SVC syndrome

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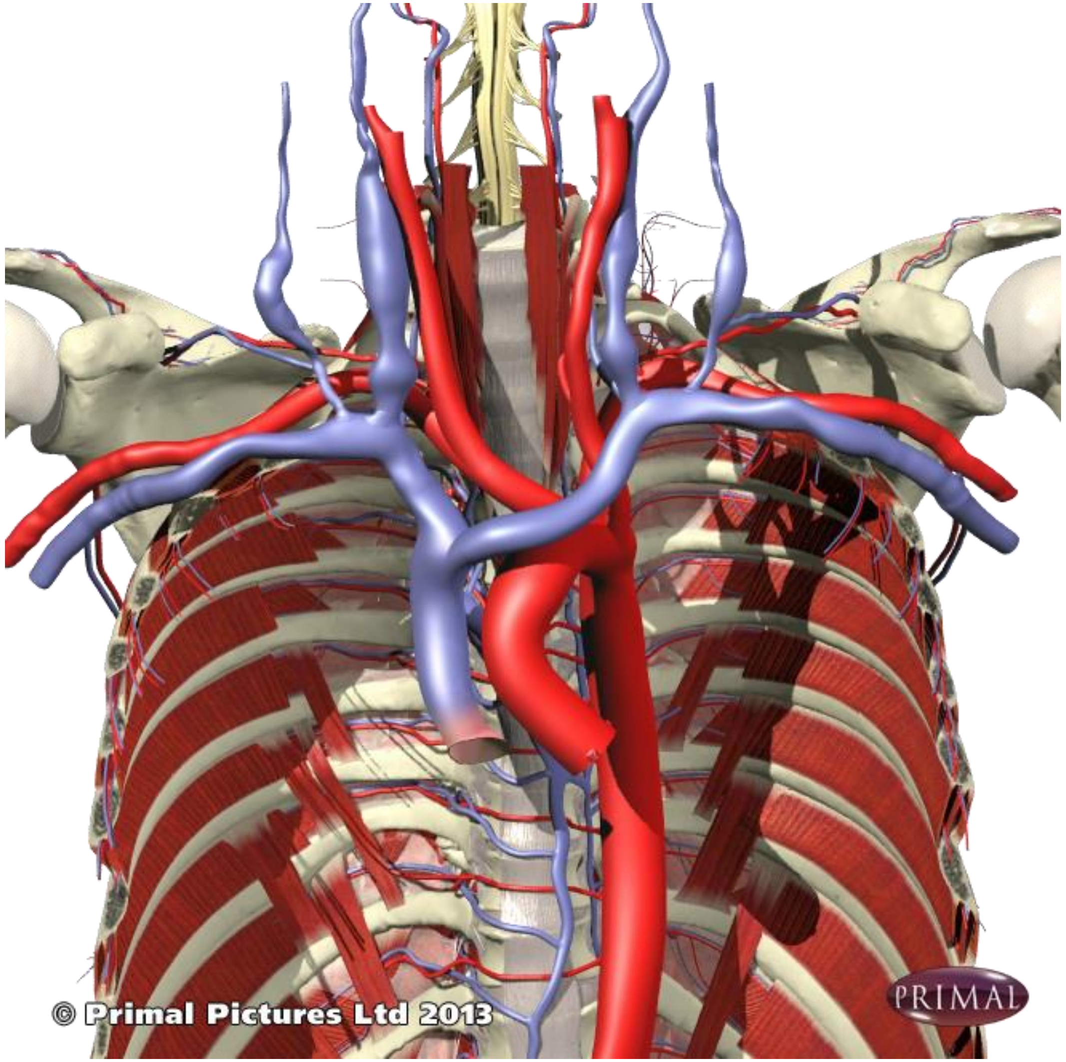


Introduction

- occlusion prevents normal blood venous return to the heart.
- affects approximately 15,000 patients each year in the United States
- SVC syndrome was first reported in 1757, when Dr. William Hunter described it in a patient with syphilitic aortic aneurysm

