Superior Vena Cava Syndrome Requiring Median Sternotomy and CorMatrix Patch Angioplasty

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INTRODUCTION

- **Superior vena cava (SVC) syndrome** results from any condition that leads to obstruction of blood flow through the SVC, including malignant obstruction, external compression by adjacent mediastinal structures, or **central venous obstruction associated with upper extremity hemodialysis access**
- Thoracic central venous obstruction resulting from hemodialysis access can be due to SVC thrombosis and/or stenosis
- While endovascular treatment of central venous stenosis and occlusion in the hemodialysis population is usually preferred despite frequent need for re-intervention, some patients have lesions not amenable to such procedures
- Although uncommon, open SVC reconstruction options exist, including vein bypasses, split saphenous vein grafts, polytetrafluoroethylene (PTFE) grafts, or pericardial tube grafts

HPI

- **39-year-old male with past medical history of HTN and ESRD on hemodialysis via LUE AV fistula presented with severe facial and neck swelling**

- PSH: Multiple tunneled dialysis catheters, bilateral upper extremity AV fistulas
- Edematous neck / face bilaterally **(Figure 1)**, non-labored respirations, LUE AV fistula with pulsatility

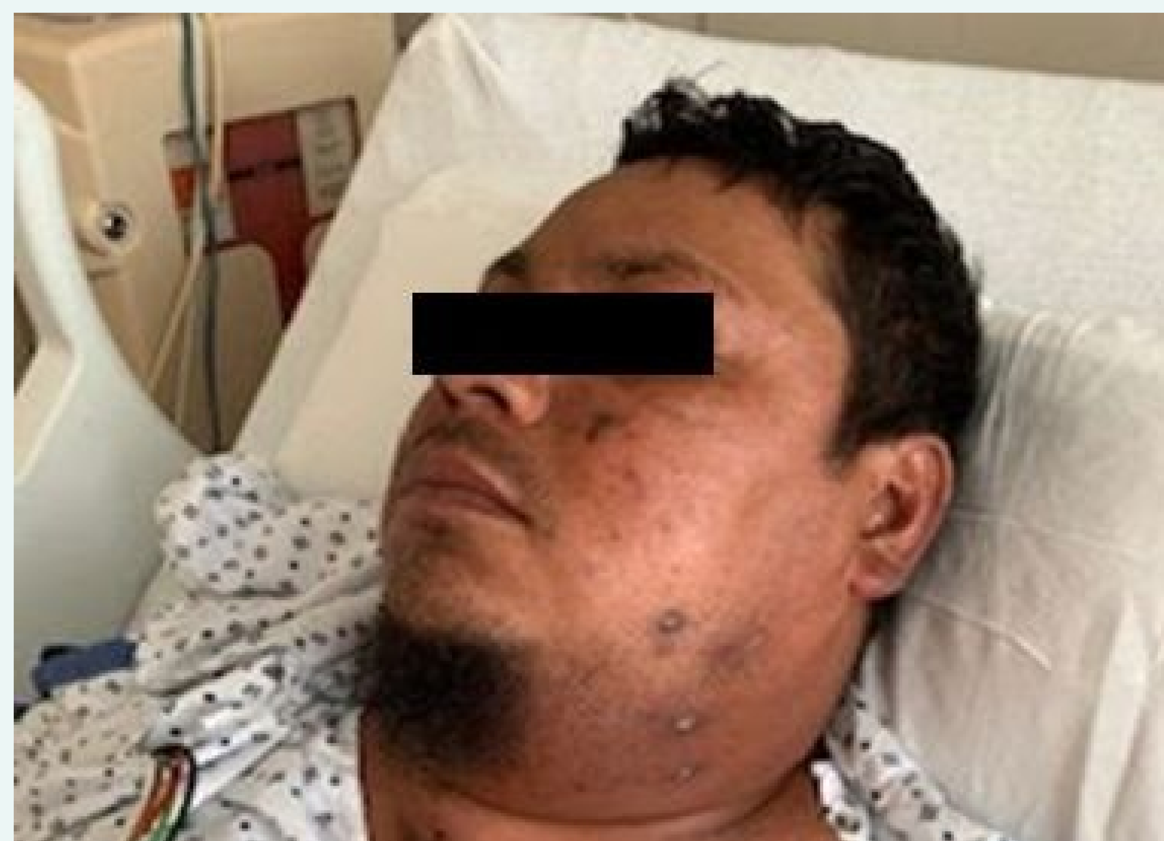


Figure 1

OPERATION

- Performed left arm fistulography via functional AV fistula
- Attempted to access SVC transfemorally, unable to recanalize **(Figure 2)**
- Attempted to cross lesion via right axillary vein **(Figure 3)**

