

# Subsequent Pregnancy in a Patient With Spontaneous Coronary Artery Dissection

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## Abstract

Spontaneous coronary artery dissection (SCAD) is an exceedingly rare condition that primarily affects women in late pregnancy and post partum period. While rare, the mortality in the acute episode may approach 38%. In the literature there are several reports of SCAD in pregnancy and the post partum period but none describe the management of such patients in a subsequent pregnancy. We report a case of SCAD in the post partum period requiring coronary intervention with placement of four stents. The patient presents for prenatal care for a subsequent unplanned but desired pregnancy. Multidisciplinary care was instituted, including close cardiology follow-up. She remained asymptomatic throughout the pregnancy and post partum period. SCAD as a rare cause of acute coronary syndrome carries a significant mortality especially if there is a delay in diagnosis, and management. It should be an important part of the differential diagnoses for a clinician working up a female patient with chest pain in late pregnancy and post partum period. While our patient had a favorable outcome during the subsequent pregnancy, delivery and post partum periods, close follow-up and co-management with cardiology is important in the care of such patients. Given the lack of available clinical information, management recommendations are suggested using expert opinion and tangential data.

**Keywords:** Post partum; Spontaneous coronary artery dissection; Acute coronary syndrome in pregnancy

## Introduction

Spontaneous coronary artery dissection (SCAD) is an un-

sual cause of acute coronary syndrome [1]. It is most often seen in late pregnancy and the post partum period [1]. There are several case reports describing SCAD in pregnancy or the post partum period but none report the management of such patients with subsequent pregnancies. We report our case, a patient with history of acute coronary dissection in the post partum period presenting for prenatal care in a subsequent pregnancy.

## Case Report

A 37-year-old Caucasian female G3 P1011 initially presented for prenatal care at 13 weeks gestation. She denied any significant medical or surgical history except that pertaining to her last pregnancy 26 months prior. The antepartum course of her last pregnancy was uncomplicated. She underwent post term induction of labor and vaginal delivery of a healthy neonate. At 9 weeks post partum she developed chest pain without exertion that prompted an emergency room evaluation. An inferior wall ST segment-elevation myocardial infarction (STEMI) was diagnosed. She underwent cardiac catheterization which demonstrated findings consistent with coronary artery dissection, including extrinsic occlusion of the right coronary artery without evidence of atherosclerotic disease. A stent was successfully deployed. Five days post intervention, her symptoms recurred and she underwent repeat coronary arteriography which demonstrated further occlusion of the right coronary artery requiring three additional stents. She was maintained on aspirin, metoprolol, warfarin, lisinopril and prasugrel in the immediate recovery phase. During the subsequent pregnancy, the patient denied chest pain or symptoms of left heart failure. She underwent evaluation for hypercoagulable state and connective tissue disorders. This proved negative. A cardiology workup revealed a normal electrocardiogram and echocardiogram. She was maintained on low dose aspirin therapy throughout the pregnancy. An uncomplicated delivery via cesarean section secondary to failure to progress resulted in delivery of a 9 pounds and 1 ounce healthy male infant. She received low molecular weight heparin thromboprophylaxis immediately after delivery, and was restarted on low dose ASA and metoprolol upon discharge from the hospital. Her post partum course was uneventful. She had normal ECG, echocardiogram and cardiac stress test studies at 6 weeks after the delivery.

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## Discussion

SCAD is a rare condition that may affect pregnant or post partum women without traditional CAD risk factors [2]. While rare in the general population, it accounts for 50% of all acute myocardial infarctions in late pregnancy and post partum women [3]. An intimal flap is the hallmark radiographic sign for the diagnosis of SCAD as seen on coronary angiography. The etiology is believed to be secondary to progesterone effects on the arterial wall, causing a decrease in intimal acid muco-polysaccharides, less corrugation of elastic fibers and breakdown of reticular fibers. These changes, in addition to the increased plasma volume and cardiac output seen in pregnancy (and thereby increase in shear forces), seem to be critical triggers for dissection to occur.

These pathophysiologic events may occur in more than one vessel, rather than an isolated vessel, supporting the premise that this is a generalized effect and not due to localized trauma, injury or atherosclerotic disease [3]. Extrinsic occlusion of the artery results from rupture and separation of the vessel media creating a false lumen within the vessel wall [3]. The sequelae of the dissection is dependent upon the vessel involved and extent of propagation [4]. Mortality for the acute event is 38% but if the patient survives, long-term survival rates are reported to be excellent [5]. Importantly, without a proper diagnosis, most of these patients are managed as acute coronary syndrome with aggressive antithrombotic, antiplatelet and even fibrinolytic therapies. Interventions such as fibrinolysis may well be contraindicated in such patients [2]. While the vast majority of these rare cases have been reported in the coronary vessels, there is evidence that similar dissection events may occur in other vessels including vertebral arteries [6].

These patients typically have no evidence of collagen disorders such as Marfan's syndrome or Ehler's Danlos syndrome and may exhibit no risk factors for coronary artery disease. SCAD remains a rare entity, and therefore there are very limited data on long-term follow-up [4]. We present our patient as an example of subsequent pregnancy after initial presentation with acute coronary occlusion requiring a total of four stents in the right coronary artery. The patient remained stable throughout the subsequent pregnancy and went on to have an uneventful delivery and post partum course. However, in one report the overall recurrence rate was noted to be significant (20% at 5 years and 29.4% at 10 years) with a median time of 2.8 years to the next event [7]. Higher recurrence rates appear to be related to impaired left ventricular function, coronary artery anatomy and ongoing ischemia and the interval between myocardial infarction and previous pregnancy [8]. Despite the successful outcome in our case, intuitively, one would expect an increased risk for recurrence in future pregnancies because of the same physiologic changes that occur in each pregnancy in an apparently susceptible host.

In the absence of definitive guidelines, management recommendations for the present time must rely on expert opinion using extrapolated data. If a history of SCAD in a patient should come to light, she should undergo a full preconception cardiac assessment. If cardiac decompensation is identified, serious consideration should be given to delaying or avoid-

ing pregnancy. Likewise, visualization of the coronary arteries might be advisable before attempted pregnancy. As with other forms of myocardial infarction, pregnancy should be delayed at least 1 year in patients with previous revascularization or infarction, until risks of recurrent ischemia have significantly decreased [8]. Importantly, clinicians treating patients with suspected SCAD should screen for fibro-muscular dysplasia in the renal arteries if the patient is also diagnosed with hypertension, carotid fibromuscular dysplasia and intracranial aneurysms.

During pregnancy, co-management with providers having cardiology expertise will be needed. Although normal physiologic changes associated with pregnancy may mask early cardiac symptomatology, serial assessment is advised. We elected to initiate low dose aspirin in our patient, given the minimal risk for adverse side effects and the potential to prevent thrombosis. As mentioned previously, if acute dissection is suspected, acute anticoagulation may be contraindicated. A low threshold for aggressive investigation of chest pain is warranted during the pregnancy. The patient will require close surveillance throughout the post partum period, and perhaps beyond, since dissections have been reported even after the typical 6 week time period.

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