Transhepatic Retrieval of an Abandoned Ventriculoatrial Shunt Catheter

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INTRODUCTION

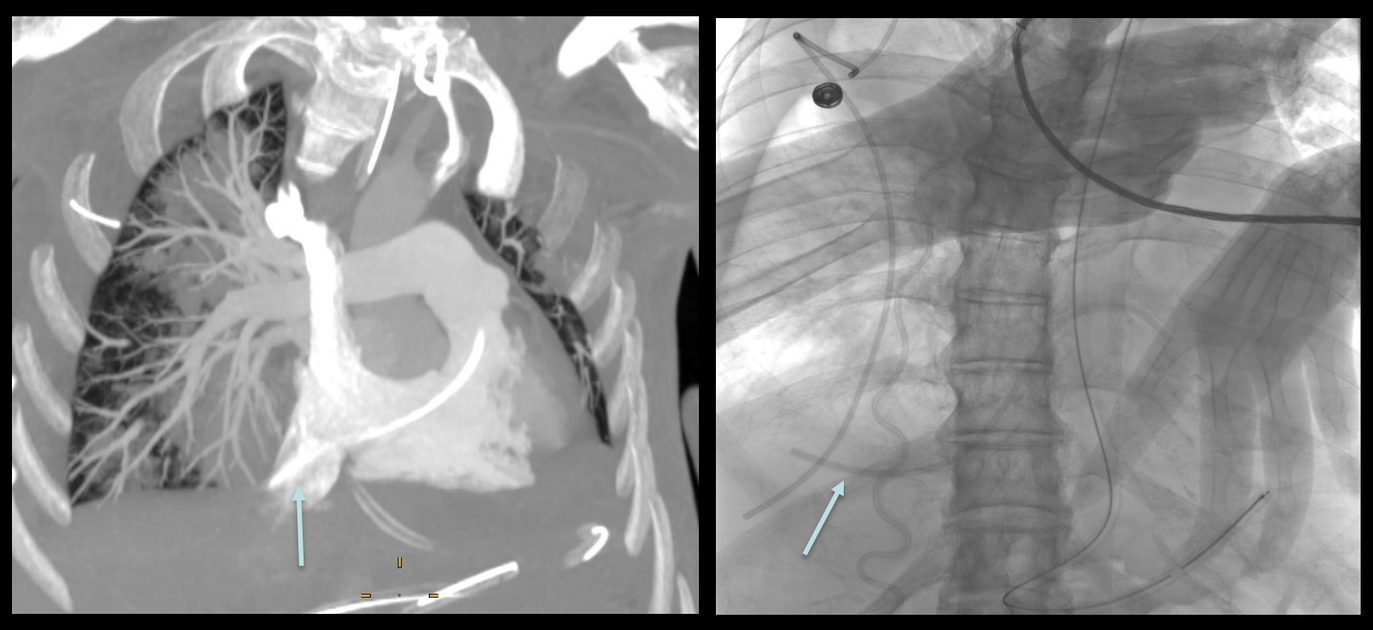
- Ventriculoatrial (VA) shunts are often used for management of hydrocephalus and are sometimes abandoned when no longer required.
- Transhepatic venous access has been described for dialysis catheter placement and for inferior vena cava (IVC) filter retrieval and may be considered for retrieval of shunt catheters in patients for whom transvenous retrieval is complicated by venous occlusions.

