

# PRE-EMPTIVE REPLACEMENT OF PERMANENT CENTRAL VENOUS CATHETERS FOR HEMODIALYSIS: PRELIMINARY STUDY

*Buono F., Laurino S., Toriello G., Di Luccio R., Galise A.*

*Department of Nephrology, Hospital "Luigi Curto", Polla (Salerno), Italy*

## Introduction and Objectives

Native Arthero-venous fistula (AVF) is well recognized as the gold standard of hemodialysis vascular accesses. Nevertheless, in contrast with KDOQI guidelines, the use of central venous catheter (CVC) as permanent vascular access is widespread, because of the increasing number of elderly patients, who have several comorbidities such as obesity and poor vascular assets.

CVC have the burden of a high incidence of related complications, like infection, thrombosis, malfunctioning, failure, thus increasing mortality and morbidity of our patients and leading to a heavy economic impact on our national health system.

The average duration of a tunneled CVC is less than 12 months [1, 2], due to the high rate of the above mentioned complications. We hypothesized that, in CVC dependent patients, periodic (every 12-13 months) pre-emptively substitution (before the occurrence of major complications) of CVC could reduce the rate of CVC related complications with a better preservation of vascular tree.

## Methods

We enrolled 10 patients divided in two groups of 5 patients. In group 1 patients we replaced CVC every 12 months, independently from the presence of complications, whereas in group 2 patients we had a "wait and see" approach, considering the intervention only in case of major complications. Total follow-up was 5 years.

**Table 1: bacterial colonization of removed CVC in group 1 patients**

Patient	I year	II year	III year	IV year	V year
1	Staphilococcus Epidermidis	Sterile	Staphilococcus aureus	Staphilococcus Epidermidis	Sterile
2	sterile	Enterococco	Streptococcus viridans	Staphilococcus Epidermidis	Sterile
3	Enterococcus	Sterile	Staphilococcus Epidermidis	Sterile	Sterile
4	Staphilococcus Epidermidis	Staphilococcus Epidermidis	Sterile	Staphilococcus Epidermidis	Sterile
5	Sterile	Staphilococcus aureus	Streptococcus viridans	Stafilococcus Aureus	Sterile

**Table 2: CVC related complications**

Complication	Group 1	Group 2
Sepsis	0	2
Exit site infection	2	0
Thrombosis	0	3
Malfunctioning	0	3
Rottura	0	1

## Results

In group 1 patients we examined the tip of removed CVC and found staphilococcus aureus infection in 2 and minor infections in 3 patients (Table 1). Group 1 patients presented with low PCR levels (mean value 1,2 mg/L) and good Kt/V (>1,2). Deaths were 0 in group 1 and 3 in group 2. Short and long term complications rate was higher in group 2 compared to group 1 patients (Table 2).

## Conclusions

The disadvantage of a periodical surgical replacement of CVC is exceeded by the benefit of a better life quality, and could permit to spare more invasive and potentially dangerous interventions.

Indeed, wire replacement of CVC is becoming increasingly safer, due to the following reasons:

- 1)Ultrasound guidance of CVC replacement
- 2)Availability of smaller needles
- 3)Availability of armed silicon Tesio CVC that make CVC replacement without the use of peel-away possible.

It remains to be shown if pre-emptive replacement of CVC can improve survival in hemodialysis patients who failed other vascular accesses (AVF or graft) and in which CVC is the only one possibility. Furthermore, it would be desirable that industry provide silicon CVC with plastic wires, instead of metallic wires, in order to make replacement with Seldinger technique easier.

## References

1. Little M.A., O'Riordan, Lucey B., et al. A prospective study of complications associated with cuffed, thunneled hemodialysis catheters. Nephrol Dial Transplant (2001) 16: 2194-2200.
2. Cetinkaya R, Odabas AR, Unlu Y, et al. Using cuffed and tunnelled central venous catheters as permanent vascular access for hemodialysis: a prospective study. Ren Fail. 2003 May;25(3):431-8.

