

## Pregnancy Complicated with Severe Aortic Coarctation: A Case Report

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**Abstract:** A 21-year-old second gravida came to our nursing home with high blood pressure (BP) in her 16<sup>th</sup> week of gestation. She was a known case of "Severe Aortic Coarctation". She had delivered her first born at our Hospital 2 years back, after which she conceived present pregnancy in her lacatational amenorrhea. On physical examination blood pressure was 200/100 mmHg and heart rate was 92/minute. Transthoracic echocardiography showed severe form of post ductal coarctation of Aorta with Aortic arch interruption. During the pregnancy (from 16 wks to 37 wks) BP was regulated with Metoprolol & Amlodipin. Delivery was induced by sweeping the membranes at 37 weeks. There was no complication in post-partum period. Healthy male child was delivered vaginally with APGAR score of 10/10. Computed tomography was performed post-partum which confirmed the diagnosis of severe form of coarctation of aorta with aortic arch interruption. Here, in this report, management of the second pregnancy in a patient who was a known case of Severe Coarctation of Aorta (not surgically corrected) is presented.

**Keywords:** Aortic Coarctation (AoCo), Blood pressure (BP).

Date of Submission: 11-03-2020

Date of Acceptance: 25-03-2020

### I. Introduction

Aortic Coarctation (AoCo) accounts for 6-8% of all congenital heart defects (1). Although there may be some anatomical variation, Coarctation is usually characterized by discrete narrowing of aorta distal to the origin of left subclavian artery. The diagnosis is made during infancy or childhood in 80 % of patients and survival into adulthood is common (2). A large number of severe congenital heart defect cases go untreated due to poverty, inadequate and maldistributed resources for treatment of CHD (congenital heart defect) in India(3). It is of immense importance to diagnose this disorder timely, because the dangerous complications of pregnancy thereby can be minimized. Here we present the case of symptomatic pregnant patient with severe aortic Coarctation who was successfully managed for the second time by inducing labour at 37 weeks of gestation and was delivered vaginally.

### II. Case Report

A 21-year-old second gravida came to our Hospital with high blood pressure (BP) at 16 weeks of gestation. Patients functional capacity was NYHA II. On medical history she was diagnosed to have Aortic Coarctation (AoCo) in her childhood.,

She was on Metoprolol and had her first successful uneventful vaginal delivery at our hospital 2 years ago. She conceived present pregnancy as a failure of barrier method of contraception in her lactational amenorrhoea. She decided to continue the pregnancy.

On physical examination her heart rate was 92 beats/minute with blood pressure 200/100 mmHg. Grade II/IV left interscapular systolic murmur was detected on cardiovascular examination. The blood pressure in both the upper limbs was 200/100 mmHg while blood pressure measured in both the popliteal fossa was 170/90 mmHg. Upper bilateral Brachial and Radial were normal to high volume pulses. While both the popliteal and dorsalis pedis appeared low volume. Pathological investigations like blood and urine biochemistry were normal. Her electrocardiogram was normal. Transthoracic echocardiography showed severe form of coarctation of Aorta with aortic arch interruption.

During the pregnancy (from 16 to 37 weeks) BP was regulated with Metoprolol 50 mg & Amlodipin 5 mg once daily. At 37 weeks gestation labour induced gradually by first sweeping of membranes and then by augmentation of labour with oxytocin in active phase of labour with antibiotic cover. Healthy male child was delivered vaginally with right mediolateral episiotomy. No aortic rupture or dissection was observed during pregnancy and labour. There were no complications in post-partum period. The neonate was examined by Pediatrician post-delivery on 1<sup>st</sup> and 4<sup>th</sup> day and was found to have no CHD (congenital heart defect). Computed tomography was performed post-partum to evaluate coarctation anatomy. On computed tomographic

Aortography Aortic dimensions were as follows: Aortic Root 24.8 x 32.5 mm, the Ascending aorta – 30.5 x 30.9 mm, the proximal Aortic arch – 25 mm. The Prestenotic Aorta – 8.9 x 10.4 mm. The stenotic segment had length of 5.4 mm, the Post stenotic Aorta- 17.8 x 18.3 mm. Patient was advised for surgical repair with graft.

### III. Discussion

Typically AoCo is located in the area where the ductus arteriosus is inserted and only in rare cases occurs ectopically (ascending descending, or abdominal aorta) (4). Adult patients without surgical correction present with systemic arterial hypertension in the upper extremities. Classically, Aortic Coarctation is poorly tolerated during pregnancy due to associated risk of acute aortopathy. The most common complication encountered in women during pregnancy with Coarctation of the aorta is systemic hypertension, yet aortic wall complications, although rare are of concern (5).

The increased flow across the narrowed isthmus coupled with hypertension may cause left ventricular failure and decreased fetal perfusion. What made this case challenging to treat was the fact that while treating the hypertension we had to be careful not to overlook the aspect of fetal perfusion. An excess of miscarriages and frequent occurrence of hypertensive disorders of pregnancy were observed in AoCo cases (6).

Hence these patients should be evaluated for early detection and prevention of obstetrical and / or cardiovascular complication. Such as sustained hypertension, aortic root dilatation. Hypertension worsens in some patients and the spontaneous abortion rate is increased. As the normal physiological changes are observed during pregnancy cardiac output increases from third to seventh month of pregnancy by 30-50%. It is the seventh month onwards sudden changes in blood pressure are observed due to altered maternal physiology. Thus this is the first critical period for AoCo patient. The second critical period is the labour itself because BP & cardiac work increases by about 20% and are at the peak during each uterine contraction (7). Aortic diameter

< 1.2 cm have been correlated with higher maternal cardiovascular events (8). In this case reported the maximum diameter of prestenotic aorta is 1.04 cm. During pregnancy, women with coarctation of the aorta have increased incidence of hypertensive complications, cesarean section delivery, longer hospital stay, and higher hospital charges (9). Hence it is recommended to patients to undergo surgical correction of AoCo prior to conception to tolerate the pregnancy well. In such challenging cases the attending obstetrician, physician and anesthetist should work in tandem to achieve the highest level of care and success. Preconception genetic counseling and hemodynamic assessment is recommended for women contemplating pregnancy.



**FIG. 2.** Computed Tomographic Aortography showing the post ductal coarctation of the aorta.

### IV. Conclusion

We report a pregnant patient diagnosed to have uncorrected severe Coarctation of Aorta with arch interruption resulting in successful delivery without cardiovascular complication.

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Charusmita Hawaldar, et al. "Pregnancy Complicated with Severe Aortic Coarctation: A Case Report." *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*, 19(3), 2020, pp. 01-03.