Aetiology

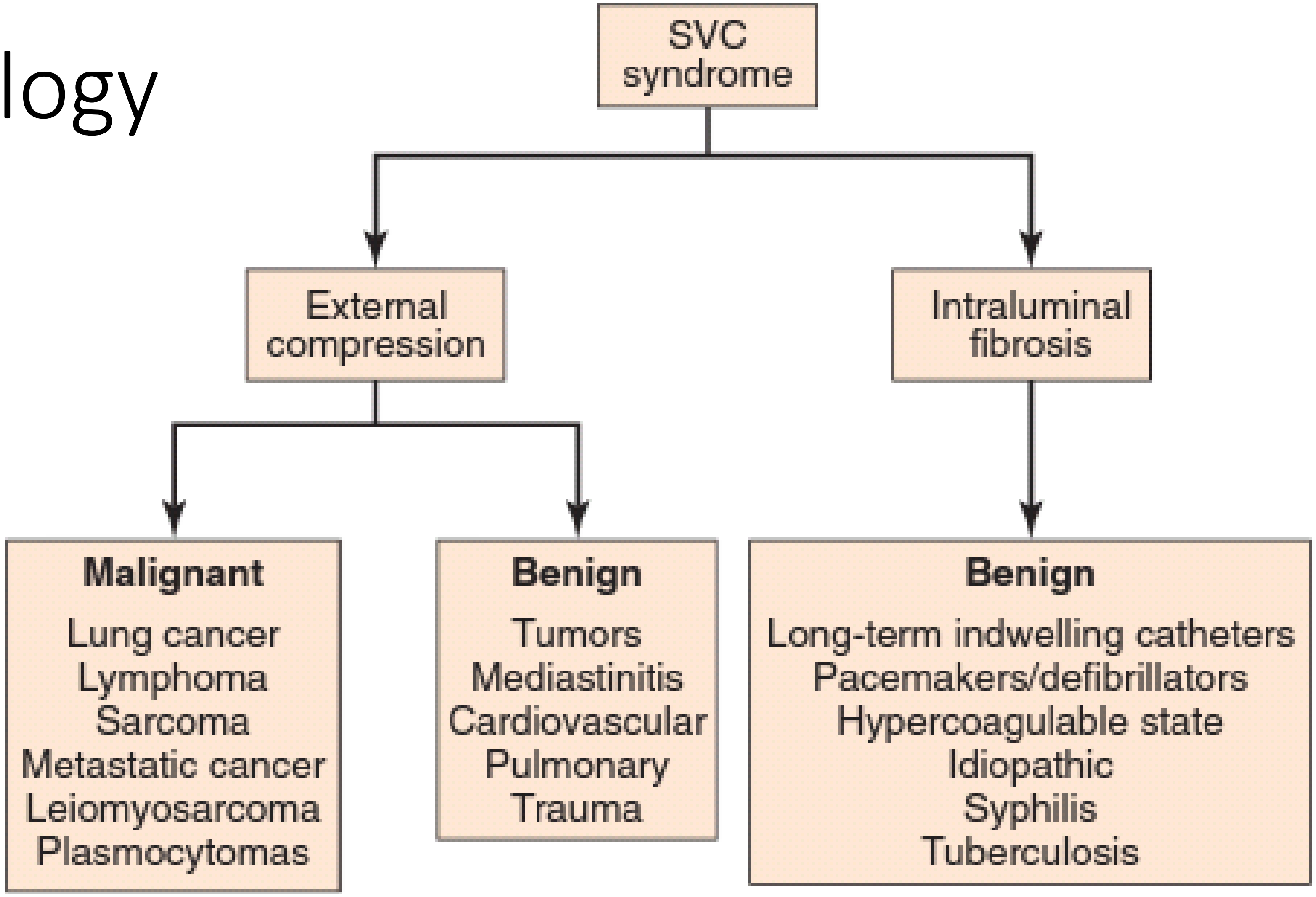
