

## **PERCUTANEOUS CATHETER INTERVENTIONS FOR COMPLICATIONS TO LONG TERM VENOUS ACCESS**

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### **Background**

Children dependent on long term central venous access often experience infectious and thrombotic complications. Luminal reduction or lack of vessel patency is common. Occluded veins may be permanently lost for further venous access. We have started to treat partial occlusions from the puncture site and of the superior caval vein by percutaneous catheter interventions.

### **Patients and results**

Case 1: A girl 14 years old, bw 35 kg, candidate for intestinal transplantation due to intestinal pseudoobstruction. She had an obstruction in the superior caval vein. During angiography a balloon was inflated in the obstructed part of the caval vein and the tip of a new CVC was positioned above the dilated section. After the intestinal transplantation a MR scan showed a patent vein of normal width.

Case 2: A girl 5 months old, bw 5 kg, had been treated for CDH with ECMO and further surgery. Central venous access was still necessary. A CT scan showed an obstruction in the middle of the superior caval vein. During angiography a balloon was inflated in the obstructed part of the caval vein and the tip of a new CVC was positioned above. Re-obstruction was found after six months and led to placement of a stent.

Case 3: A girl 18 months old, weight 7 kg, with severe immune deficiency and failure to thrive was planned for a stem cell transplantation. CT angiography revealed that the left subclavian vein was the only patent vessel. The left internal jugular vein had two segments so narrow that a catheter would cause complete obstruction. These obstructions were balloon dilated and a CVC was inserted in the left subclavian vein. Later ultrasound control revealed normal dimension of the superior, but reoccurrence of the inferior obstruction.

### **Discussion**

Percutaneous catheter interventions have the potential to dilate lumen restrictions thereby saving access sites and central veins. In the first patient balloon dilatation was successful whereas this single procedure turned out to be unreliable in the second case and a stent was positioned. An attempt to establish an additional site for venous access was partly successful in the third case. A stent could not be used, since it would make venous puncture impossible. The possibility to repeat the dilatation later on was considered, but not performed.

### **Conclusion**

We have until now treated seven children with percutaneous catheter interventions. We have until now no complications and the short term results are encouraging. The long term results will be evaluated as more patients are included.

Conflicts of interest: None

### **References**

Frank FI, et al Reconstruction of Stenotic or Occluded Iliofemoral Veins and Inferior Vena Cava Using Intravascular Stents: Re-establishing Access for Future Cardiac Catheterization and Cardiac Surgery. J Am Coll Card; 2001; 37; 251-7