

## Perioperative Management of a Patient with Prosthetic Mitral Valve Posted for Ankle Surgery

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### Abstract

*Introduction:* Patients with prosthetic valves pose a specific challenge to the anesthesiologist due to their increased predisposition to thrombo embolic events, infective endocarditis and hemolysis.

*Case Report:* Here we describe the anaesthetic management of a 50 year old female with prosthetic mitral valve posted for wound debridement and external fixation for open type III right ankle bone fracture. She is a known case of Rheumatic heart disease and has undergone mitral valve replacement with tricuspid annuloplasty 5 years back and is on oral anticoagulation which was stopped 7 days prior to surgery. Pre operative ECG showed AF with recent ECHO finding of concentric LVH with EF of 60%. Pre operative coagulation profile was normal. Antibiotic prophylaxis was given 2 hours prior to incision. Case was done under general anaesthesia. Patient was induced with etomidate and maintained with intermittent doses of propofol and isoflurane with adequate analgesics. Intra operative blood loss was around 100ml. Patient was extubated and shifted to ICU for observation.

*Conclusion:* In patients with prosthetic heart valves the most common complication is thromboembolism therefore optimising the coagulation profile before the surgery and subsequent restarting of anticoagulation therapy immediately after surgery is of utmost importance.

**Keywords:** Perioperative Management; Ankle Surgery; Prosthetic Mitral Valve.

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### Introduction

All surgeries are associated with some amount of stress leading to hemodynamic changes. Patients with Valvular heart disease are more prone for hemodynamic instability during perioperative

period. The most common valvular lesions include Mitral stenosis/Aortic stenosis.<sup>1</sup>

The problems associated with management of patients with prosthetic heart valves for non cardiac surgeries are

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- ❖ Assessment of valvular function and residual pathology
- ❖ Infective endocarditis
- ❖ Risk of bleeding and preparation for reversal of anti coagulants
- ❖ Thromboembolism

We present the successful management of a case with prosthetic mitral valve and atrial fibrillation posted for lower limb surgery.<sup>2</sup>

### Case Report

A 50yr old female patient sustained injury to her right ankle following a RTA. She was posted for elective surgery- CRIF with external fixator for ankle fracture dislocation. Preanaesthetic evaluation of the patient showed that she had undergone mitral valve replacement along with tricuspid annuloplasty 5yrs back. She was currently on tablet warfarin 5mg OD Patient had no other comorbid conditions

On physical examination, she was afebrile and pulse was 106/ min and rhythm irregularly irregular, blood pressure was 110/60mm Hg and RR is 14/min. Systemic examination showed no abnormalities. Airway assessment did not show any predictors of difficult airway. The routine pre-operative blood investigations were done and the reports were within normal limits. ECG showed Atrial fibrillation. ECHO findings were - prosthetic mitral valve, post tricuspid annuloplasty, trivial MR, no clots/vegetations, Dilated LA, atrial fibrillation and ejection fraction -60%. Warfarin was stopped 5days prior to surgery and bridged with enoxaparin(LMWH) 40mg once a day. The day prior to surgery coagulation profile was done and the reports showed PT-18.6sec, APTT-46.7, INR-1.6. Patient was on Tab. Atenolol 25mg OD. Plan of anaesthesia- General anaesthesia (As patient was not willing for regional anaesthesia).

Patients consent for surgery was obtained and the following preoperative instructions were given

1. NPO as per guidelines
2. Stop LMWH 12 hours before surgery
3. Continue Tab atenolol till surgery
4. On the day of surgery Tab atenolol 25mg orally 2 hrs before surgery
5. Tab alprazolam 0.5mg HS, Tab ranitidine 150mg 2hours prior to surgery

6. Inj. Ampicillin 1.5gms I.V 2hours prior to surgery(ATD), infective endocarditis prophylaxis.

After shifting to operation theatre, patient was premedicated with Inj.Fentanyl 2µg/kg IV. Monitors connected- ECG, Pulse oximeter, NIBP, ETCO<sub>2</sub> and temperature. Patient was induced with IV Etomidate 0.2mg/kg. After confirming bag mask ventilation, Injection vecuronium 5mg IV was given to facilitate endotracheal intubation. 90 seconds before laryngoscopy, Injection Lignocaine (2% preservative free) 60mg was given. Anaesthesia was maintained with O<sub>2</sub> : N<sub>2</sub>O : Isoflurane mixture (40:60: 0.4%).Inj. Vecuronium 1mg bolus given intermittently(Total 7mg). Inj. Paracetamol 1gm IV infusion given. Blood loss was minimal and correction was done with crystalloids. Duration of surgery was 2hrs.

At the end of surgery, patient was extubated after giving Inj. Neostigmine 2.5mg, Inj.Glycopyrrolate 0.4mg and Injection Lignocaine (2% preservative free) 60mg IV. Extubation was smooth and patient was shifted to recovery for observation. The patient had stable haemodynamics in the Recovery Room. Low molecular weight heparin was started 12 hours after surgery and later bridged on with warfarin. The patient was shifted to the ward and discharged on 14thpost operative day.

### Discussion

It is important to note that patient with prosthetic valves will be on multiple medications such as anti coagulants, digitalis, beta blockers and diuretics which may affect their response to anaesthetics. These medications have to be titrated or changed to injectable medications before surgery. Our patient was on Tab Atenolol(Beta blocker) which was continued till the day of surgery. Main threat associated with mechanical prosthetic valves is thromboembolism and the patients are on anticoagulants. Our patient was on tab warfarin which was stopped and bridged with LMWH. Acidosis, hyper ventilation and tachycardia in the intraoperative period may lead to complications like new onset arrhythmias.<sup>3</sup>

Our patient had adequate ventilation as shown by ETCO<sub>2</sub> readings between 30 - 35 mmHg and stable hemodynamics in the intraoperative period. Our patient had no clinical signs of IE and the ECHO showed no vegetation. Prophylactic antibiotics as per guidelines were given to prevent infective

endocarditis .As we did not expect major blood loss and fluctuating vitals during the surgery, we did not place an arterial line and measure IBP.<sup>4-5</sup>

### Conclusion

Patients with prosthetic valves are more sensitive than others to hemodynamic changes. They need careful preoperative assessment and clinical evaluation. Bridging of anti coagulants is the major concern in the patients with prosthetic mechanical valves along with antibiotic prophylaxis for Infective endocarditis.

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