

*Case Report*

## Successful Management of a Case of Rupture Sinus of Valsalva in Pregnancy

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### ABSTRACT

Rupture sinus of valsalva is a rare cardiac abnormality which is usually congenital in nature. Few cases regarding this condition have been reported in pregnancy mainly requiring caesarean section. We report the case of a 30 year old G<sub>5</sub>P<sub>3</sub>L<sub>2</sub>A<sub>1</sub> who presented with breathlessness and palpitation and was diagnosed with this condition by transthoracic echocardiography at 24 weeks gestation. She was managed medically till term and delivered vaginally. Rupture sinus of valsalva can produce a life threatening condition for the mother in pregnancy and can have profound fetal effects but our patient delivered successfully with a good maternal and fetal outcome.

**Keywords:** Rupture sinus of valsalva, Pregnancy, Coronary sinus

### INTRODUCTION

Aneurysm of sinus of valsalva is a rare congenital cardiac defect, first described by Hope in 1839. [1] It is usually silent but may cause significant hemodynamic changes. This condition often goes unnoticed unless a rupture occurs, usually in the 3rd or 4th decade of life. [2] Even unruptured, the aneurysm can occasionally obstruct cardiac outflow or cause heart block. The mortality rate in patients with a sinus of valsalva aneurysm in whom surgery is not performed is high within the first year after rupture. [1] Pregnancy is a state that places hemodynamic strain on the cardiovascular system and can be risky in women with underlying cardiac disease. The case is being presented because of its rarity and favourable outcome.

### CASE REPORT

A 30 year old G<sub>5</sub>P<sub>3</sub>L<sub>2</sub>A<sub>1</sub> came to our hospital at 39 weeks gestation with complaints of breathlessness (NYHA III) and palpitation at rest occasionally for the past 4 months. There was no history of associated orthopnoea, chest pain, syncope or paroxysmal nocturnal dyspnoea throughout pregnancy. She had history of three vaginal deliveries previously. There was history of an infant death at 8 months of age due to cardiac disease during her third pregnancy following which she had a spontaneous abortion. This pregnancy she conceived spontaneously and developed breathlessness occasionally in the first trimester for which she did not seek any medical treatment. There was no history of folic acid intake or any antenatal checkups in the first trimester. Her symptoms of

dyspnoea and palpitation aggravated in the second trimester at 24 weeks gestation when she was diagnosed as a case of rupture sinus of valsalva and put on lasix 20 mg once daily. There was no significant family history or past history of any congenital heart disease.

General examination of our patient was unremarkable except for bilateral pitting pedal edema. Her pulse rate was 80/minute with a high volume pulse and blood pressure of 130/90 mm Hg. Her respiratory rate was 24/minute with O<sub>2</sub> saturation 96% on room air. Cardiovascular system examination revealed a pansystolic murmur in the tricuspid area. A palpable thrill was present on the left sternal border. ECG showed normal sinus rhythm. Respiratory system revealed no adventitious sounds. Echocardiography revealed rupture of sinus of valsalva aneurysm (right coronary cusp) into right ventricle with normal right & left ventricular function. There was Windsack appearance, moderate aortic regurgitation, trivial mitral and tricuspid regurgitation. There was no associated clot or pericardial effusion. Per abdomen uterus was term size, cephalic with fetal heart rate 152 beats per minute. Her investigation reports were within normal limits. She was advised bed rest, propped up position, Inj. Ceftriaxone prophylactically at the time of delivery and Lasix 20 mg IV twice daily. Ultrasound of the abdomen showed adequate liquor and a normal fetus without any anomalies. Cardiology opinion was obtained and she was advised caesarean section for obstetric indications only.

She spontaneously developed labour pains 2 days following admission and had a precipitate labour. Vacuum was applied to cut short the second stage of labour. She delivered a term male fetus weighing 3.3 kg with good APGAR score. Lasix was given soon after delivery and vitals were monitored during the postnatal period. Postnatal period was uneventful and she was

discharged on the 4<sup>th</sup> postnatal day with advice of adopting contraceptive methods to prevent future pregnancy and to review in cardiology OPD for follow up and further management.

## DISCUSSION

Thurnam in 1840 reported the first case of rupture of sinus of valsalva. [3] It is more common in patients of Asian origin with a male to female ratio 3:1 and comprises approximately 0.1-3.5% of all congenital cardiac anomalies. [1] The sinuses of valsalva are dilatations in the aortic wall immediately superior to the attachments of three aortic wall cusps. The sinuses are named according to their relationship with the coronary arteries: i.e. the right coronary sinus, the left coronary sinus, and the non coronary sinus. Aneurysmal dilatation of the sinus of valsalva occurs when the aortic media is defective; resulting in lack of fusion between aortic media and annulus fibrosus of the aortic valve. [4] The right coronary sinus is the most common site of aneurysm formation mostly ruptures into the right ventricle, producing left to right shunting. [5] Right coronary sinus aneurysms may also rupture into the right atrium. Non coronary sinus aneurysms generally rupture into the right atrium. Left coronary sinus aneurysms are extremely rare, but they may rupture into the pericardium, resulting in cardiac tamponade and death if not quickly recognized. [1]

Cases of sudden death from sinus of valsalva aneurysm most commonly involve rupture of the aneurysm with the acute onset of overwhelming congestive heart failure, cardiac tamponade, dysrhythmia, or coronary ischemia depending on the location of the aneurysm and subsequent flow disturbance. Size and location of the shunt are the major determinants of presentation and prognosis. Other cases result from an inherited connective tissue abnormality. An aneurysm that actually ruptures is often

heralded by the sudden onset of dyspnoea and severe chest pain. Following this initial symptomatic period, the patient may become asymptomatic even without treatment as the body adjusts haemodynamically to the left to right shunting. However as the shunting and volume overload overcome the compensatory mechanisms, symptoms of congestive heart failure result.

Our patient was asymptomatic hence cardiac surgery was not advised during pregnancy. In addition, cardiac surgery during pregnancy has been found to result in increased fetal loss. [6] There have been several reports of a sinus of Valsalva aneurysm as the source of an embolic stroke. [7] Goel et al reported the case of a 26 year old multigravida at 36.6 weeks of gestation who underwent caesarean section under general anesthesia after being diagnosed with rupture sinus of valsalva. [1] Latzman et al reported 35 year old pregnant lady with rupture sinus of valsalva at 4<sup>th</sup> month of gestation delivered vaginally at term without any complications. [2] Romero R et al reported the case of a primipara with rupture sinus of valsalva aneurysm managed by caesarean section under spinal anaesthesia. [8] In literature most of the cases reported were managed by caesarean section, similar to other high risk cardiac cases like Eisenmenger syndrome. [9]

## CONCLUSION

This case illustrates the fact that medical management with any mode of delivery can provide a favourable outcome in rupture of sinus of valsalva in pregnancy

and caesarean section to be reserved for obstetric indications only.

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