

Post-CABG Coronary Steal Syndrome: Chest Pain After Coronary Artery Bypass Surgery Secondary to Unrecognized Subclavian Stenosis

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OBJECTIVE

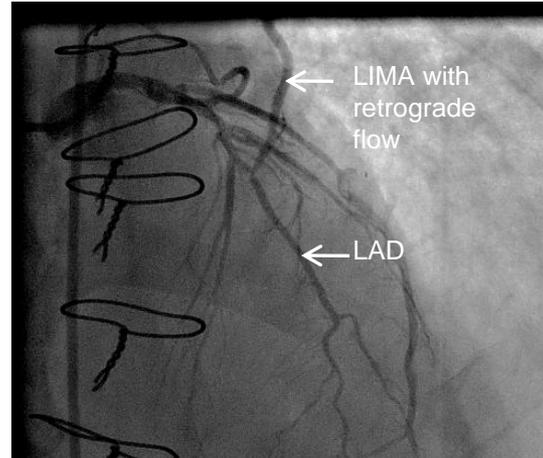
To encourage primary care physicians and cardiologists to be diligent in questioning past and future recipients of coronary artery bypass surgery, to prevent development of coronary steal syndrome.

INTRODUCTION

Subclavian steal syndrome is a well-recognized entity that results from inadequate blood flow through a narrowed subclavian artery causing arm claudication with exercise. Once diagnosed, it is easily treated with placement of a subclavian artery stent using angiography. However, if this is not recognized by clinicians prior to coronary artery bypass surgery, it can result in coronary steal syndrome. This syndrome is due to reversal of blood flow through the internal mammary artery anastomosis with exertion of upper extremities. The resulting demand ischemia can manifest as arm claudication or chest pain. Clinicians, including primary care physicians, must be aware of this rare complication to prevent further cardiac damage from persistent ischemia.

CASE PRESENTATION

A 65 year-old Caucasian male presented with angina three weeks after coronary artery bypass surgery with 5 grafts, including one from the left internal mammary artery to the left anterior descending artery. Initially thought to be a critical stenosis or complete graft occlusion, the patient was transferred to our medical center for urgent angiography and possible graft revision. EKG showed a subtle ST-elevation in lead III, and serum troponin was elevated. However, on further review of angiography done at an outside facility, it was discovered that the patient had a 90% stenosis of his left subclavian artery with retrograde flow of contrast through the anastomosis of the left internal mammary artery. On questioning, the patient reported significant arm pain with routine activities—though he had never reported this on previous encounters. An endovascular stent was placed in the left subclavian artery with good resultant blood flow and immediate resolution of chest pain.



TREATMENT

Occlusion of the subclavian artery is often managed via a percutaneous approach rather than surgery.² It is a fairly uncomplicated procedure to place a subclavian stent in the angiography lab with immediate improvement in symptoms and/or ischemia. Revascularization in patients with subclavian disease is usually reserved for patients with exercise-limiting angina pectoris due to coronary-subclavian steal syndrome.² Overall, the rate of procedural success is 98.5% with a major complication rate of 1%. At a mean follow-up of 19 ± 15 months, the primary patency rate (PPR) is 89% and the secondary patency rate (SPR) is 98.5%.¹

REFERENCES

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DIAGNOSIS

HISTORY

Patients usually present with coronary steal syndrome with one of the following symptoms: chest pain or arm claudication with upper extremity activity, or as a myocardial infarction. History taken in any patient preparing for a coronary artery bypass surgery, or with symptoms after CABG, should include specific questions about arm claudication or chest pain that occur with upper arm exercise.

PHYSICAL EXAM

There is no specific physical exam maneuver that can elicit the symptoms of coronary steal syndrome; however, it may be helpful to test for reoccurrence of symptoms after repetitive movements of the upper extremities.

IMAGING

Diagnosis of subclavian steal syndrome and coronary steal syndrome requires coronary angiography. This will demonstrate limited blood flow through the subclavian artery and reversal of blood flow through the internal mammary artery upon filling with contrast.

DISCUSSION

Subclavian steal syndrome can be easily recognized by its classic presentation. With careful questioning of patients prior to coronary artery bypass surgery and possible implementation of standardized subclavian angiography if LIMA is to be used during bypass, coronary steal syndrome can be prevented. If a patient presents with continued chest pain or arm claudication after bypass, the diagnosis of coronary steal syndrome should be considered to prevent further ischemia and damage to an already compromised myocardium.