

Table S9. Hematoma and bleeding time as an outcome of the cannulation technique in arteriovenous fistulas in Observational studies

First author	Study design	Average age (years)	Sample size		Outcome		P Value	Notes
			Experimental group	Control group	Experimental group	Control group		
Hematoma (n)								
van Loon et al. (2010) [14]	Observational	BH = 67 RL = 65	75	70	Mean 2.0 SD = 3.7	Mean 14 SD = 15.6	< 0.0001	Hematoma: An abnormal localized infiltration of blood caused by needle cannulation
Smyth W et al. (2013) [30]	Observational	BH = 60 RL = 61	41	63	n = 11 (26.8%)	n = 20 (31.7%)	= 0.752	
Bleeding time after needle removal, (min)								
Pergolotti et al. (2011) [29]	Observational	BH = 56 TRL = 66.5	21	24	Hemostasis time less 23.7%	-	= 0.0066	
Sukthinthai et al. (2012) [32]	Cross-over	56.3	21	21	A = 4.19 ± 1.66 V = 3.92 ± 1.37	A = 9.12 ± 2.36 V = 3.12 ± 2.36	< 0.0001 < 0.0001	Hemostasis after needle withdrawal in minutes
Mi-Kyoung KIM et al. (2013) [33]	Cross-over	62.4	32	32	<15 n = 15 (46.9%) 16-30 n = 17 (53.1%) -	<15 n = 7 (21.9%) 16-30 n = 16 (50%) >30 n = 9 (28.1%)	< 0.001 = 0.028	Results referring to the first assessment for A and V cannulation in minutes

Abbreviations: BH: Buttonhole; TRL: traditional RL; RL: rope-ladder; HD: hemodialysis; A: arterial; V: venous; SD: standard deviation