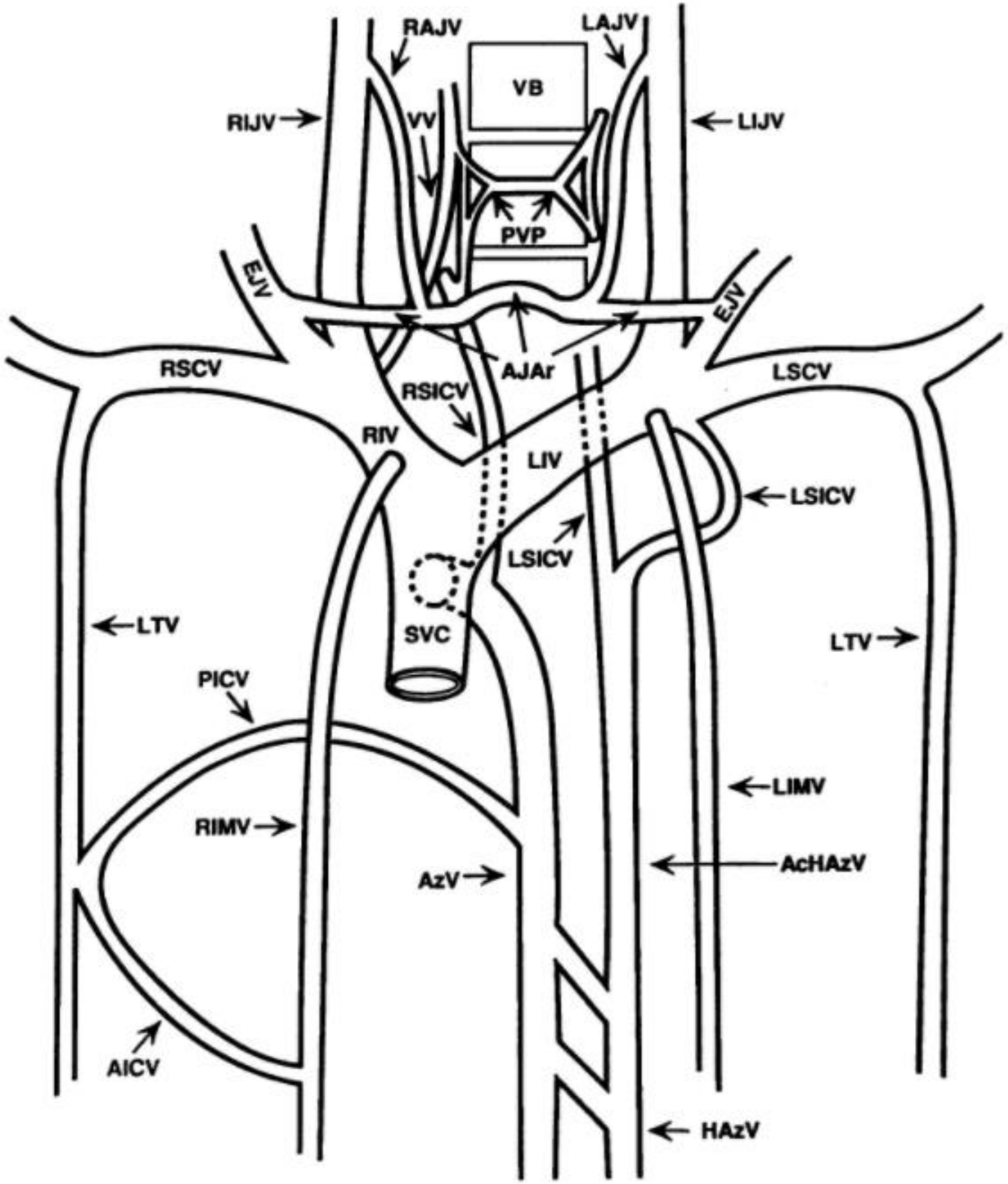


