

CARDIOLOGY UPDATES NEWSLETTER

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Dear Doctor,

Greetings from Micro Labs Limited. We are happy to bring you “Cardiology updates” which contains latest and interesting news in the field of Cardiology

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Comparison of the clinical outcomes of staged and culprit-only PCI for multivessel disease in elderly patients with STEMI

ST-segment elevation myocardial infarction (STEMI) is considered as the most threatening type of coronary heart disease. For patients with STEMI, primary percutaneous coronary intervention (PCI) within 12 h of symptom onset is the best revascularization strategy. According to studies, almost 40–65% of patients with STEMI have multivessel disease (MVD). In patients with STEMI and multivessel disease vs. single-vessel disease, decreased incidence of reperfusion success, lowered left ventricular ejection fraction (LVEF), and increased mortality rate were observed. Three intervention strategies for multivessel disease in patients with STEMI includes: Culprit-only vessel PCI during the index procedure, Culprit vessel revascularization during primary PCI with non-culprit vessels staged revascularized after primary PCI and multivessel revascularization during primary PCI.¹

According to studies, in patients with STEMI, multivessel percutaneous coronary intervention is associated with better outcomes, including lower mortality, compared with culprit vessel-only PCI.² While other studies confirmed that culprit-only PCI is superior to multivessel revascularization during primary PCI. The relative benefit of staged vs. culprit-only PCI for multivessel in elderly patients with STEMI remains unclear.

Lang J et al aimed to compare the clinical outcomes of staged and culprit-only PCI. To conduct this study, 617 patients aged 65 years with STEMI and multivessel disease who underwent primary PCI of the culprit vessels within 12 h of symptom onset were recruited. Recruited patients were then categorized into two groups: the staged and culprit-only PCI groups according to intervention strategy. To adjust for confounding factors between groups, propensity score matching was conducted. Major adverse cardiac and cerebrovascular events (MACCE), a composite of all-cause death, cardiac death, recurrent myocardial infarction (MI), stroke, and ischemia-driven revascularization was the primary end point of the study. Kaplan-Meier curves was used for Survival analyses. (fig 1)

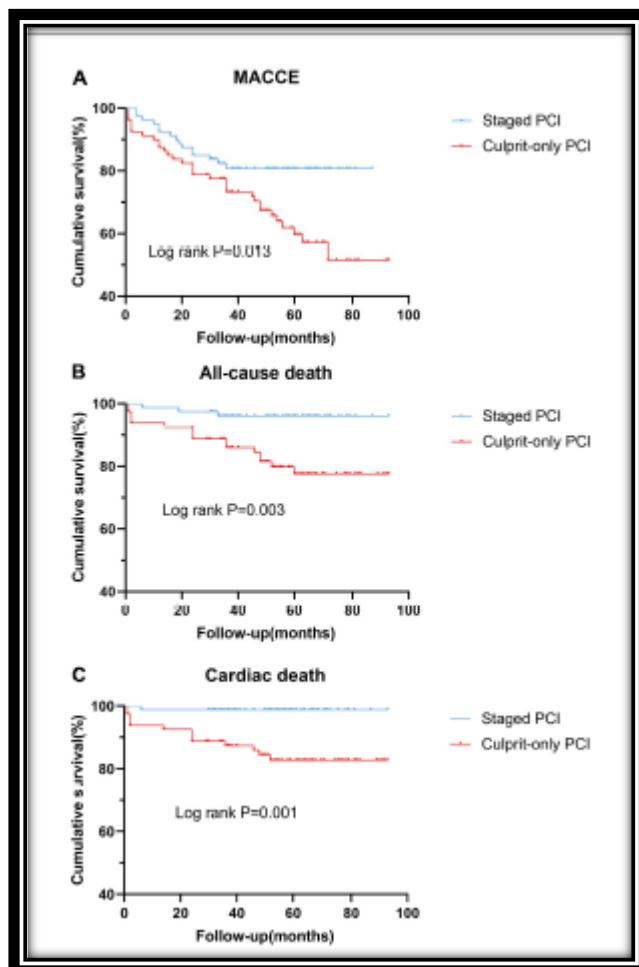


Figure 1:Kaplan-Meier curves of clinical outcomes in the two groups after the propensity score matching analysis. (A) MACCE; (B)all-cause death; and (C) cardiac death.

