



MINIMISE RISK - SAFETY FIRST!

Pressure injectable CVC

INJECTION OF CONTRAST MEDIA VIA CVC – SOMETIMES THE ONLY OPTION

In critical care, radiological examinations using intravenous contrast are a routine part of patient care. The examinations required for diagnosis and assessment necessitate high-pressure intravascular injection of contrast media.

In addition, pressure infusions using pressure infusion bags or infusion devices (“Level 1”) for rapid volume substitution are also normal practice in the care of polytrauma patients and in cases of shock.¹

There are many indications and reasons for the application of central venous catheters. However, multi-lumen central venous catheters (CVC) are not generally indicated for high-pressure injections of contrast media. In very ill patients, however, this kind of catheter may be the only possible venous access.² Especially when peripheral access is difficult or impossible.

The potential risk of catheter ruptures and the extravasation it causes are described in the literature. The FDA (Food and Drug Administration) and MHRA (Medicines and Healthcare products Regulatory Agency) also warn of a serious danger of high-pressure injection via central venous catheters that are not authorized for this purpose^{3,4}. If this warning is disregarded, the result may be catheter rupture, embolism or migration of foreign material into the circulation as well as contamination of the theatre and staff with blood & contrast medium³.

It is essential therefore to follow the manufacturer’s instructions in relation to specific flow rates and

the compression resistance of the individual lumens and to use only those CVCs for high-pressure injection that are also authorized for this purpose.^{1,5,6,8}

ALWAYS ONE STEP AHEAD WITH THE ARROW CVC FOR PRESSURE INJECTION

With the ARROW brand, one of Teleflex’s top priorities from the start has been to develop products that help to protect the vessels and prevent the complications associated with venous access. To offer you an even wider selection of venous access options, we have now augmented our traditional CVC product series with a range of CVCs for pressure injections.

Catheter rupture after contrast administration. (source: Teleflex)



The Teleflex CVC for pressure injection is indicated for access to the central venous system for intravenous therapy, blood sampling, infusion and pressure injection of contrast media. The maximum pressure used via the lumen intended for this purpose should not exceed 400 psi. You save time with the ARROWgard Blue PLUS CVC for high-pressure injection. Instead of having to wait for an additional venous access, computer tomography can be performed immediately.

MAXIMUM FLOW RATES AND CLEAR IDENTIFICATION OF THE LUMEN

The maximum flow rate for every lumen is stated accurately on the connecting parts in every case. The capabilities and parameters of the catheter are immediately obvious therefore. A reinforced hub can be used for pressure injections at flow rates of up to 10 ml/second. This means that you can easily apply the flow rate of infusions or medicines in a shorter time, with a result that CT and CT angiography are improved. ⁷



MAJOR ADVANTAGES

- indicated for higher flow rates in comparison to the Pressure Injectable (PI) PICC
- improved CT and CTA imaging
- more safety and comfort
- for physician and patient
- efficient
- time saving
- cost effective

REFERENCES:

- 1 Carsten Hermes 2013, Routine mit Risiken, Pflegeintensiv 2013.
- 2 Schummer et al. 2009, p.1, Risk of Extravasation after Power Injection of Contrast Media via the Proximal Port of Multilumen Central Venous Catheters: Case Report and Review of the Literature.
- 3 Reminders from FDA Regarding Ruptured Vascular Access Devices from Power Injection, <http://www.fda.gov/MedicalDevices/Safety/AlertsandNotices/TipsandArticlesonDeviceSafety/ucm070193.html>
 "The ruptured devices have included central venous catheters, small gauge peripheral catheters, implanted ports, extension tubing and intravenous administration sets. Some of these ruptures have resulted in device fragmentation, sometimes with embolization or migration that required surgical intervention; extravasation of contrast media; loss of venous access requiring device replacement; and contamination of the room and personnel with blood and contrast media."
- 4 Medicines and Healthcare products Regulatory Agency. Medical Device Alert MDA/2004/010. Issued 25 Feb 2004, <http://www.mhra.gov.uk/Publications/Safetyguidance/OneLiners/CON041338>,
 "If you can't take the pressure..... Intravenous catheters such as CVCs and PICCs are now available which are indicated for use with powered injectors for CT scanning. Always check the manufacturer's instructions and/or labelling to determine whether the catheter is suitable (e.g. maximum pressure and/or maximum flow rate). Do not exceed the catheter's capabilities as this may cause rupture of the catheter resulting in air embolism and/or leakage."
- 5 Herts BR et al., Power injection of intravenous contrast material through central venous catheters for CT: in vitro evaluation. Radiology 1996;200:731-35.
- 6 Douglas B. Macha, MD, MS, et al., Central Venous Catheter Integrity during Mechanical Power Injection of Iodinated Contrast Medium. Radiology: Volume 253: Number 3 - December 2009, pp. 870 - 878.
- 7 Fleischmann, D. "Contrast Medium Injection Protocols for CT Angiography." Controversies and Consensus in Imaging and Intervention, 2006, Vol. IV, Issue 2, p.24
- 8 American College of Radiology, <http://www.acr.org/Quality-Safety/Resources/Contrast-Manual>, Manual on Contrast Media version 9, 2013, page 14.