Figure 64-1 Causes of superior vena cava *(SVC)* syndrome.

Collateral Venous Pathways

- The first and most important pathway is the azygos venous system, which includes the azygos vein, the hemiazygos vein, and the connecting intercostal veins.
- The second pathway involves the internal mammary venous system as well as tributaries and secondary communications to the superior and inferior epigastric veins.
- The long thoracic venous system, which represents the third collateral venous network, is connected to the femoral veins and vertebral veins



RAJV
LAJV
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RIJV
VV
LIJV
PVP
EJV
EJV
RSCV
AJAr
LSCV
RSICV
RIV
LIV
LSICV
LSICV
LTV
SVC
LTV
PICV
LIMV
RIMV
AcHAzV
AzV
AICV
HAzV

CLINICAL PRESENTATION

Table 63-1	Signs and Symptoms of Superior Vena Cava Syndrome of Benign Etiology in 70 Patients
Signs and Symptoms	**Number of Patients (%)**
Feeling of fullness in the head or neck	61 (87)
Dyspnea on exertion or orthopnea	39 (56)
Headache	27 (39)
Dizziness or syncope	25 (36)
Visual problems	11 (16)
Cough	10 (14)
Nocturnal oxygen requirement	3 (4)
Protein-losing enteropathy	1 (1)
Head and neck swelling	65 (93)
Large chest wall venous collaterals	40 (57)
Facial cyanosis	24 (34)
Arm swelling	23 (33)
Pleural effusion	2 (3)

signs and symptoms of malignant SVC syndrome include hemoptysis, hoarseness, dysphagia, weight loss, lethargy, and palpable cervical tumor or lymph nodes. Patients with lymphoma may also complain of fever and night sweats.

DIAGNOSTIC EVALUATION

- Xray
- Ultrsonography
- CT venography
- MRV

Treatment

- Neoplastic cause > radiotherapy, chemotherapy or both
- If no response try the endovascular option (Balloon angioplasty + stenting)
- Non neoplastic cause > endovascular ttt
- Access for percutaneous stenting of the SVC is typically obtained via the femoral vein, but a brachial, basilic, or internal jugular vessel can also provide useful therapeutic access to the central veins. dual venous access not only enables antegrade and retrograde venograms but also facilitates crossing the SVC lesion.

Endovascular technique

- Femoral venous access is typically established with a 7F introducer sheath (Boston Scientific, Natick, Mass). A 260-cm Bentson guide wire (Boston Scientific) followed by a pigtail catheter is placed in the SVC. Venography of the SVC and brachiocephalic veins is performed via a femoral approach to visualize the SVC lesion.
- a hydrophilic guide wire is used to traverse the SVC lesion. Once the lesion is successfully cannulated with the hydrophilic guide wire, the guide wire is exchanged for a stiff Amplatz wire (Boston Scientific) or a Lunderquist wire (Cook Medical, Inc., Bloomington, Ind) for balloon or stent delivery

Endovascular technique

- If the wire is unable to cross an SVC occlusion or a high-grade lesion, a thrombolytic infusion catheter is placed for delivery of a thrombolytic drug either as a bolus or continuously for a certain period.
- Systemic anticoagulation with intravenous heparin (5000 U) is given prior to any catheter-based intervention. We routinely perform an initial SVC balloon dilatation because this maneuver widens the lumen, facilitating subsequent stent deployment

Endovascular technique

- Balloon angioplasty to dilate the SVC or brachiocephalic venous lesion is performed with either a 10 mm × 40 mm or 12 mm × 40 mm balloon angioplasty catheter. Following balloon dilatation of the SVC lesion, either a balloon expandable stent or a self-expanding stent is deployed across the lesion.
- If a segment of SVC adjacent to the stricture was greater than 16 mm in diameter, a bilateral brachiocephalic “kissing stent” technique using either a 12-mm- or a 14-mm-diameter stent is performed