Follow-up for 56 months was done. During follow up, it was revealed that 209 patients had major adverse cardiac and cerebrovascular events and 119 died. Staged revascularization showed lower risk of Major adverse cardiac and cerebrovascular events, all-cause death, and cardiac death than culprit-only PCI in both overall patients and the Propensity score matching cohorts. No significant difference in stroke or ischemia-driven revascularization was observed. multivariate Cox regression analysis revealed that staged PCI was linked with a lower incidence of Major adverse cardiac and cerebrovascular events and all-cause death. This study highlighted the benefits of staged PCI for multivessel disease in elderly patients with STEMI, giving a reference for future revascularization strategies for such patients.

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Left Atrial Spontaneous Echo Contrast: A predictor of the recurrence of Atrial Fibrillation / atrial tachycardia after catheter ablation in AF patients with LA dilation

In patients with left atrial (LA) dilation, left atrial spontaneous echo contrast (LASEC) can be detected by transesophageal echocardiography (TEE) prior to the catheter ablation of atrial fibrillation (AF). In atrial fibrillation patients after the procedure, left atrial dilation is a well-established risk factor for predicting outcomes. Increase in the size of left atrial leads to a higher recurrence rate of atrial fibrillation treated with ablation. However, not all atrial fibrillation patients with LA dilation develops left atrial spontaneous echo contrast during transesophageal echocardiography.¹ However, another study by Gedikli et al. highlighted that the presence of dense LA SEC did not show any correlation with periprocedural thromboembolic events in patients with atrial fibrillation undergoing catheter ablation with uninterrupted anticoagulation. But, a significant association was observed with late stroke/transient ischemic attack (TIA).² Therefore, Lin C et al aimed to investigate if the left atrial spontaneous echo contrast may be of prognostic value in patients with atrial fibrillation with Left Atrial dilation.

This prospective study enrolled 123 patients with Atrial fibrillation scheduled to undergo catheter ablation. Enrolled patients were then divided into two groups: LASEC group (73 patients) and no LASEC group (50 patients). In both groups, baseline patient characteristics were found to be similar. Before performing the procedure, enrolled patients underwent transesophageal echocardiography. Primary endpoint of this study was atrial fibrillation or atrial tachycardia recurrence-free survival after 3-month of catheter ablation. patients were followed up for 18 months. Transesophageal echocardiography was conducted to exclude left atrial thrombus before catheter ablation for atrial fibrillation and was performed under local anaesthesia, with continuous monitoring of blood pressure and oximetry (Fig 2)

At the end of 18 months of follow-up, atrial fibrillation or atrial tachycardia recurrence-free survival was achieved in 33 patients in the left atrial spontaneous echo contrast group and in 34 patients in the no LASEC groups, respectively. Survival analysis revealed that the LASEC group was associated with a poor outcome of catheter ablation. During the follow-up atrial fibrillation or atrial tachycardia recurrence was observed in 30 patients in the mild SEC group and in 15 patients in severe SEC groups. In the left atrial spontaneous echo contrast group, 2 patients had Ischemic stroke



Figure 2: Representative echocardiogram of LASEC. (A) No LASEC was detected by TEE. (B) LASEC (arrow) was revealed by TEE. V stands for left side, numbers 0 and 44 stand for imaging

This study concluded that in atrial fibrillation patients with left atrial dilation, left atrial spontaneous echo contrast (LASEC) could be a predictor of the recurrence of atrial fibrillation or atrial tachycardia after catheter ablation. This study also highlighted that the higher the degree of left atrial spontaneous echo contrast, the worse the prognosis is.

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Impact of Elevated preoperative cardiac troponin I levels in patients with ESRD undergoing non-cardiac surgery.

Compared to patient without CKD, Patients with chronic kidney disease (CKD) have a higher risk of cardiovascular (CV) disease as CKD increases the risk of arteriosclerosis progression. On the other hand, most patients with CKD have comorbidities like hypertension and diabetes mellitus which increases the chances of CV disease. Elevated level of serum cardiac troponin I (cTnI) have been used while diagnosing myocardial infarction and predicting the risk of cardiac events.¹ Cardiac troponin I also known as a contractile protein is located within myocyte is a diagnostic test of stress on the heart which is closely related to perioperative mortality. Newer generation cardiac troponin test with high sensitivity decreases the number of potentially missed coronary artery disease patients and increases prognosis in those disease that do not originate in the coronary arteries including congestive heart failure, pulmonary embolism and chronic kidney disease.² According to studies, serum cTnI levels also increases during myocardial wall distension due to volume and pressure overload. Therefore, when cardiac troponin I levels gets increased in CKD patients, especially undergoing dialysis, it becomes difficult to interpret whether this is due to MI or CKD.¹