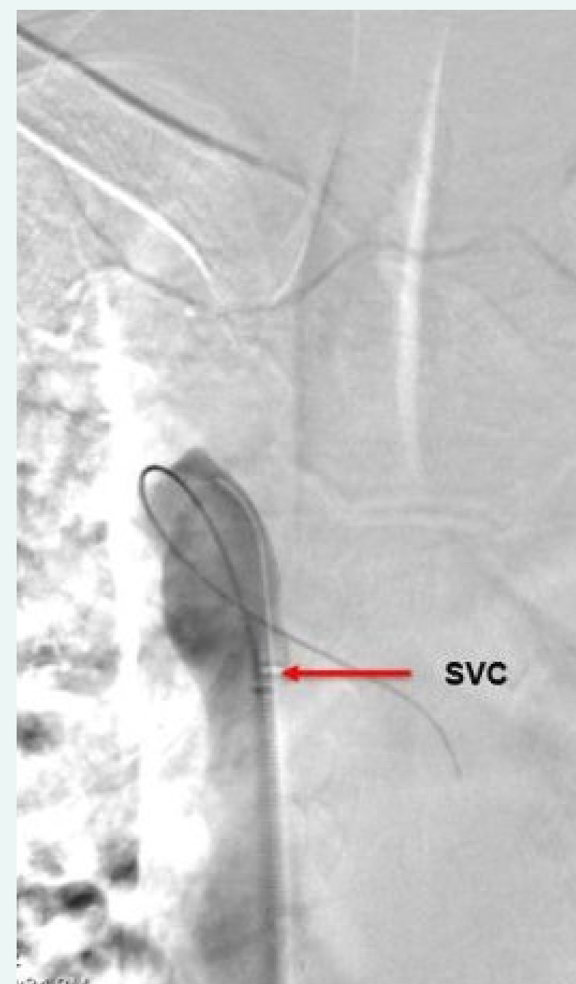


Figure 2

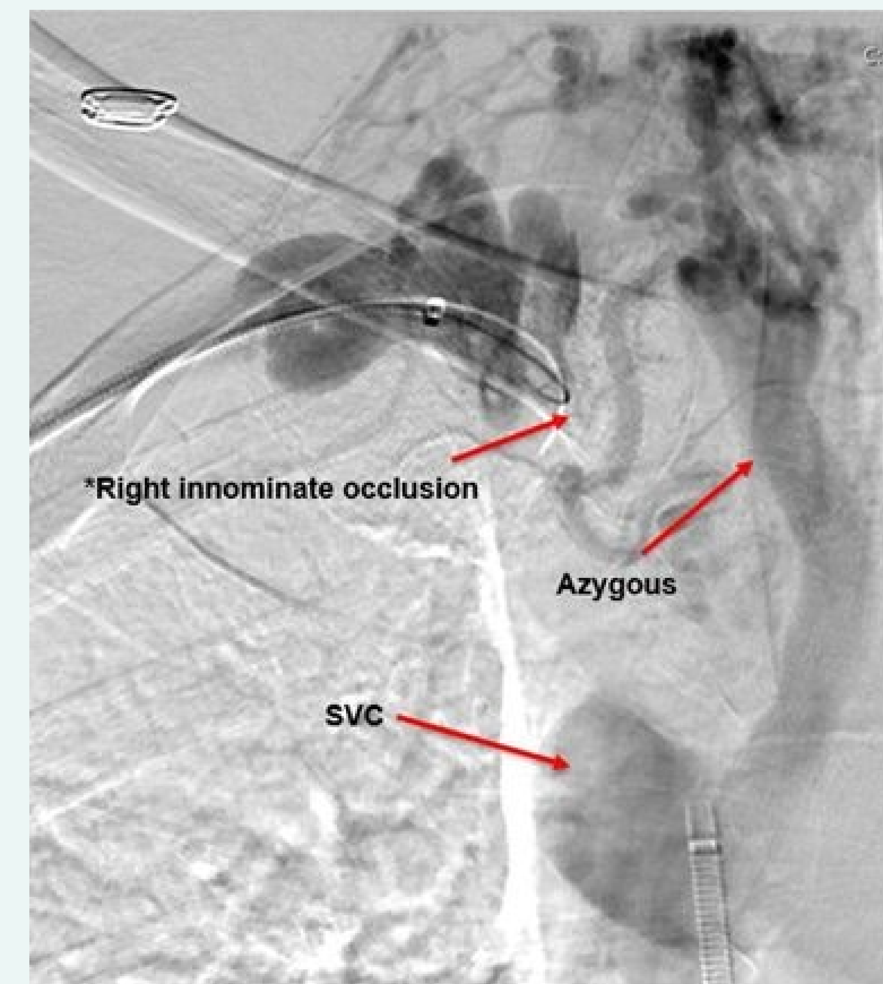
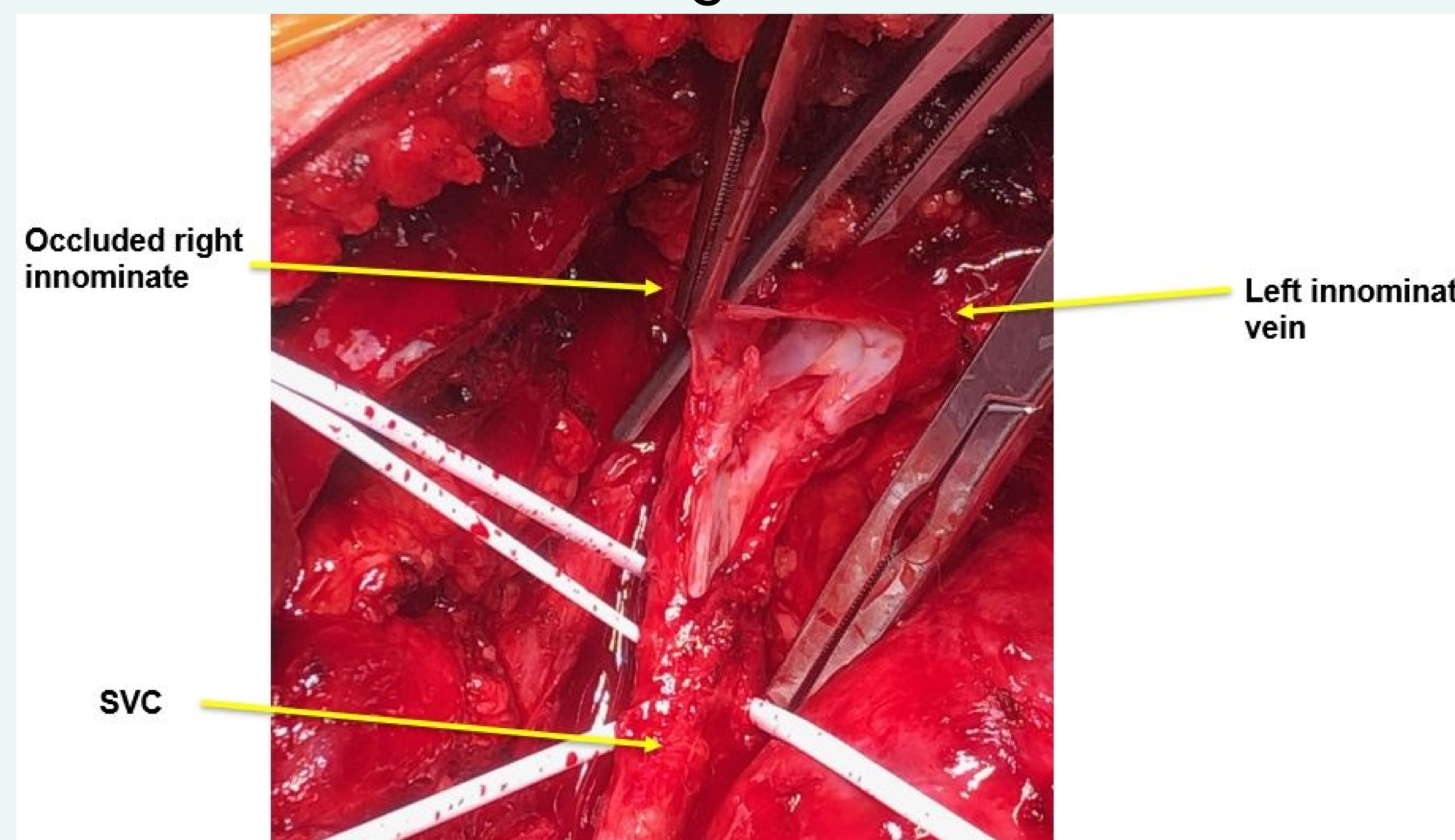


Figure 3

- Performed median sternotomy to expose the SVC and bifurcation of the left and right innominate veins
- Significant fibrosis of right innominate vein and a focal fibrotic region at left innominate vein / SVC confluence **(Figure 4)**