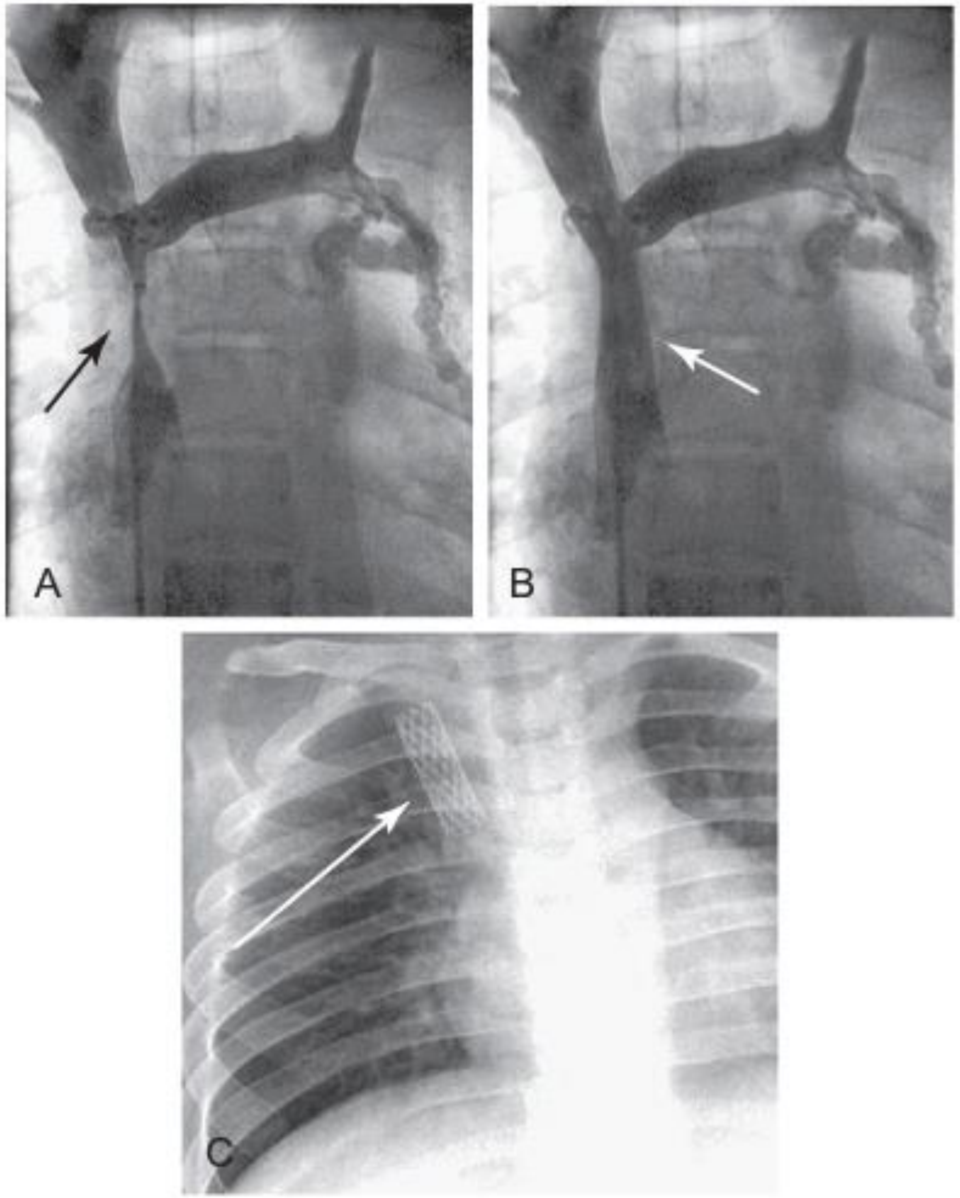
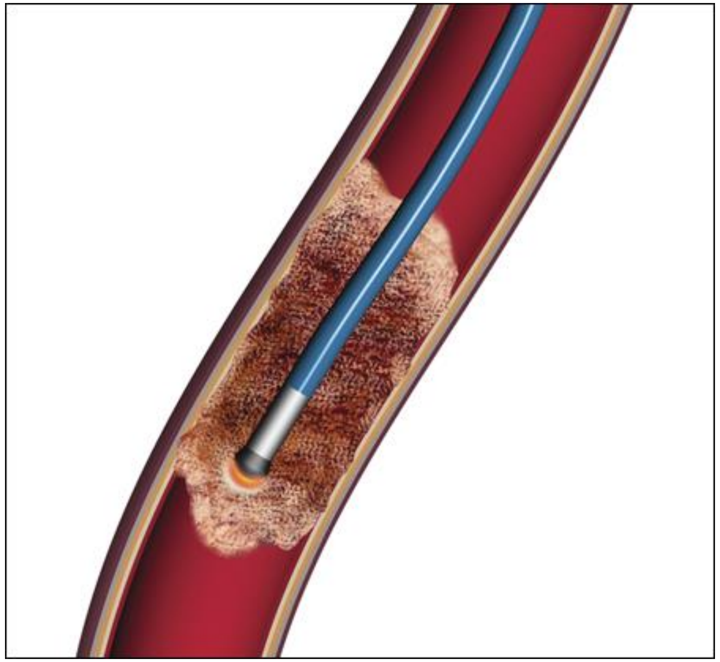
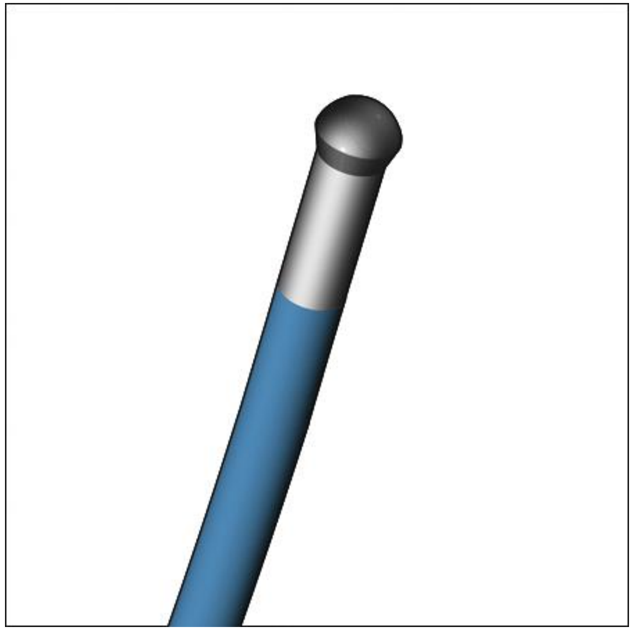


