

## Left Innominate Vein Occlusion Encountered During Permanent Pacemaker Implantation – an unusual finding

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### Background

Anomalies of the great central vessels are infrequently encountered during pacemaker implant and may pose a challenge for successful implant.

### Case Description

A 59-year-old male was referred for permanent pacemaker implant due to symptomatic complete atrioventricular block, noted during evaluation for ascending aortic aneurysm (AAA) surgery. Medical and surgical history included AAA and severe aortic regurgitation, treated with a St. Jude mechanical aortic valve conduit 14 years prior, with an uneventful postoperative course. The distal anastomotic site gradually dilated to 5.7cm. Recent chest radiographs and a chest CT pulmonary angiogram showed post-surgical changes, pulmonary nodules and dilated ascending aorta. The patient was anticoagulated with warfarin.

A micropuncture technique was used to access the left axillary vein. The guidewire did not advance beyond the costoclavicular junction. A venogram was obtained (Figure), showing no contrast flow medially, but contrast drainage towards the heart via a mammary vessel, suggesting a left internal mammary artery. Due to concern for inadvertent central arterial access in an anticoagulated patient, the image was carefully reviewed before proceeding. The presence of valves and collaterals correctly identified the accessed vessel as the left axillary vein, with complete occlusion of the innominate vein and a well-developed left internal mammary vein.

The sheath was removed and a successful dual chamber pacemaker implant was performed from right axillary venous access.

### Discussion

Innominate vein occlusion may pose a challenge to pacemaker implant. Although prior aortic root reconstruction was likely a contributing factor, the incidence of this postsurgical complication is not known. If this scenario is encountered, careful review of the contrast fluoroscopy images can differentiate this situation from inadvertent arterial access.



Figure