Figure 4



OPERATION

- Performed focal endovenectomy and CorMatrix patch angioplasty of left innominate / SVC **(Figure 5)**

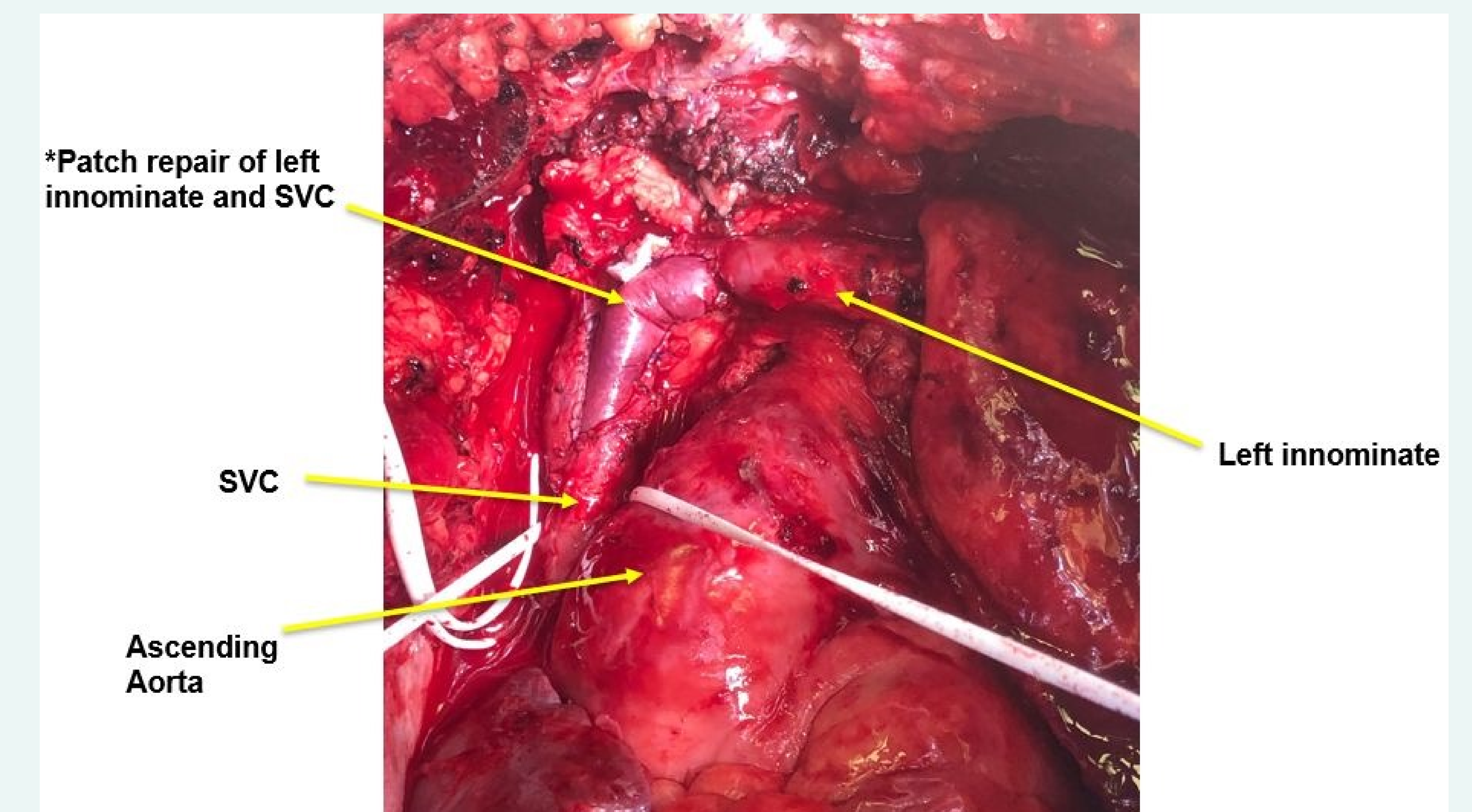


Figure 5

- CT scan during same admission showed patency of venous system
- Facial / neck edema resolved, AV fistula functional, patient did well at 6-month post-op visit

DISCUSSION

- When lower extremity access is not a feasible alternative, consideration should be given to direct repair of the superior vena cava and innominate veins, particularly in patients with SVC syndrome
- SVC syndrome that is not suitable or that has failed endovascular treatment can be safely and effectively treated by open surgical procedures

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