Park BE et al aimed to investigate if elevated cardiac troponin I (cTnI) serum levels before non-cardiac surgery were predictors of postoperative cardiac events in patients with end stage renal disease undergoing dialysis. To conduct this study, 703 patients with end stage renal disease undergoing dialysis who underwent non-cardiac surgery were included. cTnI serum levels were measured prior to the procedure in all patients. Composite of cardiac death, myocardial infarction (MI), and pulmonary oedema during hospitalization or within 30 days after surgery in patients with a hospitalization longer than 30 days after surgery were the primary endpoint.

Result of this study showed that Postoperative cardiac events occurred in 6.8% patients. Diabetes mellitus, previous ischemic heart disease, and congestive heart failure were more common in patients with postoperative cardiac events. Higher Peak cTnI serum levels were seen in patients with postoperative cardiac event. Even in patients with postoperative cardiac events, elevated peak cTnI levels > 45 ng/L were commonly observed. According to Multivariate logistic regression analysis, Diabetes mellitus and serum peak cTnI levels ≥ 45 ng/L were independent predictors for the primary outcome of cardiac death, MI and pulmonary oedema. Also, cTnI levels ≥ 45 ng/L showed increased prognosis to the revised cardiac risk index and to the combined revised cardiac risk index and left ventricular ejection fraction

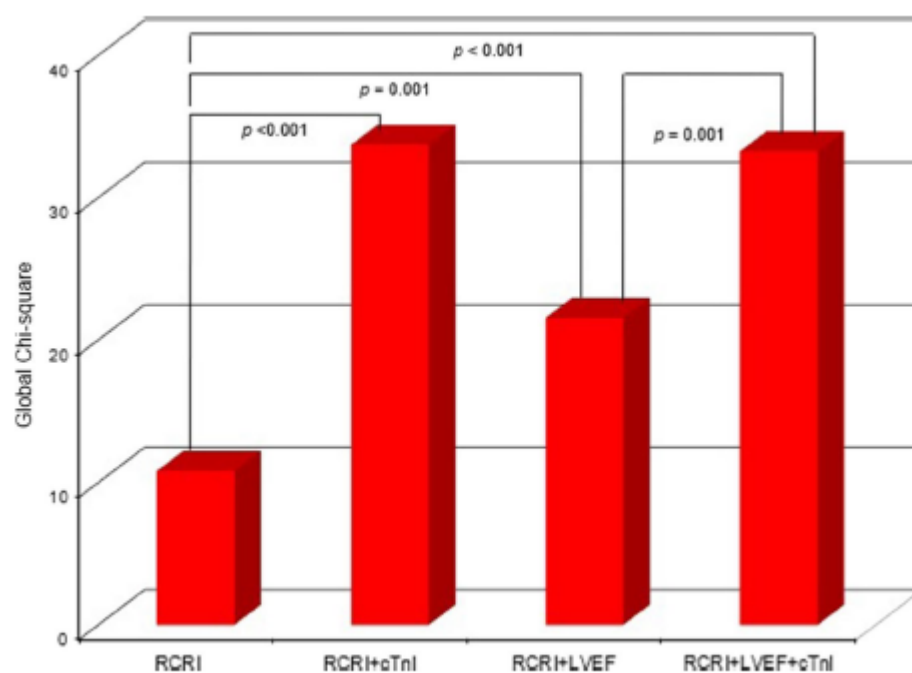


Figure 3: Incremental prognostic value of sequential RCRI, cTnI, and LVEF. Global Chi-square on the Y axis indicates the incremental prognostic value of sequential RCRI, cTnI, and LVEF. RCRI revised cardiac risk index; cTnI cardiac troponin I; LVEF left ventricular ejection fraction

This study concluded that increased level of preoperative cTnI are predictors of postoperative cardiac events, including cardiac death, MI, and pulmonary oedema in patients with end stage renal disease undergoing non-cardiac surgery. Thus, measurement of cTnI from relatively easy blood tests may be helpful for the clinicians to assess the postoperative cardiac risks events in patients with end stage renal disease

