

Table S1. Characteristics of included observational studies

| First author | Publication year | Origin | Study design | Context | Sample size | Interventions | | Protocol | | Follow up (months) | Outcomes |
|--------------------------|------------------|-------------|------------------|----------------------------------|-------------|-----------------------------------|-----------------------------|----------------------------------|----------------------------------|--------------------|----------------|
| | | | | | | Experimental group | Control group | Experimental group | Control group | | |
| van Loon et al. [14] | 2010 | Netherlands | Observational | Multicentric | 145 | BH | RL | Specified | Specified | 9 | ① ② ④ ⑤ ⑥ ⑦ |
| Pergolotti et al. [29] | 2011 | USA | Observational | Center | 45 | BH | Traditional method | Not specified | Not specified | 4 | ① ③ ④ |
| *Sukthinthai et al. [32] | 2012 | Thailand | Cross-over study | Center | 21 | BH | Area puncture method | Specified | area puncture | 11 (3 phases) | ① ③ |
| Mi-Kyoung K. et al. [33] | 2013 | South Korea | Cross-over study | Center | 32 | BH with Two pairs of tunnel tract | RL | Specified | Not specified | BH 3; RL 2 | ① ③ |
| Smyth W. et al. [30] | 2013 | Australia | Observational | Multicentric (hospital & center) | 104 | BH | RL | Specified | Not specified | 3 | ① ② ④ ⑤ ⑥ |
| Glerup R. et al. [31] | 2019 | Denmark | Observational | Multicentric | 286 | BH | Stepladder or area puncture | Not specified & Self-cannulation | Not specified & Self-cannulation | 60 | ⑤ |

Note: ① pain; ② hematoma; ③ bleeding time; ④ aneurisms formation/development; ⑤ bacteremia related to vascular access; ⑥ unsuccessful cannulation; ⑦ maintenance of functionality; ⑧ thrombosis; ⑨ AVF survival; ⑩ number of interventions. Abbreviations: TC: Cannulation technique; BH: Buttonhole; MuST: Multiple single cannulation technique. RL: Rope-ladder

* The study was conducted over 11 months in 3 phases but does not specify the duration of each one.