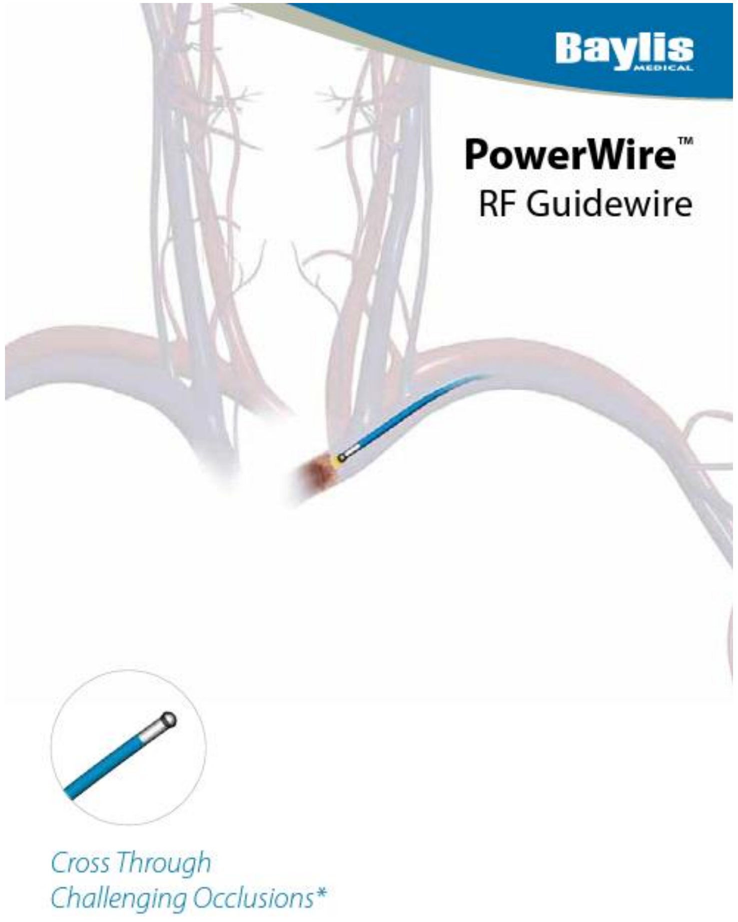
Figure 64-2 Images of a patient with symptomatic superior vena cava (SVC) syndrome. **A,** A high-grade SVC stenosis is depicted in the venogram *(arrow)*. **B,** Luminal patency was established with the placement of a balloon-expandable Palmaz stent *(arrow)*. **C,** Chest radiograph demonstrated the location of the Palmaz stent *(arrow)*.

