Management of Coarctation of Aorta during Pregnancy: A Case Report

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BACKGROUND

• Coarctation of the aorta (COA) is usually diagnosed early in childhood, but 20% of cases do not present until adult life.  
• Patients with COA are increasingly reaching childbearing age, and pregnancy-related cardiovascular changes place additional stress on coarctations. 
• Uncorrected COA in a pregnant woman can be life-threatening for both mother and fetus (Table 1).  
• When medical management with typical antihypertensives fail to decrease gradient of coarctation, invasive intervention may be indicated.  

Maternal Complications Fetal Complications

- Maternal hypertension - Placental abruption
- Aortic dissection - Intravascular thrombosis
- Aortic rupture - Growth retardation
- Congestive Heart Failure - Premature Birth
- Hypertensive crisis - Infective endocarditis

Table 1. Potential life-threatening complications that can occur in pregnant woman with uncorrected coarctation.

• Mothers with congenital heart disease, such as COA, have a slightly increased risk of having children with congenital heart disease.  

CASE SUMMARY

Case Presentation:
A 18-year-old G1P0 at 11 weeks gestation with past medical history of unrepaird COA presented with severe non-radiating substernal chest pain for 2-3 days. Her chest pain was worse with exertion; other symptoms included dyspnea with exertion, orthopnea, palpitations, and presyncope. Vital signs demonstrated BP in R UE 128/76, L UE 133/79; R LE 117/78; L LE 114/74. On exam, a grade 3/6 systolic murmur was heard under L scapula and her lower extremity pulses were not palpable.

Hospital course:
ECHO demonstrated dilated ascending aorta and transverse arch with decreased pulsatility in the descending aorta consistent with critical coarctation as seen in Figure 2A and 2B. Emergent cardiac catheterization was performed and a balloon expanded stent was used to dilate the area of coarctation as seen in Figure 3A and 3B. Post-procedurally, she had no residual gradient and went on to have an uneventful pregnancy and delivery.

Follow-up:
She is now a 23-year-old G5P3. She has two living children with Shone complex and had two pregnancies end in miscarriages. Fetal ECHO was performed for each pregnancy and the patient received genetic counseling but declined further genetic testing.

DISCUSSION

• This case illustrates a successful percutaneous repair of COA during pregnancy with a balloon expanded stent placement.  
• To our knowledge, only one other transcatheter stent has been placed during pregnancy for treatment for COA.  
• Few case reports have been documented, with management ranging from simple balloon angioplasty to coarctectomy. 
• Stent implant is thought to be safer in pregnancy as high estrogen levels can impact aortic remodeling, predisposing the aorta to dissection and rupture.  
• If residual gradient is low, outcomes of further pregnancies are favorable, with similar rates of preeclampsia as the general population.  
• More research is needed to establish the safety and efficacy of COA repair during pregnancy.

Figure 4. Fetal ECHO image shows the fetal aorta without coarctation.

REFERENCES

7. Pick T, Phelan S. Congenital Heart Disease and Reparative Gene Therapy: an approach to the unclassified, the unremediable, and the lethal.  

Figure 2A. Suprasternal echocardiographic image with color doppler demonstrating turbulent flow across the coarctation in Image A correlating with a gradient of 5.3 mmHg. Figure 2B demonstrates improved flow across the stented area with residual gradient of 150 mmHg.

Figure 3A. Lateral angiographic images demonstrating the severe coarctation before intervention (3A) and relieved obstruction after stent placement (3B).