METHODS

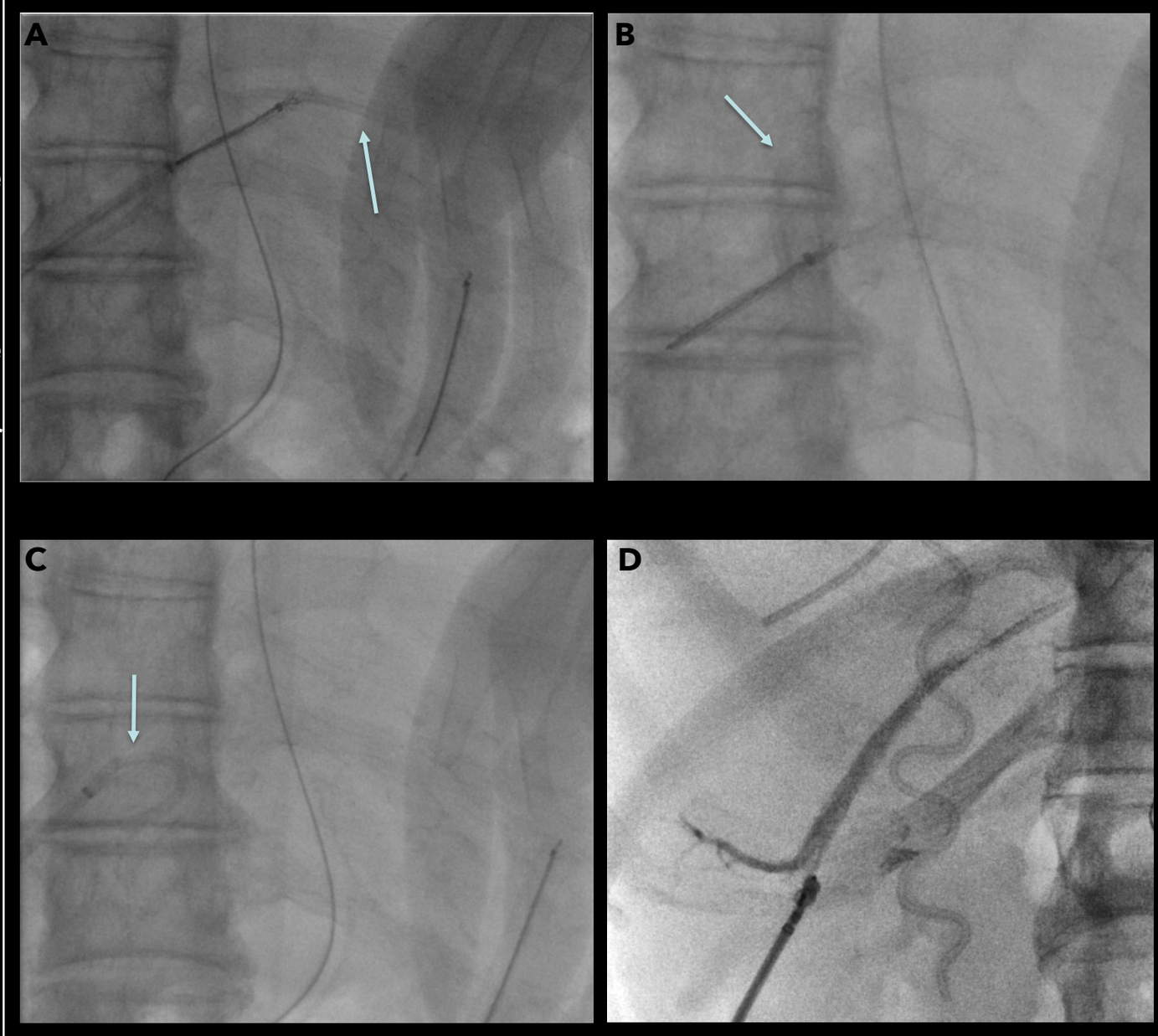
- 49-year-old male with history of cerebral palsy and congenital hydrocephalus presents with abdominal pain and is admitted for ileus.
- Patient had a VA shunt placed 18 years prior at an outside hospital.
- Four days prior to admission, the patient underwent revision of the VA shunt to a venticulopleural shunt, during which the distal potion of the VA catheter was not retrieved, due to venous occlusions.
- During our admission the patient had an episode of Torsade de Pointes, felt to be secondary to irritation from abandoned VA catheter tubing. Computed tomography showed catheter tubing extending from the right hepatic vein, through the IVC, right atrium, and into the right ventricle to the level of the pulmonic valve.
- Interventional radiology was consulted for consideration of catheter removal. Attempts to access the right common femoral, right internal jugular, and right external jugular veins were unsuccessful due to extensive venous occlusion.
- The benefits of transhepatic access were felt to outweigh the risks, given the severity of the arrhythmia.

RESULTS

- Transhepatic access into a peripheral branch of the right hepatic vein was successful.
- Access was upsized to a 6 French sheath and a 6 French Ensnare device was advanced into the right atrium.
- VA catheter tubing was snared and removed through the vascular sheath.
- No further arrythmia were noted for the remainder of the patient's admission.



Coronal maximum intensity projection image (left) and fluoroscopic image (right) noting abandoned VA shunt catheter (blue arrows) extending from the suprahepatic IVC through the right atrium, into the right ventricle and directed towards the pulmonary outflow tract.



Intraprocedural fluoroscopic images of ventriculoatrial (VA) shunt catheter retrieval.

A. Successful access of right hepatic vein peripheral branch and advancement of vascular sheath and Ensnare device to the level of the VA shunt catheter (blue arrow).
B. Initial capture of VA shunt catheter (blue arrow) with Ensnare device.
C. Near complete retrieval of VA shunt catheter (blue arrow) by Ensnare device and withdrawal into vascular sheath.
D. Venogram after full retrieval of VA shunt catheter with withdrawal of vascular sheath to the level of the access site.

CONCLUSION

- Transhepatic access to the venous system for foreign body retrieval can be safely performed.
- Multidisciplinary discussion may help guide intervention.