

**Abstract****Long Term Cuffed Tunneled Hemodialysis Catheters: Perfect Position, Different Problems**

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Long term hemodialysis (HD) catheters are common in current era of HD. Though many nephrologists hate them, but one cannot live without them also. We are presenting story of three different patients with long term HD catheters, having different problems. First patient has nonfunctioning catheter and no symptoms where as second patient has normally functioning catheter, but has symptoms. Third patient has a functioning right IJV catheter for 8 years and suddenly develops malfunction. All catheters were in right IJV with perfect tip positions and no kink.

**Case 1:**

55 years old female, diabetic nephropathy, with multiple failed AV fistulae, on maintenance HD through right IJV cuffed tunneled catheter which lasted for two years. Thereafter, in view of flow problems, it was removed and left IJV cuffed tunneled catheter was inserted. It was a perfect position but there was a flow problem. The catheter was repositioned after two days and somehow worked for 8 months, before it was concluded that this catheter cannot last long, and hence it was removed. Another cuffed tunneled catheter was inserted in right IJV and it worked well. But, after two and a half months, it started giving flow problems. The inflow was good without resistance but the outflow was difficult. There was no improvement with urokinase lock. A guide wire inserted through the catheter under fluoroscopic vision was able to pass freely up to RA. The problem was suspected to be due to fibrin sheath formation and patient was taken up for the over the guide wire exchange. Prior to the insertion of new catheter, contrast was injected through the pulled back previous catheter and the fibrin sheath was documented. The sheath disruption was carried out with 12mm diameter x 40 mm length balloon. It required four dilatations, starting from the junction of RA with SVC up to the junction of RA with IVC. The sheath had extended up to IVC. The catheter inserted thereafter and is working well for past 8 months.

As opposed to this, we had another patient who was grossly symptomatic due to her fluid overload state, in spite of the catheter functioning very well.

**Case 2:**

A 48 years old female had ESRD secondary to lupus nephritis. She was antiphospholipid antibody positive and had failed AV fistulae. She is on long term oral anticoagulation. She was on HD through right IJV cuffed tunneled catheter which lasted for 3 years, when it was changed with a new catheter over a guide wire. One and a half years later, patient had fever, and was diagnosed to have abdominal lymphadenopathy. The biopsy showed sarcoidosis and fever responded to steroids. Soon after, patient developed facial edema and used to get episodes of breathlessness daily at 5 am, followed by a bout of cough and bringing out blood streaked sputum. She would need nasal oxygen at home. The episodes were not related to her level of BP and the chest was clear. OSA was considered but ruled out by the pulmonary physician. She had also developed hepatosplenomegaly and on 2D echocardiography, she had moderate pulmonary hypertension. She was diagnosed to have SVC syndrome, related to the catheter. Contrast CT angiogram showed a tight stenosis at the junction of SVC with RA and hardly any space between the catheter and the SVC.

She was taken to cath-lab and right femoral vein was punctured. Due to the narrowing at the junction of SVC with RA, 0.035' guide wire could not be negotiated across the stenosis. Hence we punctured the right cephalic vein under USG guidance with 5F sheath in place. Using head hunter catheter and the guide wire (Terumo glide wire), we could negotiate the occlusion of the SVC and passed the guide wire all the way down into right femoral vein. The guide wire was snared and externalized through the right femoral vein. The Terumo wire was exchanged for 0.035' double

length Teflon catheter. The occluded segment was balloon dilated with OPTA-LP 12mm diameter x 40mm length (Cordis) and MAXI-LD (14mm x 40mm) (Cordis) used to dilate the stenosed junction. The free flow of blood from SVC to RA was confirmed. The cuffed tunneled catheter was left in situ. Following this, patient is asymptomatic, facial puffiness has disappeared, hepatosplenomegaly has regressed, and the pulmonary arterial pressure has become normal.

What happens to a previously perfect positioned catheter?

56/F, on HD for 12 yrs with prior history of 7 failed vascular access (6 AVFs, 1 graft). She was on HD through Rt IJV cuffed tunneled catheter for 3 years, which was exchanged over a guide wire and new catheter inserted, which is working for 5 yrs. One day, she reported poor flow through the catheter and we found that the catheter had slipped out up to the clavicle. On injecting the dye through the catheter, SVC was found to be completely thrombosed. She was subjected to SVC plasty and a new catheter was inserted through the same route of right IJV.

**Conclusion:**

Long term hemodialysis catheters have various causes of catheter malfunction. One needs to study the cause carefully so that further appropriate treatment can be planned.