

# Broken Heart Syndrome— An Intra Operative Complication.

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## ABSTRACT

We report a case of Broken heart Syndrome in a 56 year old Postmenopausal women suffered while undergoing simple biopsy procedures for vocal cord polyp that lead to physical, mental and financial burden both for the patient and doctors. The diagnosis of this case is made by a team of cardiologists based on clinical and echocardiographic findings.

**Keywords:** Broken heart Syndrome; Intraoperative Myocardial Infarction; Reversible Myocardial Infarction; Tako-Tsubo Cardiomyopathy; Stress related Myocardial Infarction.

## INTRODUCTION

Broken Heart Syndrome is also known as Transient Left Ventricular Apical Ballooning Syndrome (TLVAB), Tako-Tsubo Cardiomyopathy, Stress Cardiomyopathy<sup>[1]</sup> is an acute reversible left ventricular dysfunction in the absence of obstructive atherosclerotic coronary artery disease due to emotional or physical stress<sup>[2]</sup> usually affecting elderly post menopausal women.<sup>[3]</sup>

It mimics acute myocardial Infarction and acute coronary syndrome with characteristic features of typical chest pain, pulmonary edema, diaphoresis, cardiogenic shock along with ST elevation in the electrocardiogram, raised cardiac enzymes.<sup>[4]</sup>

The pathophysiology of this syndrome involves coronary vascular dysfunction due to excessive sympathetic stimulation. This syndrome is characterized by a sudden onset of transient akinesia/hypokinesia of the left ventricle often involving all three major coronary artery territories in the absence of significant coronary artery stenosis.<sup>[4]</sup>

This syndrome is widely misdiagnosed as acute myocardial infarction by physicians that lead to unnecessary interventions.<sup>[5]</sup> As this syndrome is an Intra-operative complication<sup>[5]</sup> due to stress it has become a miserable experience for the anaesthetists just as in our case. Beta-blockers<sup>[5]</sup> and intensive care is the prime mode of treatment which provides good recovery and relatively rare deaths.

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## CASE REPORT

A 56-year-old post-menopausal woman presented to E.N.T. Outdoor in National Institute of Medical

Science, Jaipur with complaints of hoarseness of voice since 3 months. On laryngoscopic examination, she was diagnosed with vocal cord polyp for which biopsy was planned to rule out malignancy. She was posted for biopsy in O.T next day. During elective intubation, the patient suddenly became haemodynamically unstable and suffered cardiopulmonary arrest for which she was resuscitated, revived and shifted to a medical ICU for further management. The patient was brought to us in cardiogenic shock (PR- 140/min, BP- 100mm of Hg systolic with dopamine and dobutamine support), frank ST elevation in anterior chest leads, raised cardiac enzymes (Trop-T, CPK-MB, SGPT). 2D-Echo findings reveal – Akinetic LAD territory with EF-35% and arterial blood gas analysis reveal metabolic acidosis (pH- 7.23, HCO<sub>3</sub><sup>-</sup> - 12meq/L). On auscultation bilateral coarse crepitations heard with normal heart sounds. However, patient remained conscious co-operative with preserved urine output.

Her treatment was started with guarded intravenous fluids with diuretics with strict monitoring of central venous pressure, arterial blood gas and serum electrolytes in addition to routine cardio protective- dual anti-platelet, statin, Low molecular weight Heparin along with broad spectrum antibiotic. Later patient was taken on Intra Aortic Balloon Pump support. After continuous monitoring of 48 hours, patient showed improvement as her chest became clear, inotropic supports came down, and beta-blockers were added to the treatment regimen. On the 3<sup>rd</sup> day, her 2D-Echo was repeated which raised our eyebrows with surprise as cardiac activity is absolutely normal (No regional wall motion abnormalities-RWMA, Ejection Fraction- 55%).She was shifted to cath-lab for coronary arteriography which further added to our surprise list as normal coronaries. Patient showed drastic improvement and was discharged on simple beta-blockers on day-7. The team of Cardiologists diagnosed this as ‘Broken Heart Syndrome’.

## DISCUSSION

Broken Heart Syndrome/ Stress induced Cardiomyopathy is an acute reversible condition first recognized in 1990's. 90% of the patients were women preferably post-menopausal between ages of 66 and 80 years.<sup>[6]</sup>

The mechanism of myocardial dysfunction in stress induced cardiomyopathy has not been fully elucidated, but a leading hypothesis suggests that a catecholamine surge resulting in regional microvascular dysfunction in susceptible patients, accompanied by cellular calcium overload.<sup>[7]</sup>

The most common area involved is left ventricle (LV) apex (hence the synonym apical ballooning syndrome), however RWMA is also seen in mid ventricular/ other ventricular walls with compensatory hyper dynamic contraction of the basal LV segments with associated apical LV dyskinesias results in acute left ventricular outflow tract obstruction as in this case because of systolic anterior motion of the mitral valve with associated outflow tract gradient and hypotension.

The long term prognosis is good with mortality around 1-2% due to rare complications such as irreversible cardiogenic shock, LV rupture or embolization of LV thrombi, fatal arrhythmias and complete heart block.<sup>[8]</sup> The association of this disease with QT interval prolongation has been noted hence drugs prolonging QT should be avoided along with strict monitoring of electrolyte levels. Recurrence is seen in 2-5% case.<sup>[9]</sup> Long term management with Beta-blockers is advised as treatment strategy to suppress catecholamine surge and there is no need of anti-platelet, anti-coagulants.

## CONCLUSION

Although rare, it is serious intra-operative complication, which may lead to death if not managed properly. Hence, operating surgeon, anaesthetist and attending physician/cardiologist should always keep this in mind while managing sudden cardiac dysfunction as an intraoperative complication. This is a disorder with very good prognosis with proper treatment guidelines as well as fatal prognosis with misdiagnosis/under diagnosis.

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