

EFFICACY AND SAFETY OF A NEW TECHNIQUE OF CONVERSION OF TEMPORARY TO TUNNELED CENTRAL VENOUS CATHETERS

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Introduction. The conversion technique of temporary central venous catheters (CVC) to tunneled catheters using the same venous insertion site has been described in the literature (1, 2, 3, 4). The latter required a peel-away technique, which may increase the risk of immediate complications, especially in the elderly patients. We propose a new conversion technique using a guidewire, without the use of the peel-away sheath. The efficacy and safety of this technique was evaluated.

Methods. All incident patients starting hemodialysis with a temporary CVC from January 2012 to December 2013 were included in the study. As control group, a historical one of incident patients who received de novo placement of tunneled CVC from January 2010 to December 2011, was evaluated. All the CVC were inserted with a Doppler US image guidance. The temporary polyurethane CVC (Vascath Flexxicon®, 11.0 Fr, Bard, USA) and tunneled silicon CVC (Mahurkar™, Fr 13.5 Fr and PermCath™, 14.5 Fr, Covidien USA) of appropriate length were used. In the conversion technique, a guidewire was advanced through the existing CVC; then a subcutaneous tunnel was created from the upper chest, or outer thigh surface, to the venotomy site. After removal of the temporary CVC, the tunneled one was placed over the guidewire. Chest or abdominal X-rays were always performed to check for the correct tip placement. The outcome measures were: technical success (correct tip position); catheter performance ($Q_b < 200$ ml/min); immediate complications (IC): number of events as bleeding, pneumothorax, and air embolism.

Results. Thirty-five CVC were placed in the right jugular vein (RJV); 15 in the left jugular vein (LJV) and 5 in the femoral vein (FV). The comparison between the two groups is reported in the table. The temporary CVC had been in place 10 ± 6 days, neither skin infection or CVC-related bacteremia occurred in this period.

In the group 1, only one CVC had a kinking at its top. In the group 2, 5 CVC (3 inserted in LJV, 1 in RJV, 1 in FV) were dislodged; 3 CVC had a kinking at their top. $Q_b < 200$ ml/min was present in 8 CVC: one of the group 1 and 7 of the group 2. No IC resulted with the conversion technique, whereas, two air embolisms, one pneumothorax, and three bleeding episodes occurred in the controls (Table).

Table	n. (m/f)	Age, ys	RJV	LJV	FV	Technical success	$Q_b < 200$ ml/min	IC
Group 1 (conversion)	28 (15/13)	72 ± 7.3	18	7	3	27/28 (96%)	1/28 (3.5%)	0/28 (0%)
Group 2 (historical controls)	27 (13/14)	71 ± 6.8	17	8	2	19/27 (70%)	7/27 (26%)	6/27 (23%)
Statistics*	NS	NS	NS	NS	NS	0.011	0.024	0.010

*Fisher's exact test; mean \pm standard deviation; NS = not significant.

Conclusions. The conversion of temporary CVC to tunneled CVC without a peel-away sheath is an effective and safe procedure. The conversion technique may be advised as elective especially in the elderly patients, when the LJV and FV sites are used.

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