



## A Rare Case Report on Use of IABP in Post Op-Mediastinal Mass Removal

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### Abstract

*A 50-year-old female patient, presented with mediastinal mass (H/P thymoma) with total occlusion of the right main bronchus. After removal of the mass, sudden dilatation of LV and LV failure was occurred. High inotropic support was started but hemodynamic instability was found. so IAB was inserted. After initiation of IABP, hemodynamic condition was improved.*

**Keywords:** mediastinal mass, LV failure, IABP support.

### Introduction

The intra-aortic balloon pump (IABP) is a mechanical device used to assist cardiac circulatory function in patients suffering from cardiogenic shock, congestive heart failure, refractory angina and complications of myocardial infarction. . Recent case studies have reported favourable outcomes with the use of IABP support in non-cardiac surgery in patients with severe cardiac compromise<sup>(1)</sup>.

### Case Report

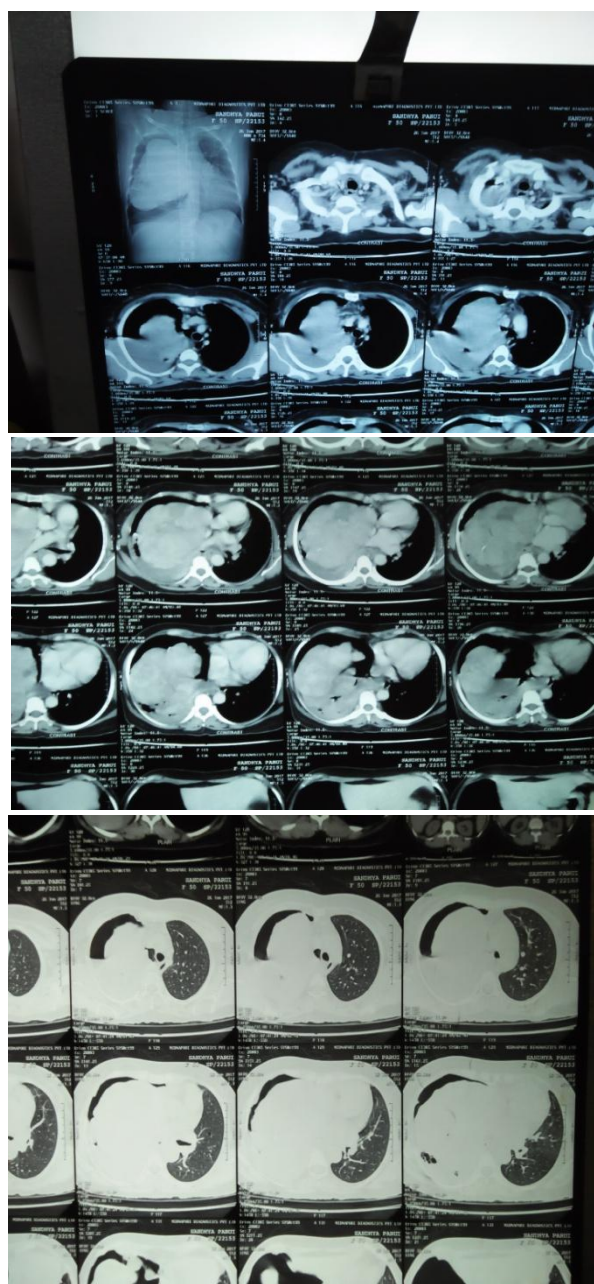
50 yr old female, admitted to chest department with severe respiratory distress, subsequent investigation shows mediastinal mass compressing the right main bronchus and complete collapse of right lung with compression on heart. Patient was taken up for surgery after proper preoperative preparation. Preoperative echo was

WNL. She had no features of myasthenia gravis as well as anti AchR antibody level was within normal limit. FNAC showed findings consistent with thymoma

### Operative procedure

Patient underwent conscious intubation, after that muscle relaxant was given which immediately landed up with fall of saturation and BP. So a rapid entry to mediastinum was obtained via median sternotomy. Tumour was seen to be attached with right chest wall and compressing the RA/RV. After manual pulling of tumour pressure on heart and right bronchus was relieved with improvement in saturation and BP. In addition to median sternotomy a right anterior thoracotomy was performed. Pericardium was opened and tumour was removed. After removal of tumour (as the pressure on heart AND Rt bronchus was

relieved) right lung expanded completely and hemodynamics improved. However during closure the heart seemed to be dilated gradually with Brady cardia and decreased BP. Inotropic support was stepped up and patient was shifted to ITU with steep inotrope and ventilatory support. Patient gradually developed cardiogenic shock (IBP 50/30 mmHg. Urine output 25 ml/hr), TEE was done which showed both systolic and diastolic dysfunction of LV and RV with EF =30%. So it was decided to insert IABP. After IABP insertion hemodynamics improved, inotrope tapered from after 36 hours, IABP removed and pt was weaned from ventilator.



**Image: Preop CT Thorax**

## Discussion

Intra aortic balloon pump (IABP) is a form of internal counter pulsation, acting as an assisting circulatory support device. Diastolic augmentation during inflation potentially contributes to coronary, cerebral, and systemic circulation<sup>(1)</sup>. The balloon is rapidly inflated at the beginning of ventricular diastole, augments diastolic pressure which improves coronary perfusion. The balloon is deflated just before the beginning of ventricular systole which reduces the cardiac after load. According to Freedman et al.<sup>[2]</sup> presystolic deflation lowers the impedance to systolic ejection and therefore Myocardial work and oxygen demand are reduced. By increasing the coronary perfusion and decreasing cardiac after load IABP improves myocardial function.

The increase in cardiac output detected with intra aortic balloon treatment is between 0.5 and 1.0 Lt per minute. Krakauer et al.<sup>[3]</sup> in the beginning of 1971 reported the experience with the intra aortic balloon in 30 cases treated for cardiogenic shock due to acute myocardial infarction refractory to conventional pharmacological treatment.

After the operation, the heart seemed to be dilated gradually with Bradycardia and decreased BP. High volume was infused to maintain BP and Inotropic support was stepped up. The patient was shifted to ITU with steep inotrope and ventilatory support. Patient gradually developed cardiogenic shock (IBP 50/30 mmHg. Urine output 25 ml/hr), TEE was done which showed both systolic and diastolic dysfunction of LV and RV with EF =30%. So it was decided to insert IABP.

IABP was initiated with 1:2 mode triggered by arterial wave form. Bolus Heparin infused 50 units/kg body wt and ACT achieved at 190s. Throughout the IABP therapy ACT maintained 180-200s by continuous heparin infusion and titrated. After initiation of IABP heart was gradually recovered and inotropic support gradually minimised. After 72 hours, we decided to wean IABP.

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minimised. After 72 hours, we decided to wean IABP. Gradually we reduced the IABP support from 1:2 to 1:4, 1:8. ACT was 200. 30 min before the removal of IABP we stopped antiagulation. Then IABP was stopped and noticed the BP. Maintaining normal blood pressure, decided to remove IABP catheter. After removal of IABP, patient was hemodynamic ally stable and discharged on 7<sup>th</sup> post-operative day.

The intra-aortic balloon pump (IABP) is the most commonly used device for circulatory support for both cardiac and non-cardiac patients. Balloon is placed into the descending thoracic aorta just below subclavian artery.

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### Conclusion

Preoperative Echo and ECG reported that patient was non cardiac patient. But just after removal of the large size tumour LV failure was seen. EF was 30%. So we started IAB counter pulsation. So we can conclude that after removal of large size mediastinal tumour (1.9kg), LV failure may occur.

**Conflict of interest-** none declared

### References

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