



## Surgery

## ANAESTHESIA FOR NON CARDIAC SURGERY FOR A PATIENT WITH RECENT MYOCARDIAL INFARCTION

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**ABSTRACT** Ischaemic heart disease is a condition in which there is inadequate supply of blood and oxygen to a portion of myocardium. Patients with coronary artery disease undergoing non cardiac surgery are more prone for perioperative complications like myocardial ischaemia, myocardial infarction, arrhythmias, cardiac arrest and increased morbidity and mortality. In this paper, we present anaesthetic management of a patient with recent MI for a non cardiac surgery

**KEYWORDS :** Perioperative anaesthesia care, recent myocardial infarction, non cardiac surgery

**INTRODUCTION:**

The primary aim of anaesthetic management of patient with CAD for non cardiac surgery is avoidance of ischaemias and MI. Those with recent MI or unstable angina are at very high risk if they require urgent or emergency surgery.[1]

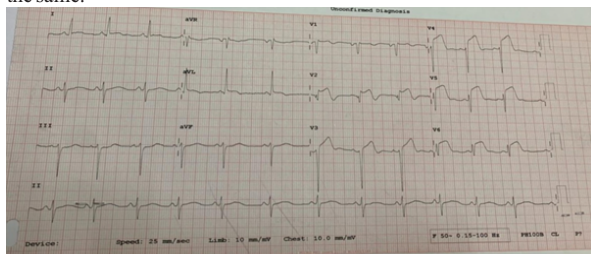
American college of Cardiology and National database defines

- An acute MI as one that is lesser than or equal to 7 days
- Recent MI is defined as MI occurring within more than 7 days but less than 30 days.
- Prior MI is defined as MI that occurred more than 30 days before surgery.

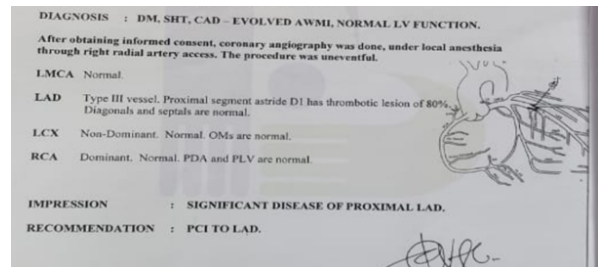
**CASE DETAILS:**

A 57 years old male weighing 85kgs was posted for nephroureterectomy for right sided renal tumour. He had a history of Type II diabetes mellitus and systemic hypertension for past 25 years.

He had a history of recent MI 7 days back with symptoms of severe chest pain radiating to left hand. ECG was done which showed ST elevation in leads V2-V6. He was advised for coronary angiography for further evaluation which showed significant disease (Thrombotic lesion of 80%) of proximal left anterior descending artery. He was advised further management with angioplasty. Incidentally his CT CHEST revealed a tumour invading his right kidney with large heterogenous lesion in the inter and lower pole of kidney. Hence he was advised to undergo surgery for tumour and was being evaluated for the same.

**PRE ANAESTHETIC CONSIDERATIONS:**

A routine pre operative assessment of the patient was done. He had a history of Type II diabetes mellitus and systemic hypertension for past 25 years for which OHAs (T.Metformin 500 mg BD and T.Glimipride 1 mg BD) and antihypertensives (T.Bisoprolol 5mg BD, T.Ramipril 2.5 mg BD ) were taken respectively. Patient was given T.clopidogrel 75 mg OD ,T.Ecospirin 75 mg OD and T.Nitroglycerin 2.6 mg OD by the cardiologist a week back before the pre anaesthetic check up. ECG showed ST elevation from V2- V6. Echocardiography was taken which shows ejection fraction of 63% with normal left ventricular systolic function. Coronary angiography had AWMi with 80% obstruction to LAD. Fitness for surgery was given under high risk by the cardiologist. Further he advised the patient to withhold T.Clopidogrel 75 mg and T.Ecospirin 75 mg for one week prior to surgery.

