Extending the interval of flushing procedures of totally implantable vascular access devices in cancer patients: It is time for a change

Sergio Bertoglio¹²

Abstract
Several recent literature reports regarding the flushing technique of TIVADs highlight how the definition of the optimal flushing interval is still a source of controversy. Several recent studies indicate more and more frequently how 4 weeks can be considered a too short interval for the flushing of a totally implantable access device (TIVAD); on the other hand most of the main guidelines and instructions for use provided by the device’s manufacturers still suggest an interval between 4 weeks and 1 month as the ideal one. The recent meta-analysis by Wu et al. on this topic, promotes an important strategy change, indicating the possibility of extending the flushing intervals at least up to 8 weeks. This editorial extensively discusses the flushing methods of TIVADs highlighting the need for important and substantial changes, both in extending the range of flushes and in the solutions and methods to be used. It represents an invitation to the scientific community and device manufacturers for a complete revision of the indications on flushing techniques.

Keywords
Oncology access, techniques & procedures, nursing, central venous access, flushing

Date received: 14 July 2020; accepted: 20 August 2020

The recent meta-analysis on the prolonged flushing time of totally implantable vascular accesses (TIVAD) by Wu et al. published in a recent issue of JVA¹ offers an interesting point of discussion with important clinical implications regarding the management of TIVADs. The flushing modalities of these devices, performed to maintain long-term catheter patency and their correct functioning is still a controversial aspect of maintenance and nursing procedures, are still controversial. A correct TIVAD flushing procedure is mainly based on three aspects represented by the type of solutions used, the technique used when performing the flushing itself and the correct definition of the optimal times to ensure correct functionality of the devices. TIVAD flushing procedure is based on three main aspects: the used solution, the technique of flushing, and the interval of time. In the last decade, the attention of researchers has mainly been focused on identifying the best possible applicable solution for this procedure and on defining a correct execution technique. Several clinical studies published in the literature²⁻⁵ and the latest international guidelines have established that, as far as non-dialysis catheters (NDCVA) are concerned, the standardized use of normal saline solution is to be preferred to anticoagulant solutions and, in particular, to heparinized saline solutions. In particular, the recent INS 2016 Standard of Practice and the Gruppo Accessi Venosi Centrati a Lungo Termine (GAVeCeLT) 2016 consensus of Italian experts have given clinical importance to this topic suggesting that normal saline solution is to be preferred in lieu of heparinized saline solution significant clinical relevance regarding the topic and suggest that normal saline solution is to be preferred in lieu of heparinized solutions, which, for the latest decades, have been considered a standard of practice.⁶,⁷ The rationale of these positions are based on safety reasons, clinical efficiency, economics, and ease of use; all of which having and

¹Department of Surgical Sciences, University of Genova, Genova, Italy
²Chirurgia I – Policlinico San Martino, Genova, Italy

Corresponding author:
Sergio Bertoglio, Department of Surgical Sciences, University of Genova, Viale Benedetto XV 10, Genova 16100, Italy.
Email: scotchbertoglio@gmail.com
these recommendations have relegated the use of heparin solutions to a marginal and almost obsolete role with the exclusion of venous catheters used in nephrology patients for dialysis purposes. Similarly, there is a large consensus in the literature relating to catheter flush technique performance which must absolutely be pulsatile and with a positive pressure over the syringe piston, paying particular attention to the prevention of blood reflux in the tip of the catheter at the end of the wash injection.5,9

The innovative aspect of Wu et al.’s recent meta-analysis concerns the timing for flushing TIVADs, especially when they are dormant or not in use, and/or when their removal is contraindicated. Scientific research has been manifestly lacking or of little incisiveness regarding this topic. For several decades now, the main guidelines relating to long-lasting vascular access have always indicated an interval ranging from 4 weeks to a month as the optimal timing for flushing procedures and control of catheter patency. Moreover, almost all of the medical industry involved in the production of TIVADs specifically suggest the adoption of this interval in the device instructions for use (IfU). Not everyone, however, agrees with this position and there is literature, albeit scant, which has long suggested that this interval could be prolonged without compromising the correct effectiveness of the devices or causing more mechanical complications, such as occlusion. Unfortunately, these are sporadic reports and tend to be occasional observations or, in some cases, random results relating to clinical errors in the planning of maintenance of TIVADs or failure of patients to comply with medical prescriptions.5

However, it is also well known that in many hospitals, especially in cancer centers where patients cyclically refer to outpatient facilities, an explicit custom of extending this time interval to at least 2 months is adopted quite often.10–13 This practice, albeit in open violation of what is expressed by numerous guidelines and by the main IfUs of the devices, finds a strong rationale in terms of: patient compliance and improvement of quality of life; difficulty in accessing healthcare facilities in low-intensity geographical areas of care; and, last but not least, a clear savings economically and savings savings.

In over 10 years of our personal experience at a high intensity cancer hospital, the flushing time interval for TIVADs not in use has been extended to 2 months without negative effects in terms of increased mechanical complications or intraluminal occlusion of the devices. It should also be noted that, between the beginning of March 2020 and the end of June 2020, in conjunction with the recent Covid-19 COVID-19 pandemic, this interval was further prolonged to up to 3 months in over 200 patients. The rationale for this choice was to ensure fewer patients accessing hospitals, thus, minimizing the risk of transmission of Sars-Cov-2SARS-CoV-2. During this period there was no noted increase in the mechanical and occlusive complications of TIVADs. In our experience, the Covid-19 COVID-19 pandemic has provided an excellent opportunity to implement into clinical practice the conclusions of Wu et al. meta-analysis and to confirm the assumption that prolonging the flushing interval of TIVADs can be an optimal clinical strategy without negative outcomes.

To reinforce this belief, it is worth mentioning Wu et al.’s meta-analysis observation that in patients whose flushing interval of TIVADs had been prolonged up to 8 weeks, the incidence of major adverse events or occlusion of the catheters was lower than that reported for patients with flushing interval of 4 weeks. Therefore, the prolonged frequency of flushing to at least 8 weeks, and perhaps beyond, has little effect on the mechanical and the occlusive complications of the catheters. This can be further ensured by means of correct washing methods and the use of suitable solutions such as normal saline.

It is therefore intuitive to conclude that the time has certainly come to bring forth a decisive change in the flushing strategies of the TIVADs based not only on the type of solution to be used and the importance of a flushing the device correctly, but also for the adoption of a policy to prolong the flushing time interval to at least 2 months. A further flushing interval extension to 3 months could even be considered possible, but must be investigated with further clinical trials.13,14

Like any change in entrenched habits, a proactive effort by the scientific community and the medical industry is advisable to achieve widespread propagation of flushing procedure changes within the medical community. Given these revelations, the manufacturers of TIVAD could review the contents of their IfU for these devices. It would be advisable that scientific networks and medical industry actively participate in this effort to improve patient compliance, safety and efficacy of vascular accesses.

Declaration of conflicting interests
The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding
The author(s) received no financial support for the research, authorship, and/or publication of this article.

ORCID iD
Sergio Bertoglio https://orcid.org/0000-0001-7235-3444

References