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A Case Report concerning the diagnosis and management strategies of Multivalvular heart disease

Multivalvular heart disease (MVD) is characterized as the concurrent stenosis and regurgitation involving two or more valves. According to Euro Heart Survey, Multivalvular heart disease is seen in 15% of patients who underwent valvular surgery.¹ Diagnosis of Multivalvular heart disease is challenging, because several echocardiographic methods are validated only for patients with single valve disease. Several factors should be taken into consideration while treating Multivalvular heart disease, including the severity and consequences, the patient's life expectancy and comorbidities, the surgical risk associated with combined valve procedures, risk of morbidity and mortality and the risk of reoperation.² Transcatheter valve therapies has provided as a new treatment options for patients with Multivalvular heart disease.¹

A 46 years-old female patient was presented with a chief complaint of dyspnoea and fatigue on daily activities. Patient was experiencing similar symptoms since her late 30's and worsening over the past two years. No history of previous heart disease, family history, or genetic information was found. According to Physical examination, neck vein was distended, heart rate was irregular, with grade III/IV diastolic murmur at the apex with clear lung. Liver was found to be mildly palpable, but no lower extremities pitting oedema was observed. Electrocardiography showed atrial fibrillation and cardiomegaly. Echocardiography evaluation also revealed severe mitral stenosis, calcification of aortic valve with severe aortic stenosis, moderate aortic regurgitation, severe tricuspid stenosis regurgitation and dilatation of all chambers, LV Ejection Fraction 61%, and concentric remodelling of the LV. Later, patient was diagnosed with stenotic mitral valve with severe calcification, stenotic-regurgitant aortic valve, and stenotic-regurgitant tricuspid valve with moderate pulmonary hypertension. Double mechanical valve replacement at the aortic and mitral valve revealed a 4cm × 1.5cm x 2.2cm thrombus from left atrium.

Patient was administered furosemide 20 mg once daily, bisoprolol 2,5 mg once daily, and heparin with aPTT targeted to 2–2.5 times control. On day 4, patient felt relieved as the complaints are much reduced. Patient was then transferred to standard care and discharged two days later with anticoagulant switched to warfarin with an INR target of 2.5–3. For 1 year, patient was followed up every month. The patient condition was gradually improving and was able to carry out normal activities without any complaints.

This study highlighted the expertise of multidisciplinary heart valve team and their importance in determining diagnosis and optimal management strategy.

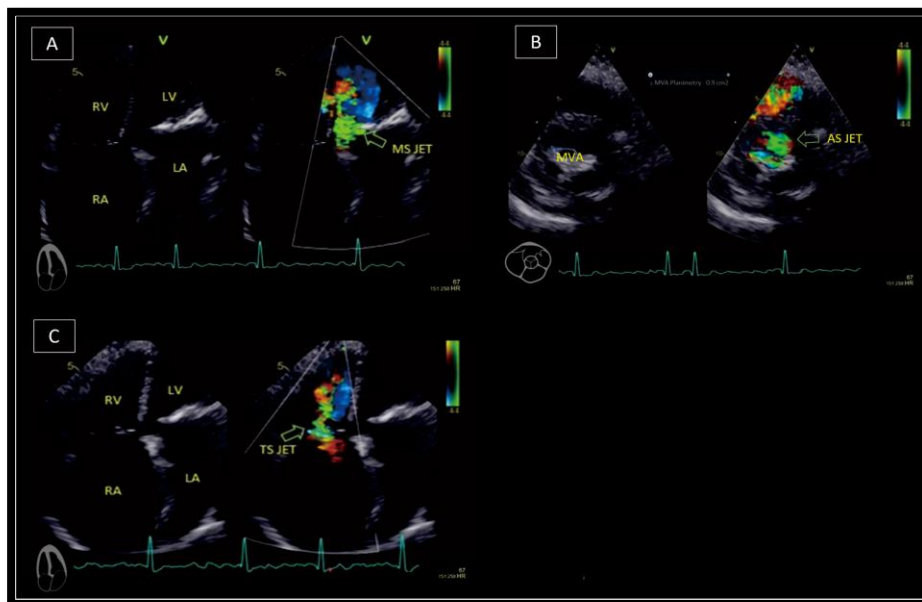


Figure 4: Transthoracic echocardiography showed (A) mitral stenosis in 4 chamber view, (B) The mitral valve area planimetry was 0.9cm² from parasternal short axis

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