point is that minimally invasive cardiac surgeons work in a limited surgical field. Because of that they may have to improvise their techniques from time to time. In this way, this surgical modality is becoming so open for novelties and developing fast. On behalf of myself and the clinic, we have no solid rules from skin cutting to the closure of chest cavity during the surgery. For instance, when the LAD lesion is including its proximal, we are not opening the chest cavity via the 4th or 5th intercostal area all the time. In this situation we used 3th ICA sometimes. After transecting IMA at the level of rib, we are ligating its distal by using medium-large clip to make sure complete obliteration of IMA with accompanying vein. Medium size clip can not cover the artery and vein package together. Endoscopic clip applicators are so important during IMA harvesting because they don't obscure the view and they can manage proximal branches of IMA better. We are harvesting IMA till we see subclavian vein. In this way we are obtaining enough length IMA. Also this can prevent IMA from coming into contact with Chitwood clamp.

***Correspondence to:** Kaya M, Cardiac Surgeon, Department of Cardiovascular Surgery, Heart Center, Almoosa Specialist Hospital, Saudi Arabia, E-mail: xxxxx@gmail.com

Citation: Kaya M (2022) Minimally Invasive Coronary Artery Surgery. J Heart Clin Cardiol Vol.1 No.1:2

Copyright: ©2022 Kaya M. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Additionally, the length of the clamp that covers the aorta should not be too long in order to close it completely. In my humble opinion, single dose long acting cardioplegia is always suitable for every sort of mini heart surgery. MiCAS also needs a long aortic root cardioplegia line. Surgeons can easily reach the RCA and CX system using some traction sutures. Unnecessary encircling some cardiac structures such as vena cava inferior and left pulmonary vein may damage intima or cause injury. Another issue, marking of the saphenous vein can prevent its kinking or torsion during anastomosis. After the completion of all anastomosis and hemostasis control, we are putting one chest drain and applying a long acting local anesthetic agent.

In conclusion, MiCAS has a currently well codified and established system. It started to be used commonly. This flow will affect all both surgeons and patients eventually due to its beneficial effect.

References

1. Benetti FJ, Ballester C, Sani G. Video assisted coronary bypass surgery. *J Card Surg.* 1995; 10:620-625
2. Kikuchi K. Minimally invasive coronary artery bypass grafting: a systematic review. *Asian Cardiovasc Thorac Ann.* 2017.
3. İyigün T, Kaya M, Gülbeyaz SÖ, Fıstıkçı N, Uyanık G, et al. Patient body image, self-esteem, and cosmetic results of minimally invasive robotic cardiac surgery. *Int J Surg.* 2017; 39:88-94.
4. Rajiah P, Schoenhagen P. The role of computed tomography in pre-procedural planning of cardiovascular surgery and intervention. *Insights Imaging.* 2013; 4:671-689.
5. Modi P, Chitwood WR. Retrograde femoral arterial perfusion and stroke risk during minimally invasive mitral valve surgery: is there cause for concern? *Jr. Ann Cardiothorac Surg.* 2013 Nov; 2(6):E1.