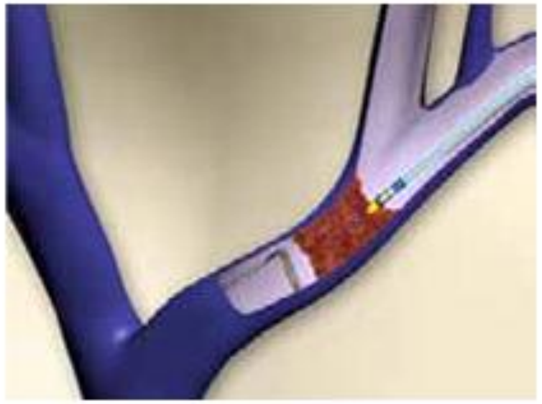
Endovascular technique

- event of chronic venous occlusion whereby conventional catheter and guide wire techniques are not successful in crossing the venous occlusion, radiofrequency guide wire technology has been shown to be beneficial in establishing access across the venous occlusion. The PowerWire Radiofrequency Guidewire (Baylis Medical Company Inc, Montreal) can be used to facilitate crossing vessels with thrombotic occlusion. This 0.035-inch wire has a hot tip and low-friction insulation but is not steerable. The device monitor displays delivered radiofrequency power, impedance, and elapsed time to allow for continuous monitoring.

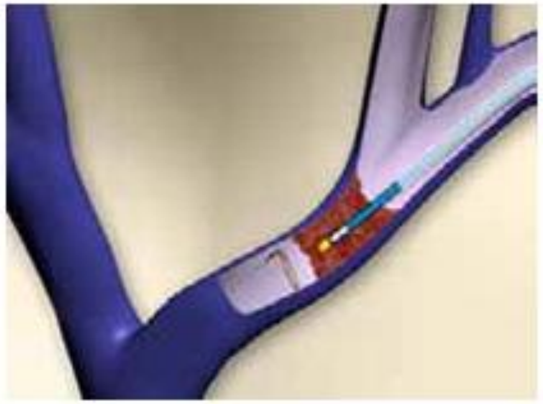




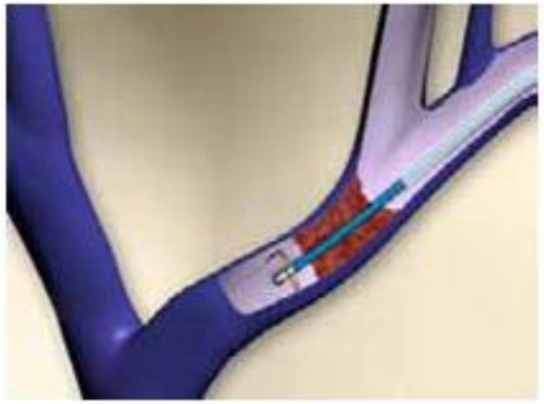

Baylis
MEDICAL
PowerWire™
RF Guidewire
Cross Through
Challenging Occlusions*



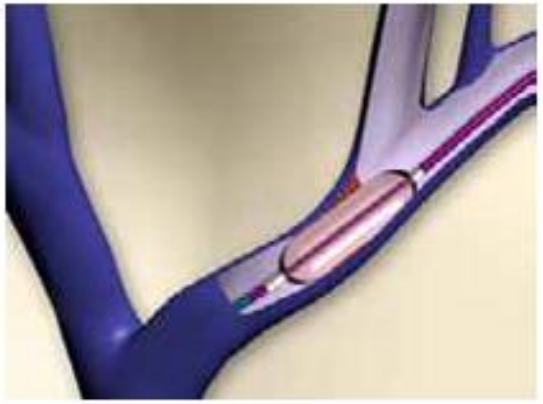
Turn energy on to cut into the lesion using a snare as a target



Advance the wire with or without energy delivery



Snare the PowerWire™



Use the PowerWire™ as a standard guidewire to advance a balloon

THANK YOU