**PERIOPERATIVE CARE**

The patient was kept nil per oral overnight, patient was monitored with pulse oximetry , non invasive blood pressure monitoring , ECG recording . Patient was given epidural anaesthesia with epidural catheter tip placed at L1 for perioperative analgesia .At supine posture after pre oxygenation for 3 minutes with 100% oxygen ,patient was pre medicated with inj. Glycopyrolate 0.2mg iv , Inj.Fentanyl 2mcg per kg .Patient was induced with Inj.Etomidate 0.3 mg per kg , Inj.vecuronium 0.1mg per kg and intubated with 8.0 size endotracheal tube and was mechanically ventilated . Anaesthesia maintained with oxygen , Nitrous oxide ,isoflurane, Inj.Vecuronium Further under aseptic precaution right Internal jugular vein was identified with Ultrasonography and cannulated with triple lumen central venous catheter , left radial artery was secured with a arterial line and monitored for invasive blood pressure .Intraoperative period was uneventful and patient was hemodynamically stable. Further patient was shifted to ICU and mechanically ventilated and perioperative cardiac monitoring was done to prevent any ischaemic episode.

**DISCUSSION**

In recent years, an increase in patients with history of heart disease specifically ischaemic heart disease has been on the rise. This can be attributed to many factors such as pre existing co morbidities like diabetes mellitus, systemic hypertension, sedentary lifestyle, smoking and rise in obesity. As a result, an increase in number of patients with ischaemic heart disease are presenting with non cardiac surgeries.

The challenges faced by the anaesthesiologist is a plenty. The goal of anaesthesia should be to minimise the risk of myocardial ischaemia, cardiac arrhythmias, cardiac failure and cardiac arrest in the perioperative period [2]. This can be achieved by a thorough preoperative evaluation, good optimising of pre existing co morbidities, thorough pre operative cardiac evaluation including but not limited to 2D echocardiography ,TMT and if indicated coronary angiography. A careful risk stratification and preplanning of intraoperative anaesthetic management helps in reducing morbidity and mortality.[3]

In our case, the patient presented with right renal tumour with uncontrolled diabetes mellitus and systemic hypertension for the 25 years. Patient presented with recent anterior wall myocardial ischaemia 7 days back for which he was treated with T.Ecospirin

75mg, T.Clopidogrel 75mg, T.Nitroglycerin 2.6mg and T.Atorvastatin 40 mg. He was then taken up for coronary angiogram which revealed 80% occlusion of LAD. Although he was advised to undergo angioplasty, keeping on mind of his metastatic renal tumour, angioplasty was planned after the urgent surgery (nephrourethrectomy)

Level of risk	Clinical predictors
Major (cardiac risk >5%)	Unstable coronary syndromes Decompensated CHF Significant arrhythmias Severe valvular disease
Intermediate (cardiac risk <5%)	Mild angina pectoris Prior MI Compensated or prior HF Diabetes mellitus (particularly taking insulin) Renal insufficiency
Minor (cardiac risk <1%)	Advanced age Abnormal ECG Rhythm other than sinus Low functional capacity History of stroke Uncontrolled systemic hypertension

CHF – Congestive heart failure; MI – Myocardial infarction; HF – Heart failure; ECG – Electrocardiogram

The primary aim of anaesthesia for this patient is to prevent perioperative myocardial ischaemia/acidosis, cardiac arrhythmias, hypoxia which will aggravate myocardial insult. In this case, Inj. Etomidate was used for induction for its cardiac stability. Inj. vecuronium is used muscle relaxant and Inj. succinylcholine is avoided due to its potential to induce arrhythmias (due to hyperkalemia). Right IJV was cannalised for closed intraoperative monitoring of central venous pressure, to start on inotropes if required. Left radial arterial line was secured for beat to beat blood pressure monitoring and to obtain samples for ABG analysis. Analgesia was maintained perioperatively by epidural anaesthesia with catheter tip placed at L1. It has an added advantage to this patient which predominantly results in drop in SVR via vasodilation without effects of cardiac sympathectomy and can improve global and regional ventricular functions with angina provided volume loading is limited. All these measures were taken to prevent worsening of cardiac status and to reduce morbidity and mortality.

## CONCLUSION

A thorough evaluation and adequate tests are required as these patients are at increased risk of myocardial ischaemia, infarction and arrhythmias during peri-operative period[4]. It has to be a team effort of cardiologists, surgeons and physicians and patients. Anti-failure medications, beta-blockers and statins have to be continued throughout peri-operative period. For regional anaesthesia, guidelines have to be followed regarding anticoagulant medications. Factors which alter myocardial oxygen supply-demand ratio are strictly monitored. Perioperative monitoring is important to detect early ischaemia and rhythm disturbances along with pain management is other important aspect. Hence, proper evaluation and management peri-operatively are the key to success.

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