Beware from Inadvertent Fitting of the Disposable Syringe

Sir,

Damage to the injection port of the central venous catheter (CVC) is rare. We encountered such a problem during utilization of a CVC. After an extensive literature search, we found an incidence with epidural catheter filter port with different brands of disposable 10-ml syringes,^[1] but we did not find any case with CVC. A 56-year-old woman weighing 64 kg was admitted to our hospital with severe pneumonia and hypotension. She was on ventilator support because of acute respiratory failure and vasopressor support. A double-lumen 7 Fr. CVC (NewTech™ Medical Devices, New Delhi, India) was inserted in the right subclavian vein using a landmark technique to monitor central venous pressure and to administer medications.

In the initial 3 days, her blood pressure was maintained ($\approx 130/80$ mmHg) with vasopressor infusion. However, on the 4th day, she became hypotensive ($<90/60$ mmHg). The bedsheet was seen to have been stained reddish color below the right shoulder because of backflow. The blood was coming back slowly through one port. On close observation, a crack was found in one of the ports of the CVC, leading to spillage of blood [Figure 1]. We flushed it with normal saline. On enquiry about the possible cause of this incidence, we found that in our hospital, disposable syringes of different volumes and different brands are supplied. We also noticed that there was a slight difference in the nozzle diameter of these syringes [Figure 2], and we suspect that the use of a syringe with a slightly larger diameter might have led to the damage to the injection port of the CVC. We tend to speculate that an effort during flushing might have caused the damage and resulted in an outflow of medication. Unobserved, such spillage can cause inadequate drug delivery.

To maintain catheter patency and function, flushing of a CVC or vascular access devices (VADs) is a crucial intervention. By

national and international guidelines, flushing is recommended in concurrence with the manufacturer's instructions for use to optimize VAD safety, function, and durability for all those patients who require short- or long-term intravenous therapy.^[2] Flushing a VAD using the proper technique, at the right time, is much more than just injecting fluid into a catheter lumen.^[3] It requires knowledge of flushing techniques and needle-free connectors by the healthcare professional providing hands-on care.^[4] To eliminate inadvertent blood reflux, we may use prefilled syringes, but they are costlier than usual disposable syringes.

Prefilled syringe flush volumes are available in 3, 5, and 10 mL options for various VAD type, length, and size. The smaller volume prefilled syringes are produced in diameters and dimensions consistent with a 10-mL syringe barrel,^[5] generating significantly less pressure^[1] than standard 5 and 3 mL syringes. Flushing VADs incorrectly, by exerting high pressures with smaller syringes than the manufacturer's recommendations, suggests that it may contribute to catheter rupture, especially if resistance is met on flushing the device.^[6,7] On this unusual event with lack of regulatory standardization, we would like to suggest that there should be a gentle application of syringe in the injection port of the CVC. We also suggest that one should look for any leakage during drug administration. If spillage is present, we should suture or clamp the damaged injection port of the CVC. It may be better to connect three-way stopcocks to each port of CVC. Even if damage occurs, it would occur to one of the three-way stopcocks and avoid damage to CVC ports.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient has given her

Figure 1: Cracked injection port of the central venous catheter

Figure 2: Different nozzle diameters of different volume of syringes of different brands

consent for her images and other clinical information to be reported in the journal. The patient understand that her names and initials will not be published and due efforts will be made to conceal her identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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