

2021 Cardioplegia

Permission to print: Yes

Category: cardioplegia

Incident type: Good Catch Near Miss

Duration of incident: minutes

Description: Our unit recently introduced the Sorin (dideco) Vanguard heat exchanger into our cardioplegia circuit. We have been using this device for a number of months without any trouble. During this incident, after 2 uneventful doses of cardioplegia and prior to the 3rd dose of cardioplegia, air was noted in the vanguard device, in fact it had de-primed itself all the way down to the patient delivery line. The surgeon had to disconnect the delivery line and allow us to purge the air prior to our next dose of cardioplegia. If the air had not been noticed, it would have been delivered down the coronary arteries. At the end of the case, the vanguard device was tested and air was noted within the device at all pressures less than -50mmHg. Subsequently we have tested other Vanguard devices and it seems that this is true for Vanguard devices in general. The (so-called) one way valve/priming valve, at the top of the unit, allows the device to be primed quite easily however does allow air back into the device at negative pressures we have not, in the past, been concerned about. The company suggested clamping the delivery line after the delivery of cardioplegia and prior to venting the heart. The negative pressure is generated by the venting of the ascending aorta by the [dual lumen antegrade cardioplegia cannula] vent. Currently we have a one way valve in our vent line which prevents negative pressures less than 110 mmHg to be transmitted through the circuit. This seems to be enough to prevent cavitation but not enough to prevent air from entering the Vanguard.

GOOD CATCH - what went well The air was noticed in time to prevent delivery to the patient.

What could we do better Consistent practice. Clamping the cardioplegia line prior to venting was not standard practice at our institution. Some perfusionist here do clamp the cardioplegia line after

Preventive actions Knowledge of the incident and increased awareness of the limitations of the Vanguard heat exchanger has been widely circulated within our group. Clamping the cardioplegia line prior to venting the heart has been advocated and is now my standard practice

Hospital incident filed: No

Ext Authority Advised No

Discussed with team: Yes

Manufacturer advised: Yes

Protocol issue No

Rule issue No

Skill issue No

Team Issue No

Commentary Surprisingly, this problem has not been previously reported to PIRS. The editor could find no IFU caution regarding air entrainment from the one way valve designed to "keep air from entering if a negative pressure is generated." The company advice to clamp the cardioplegia delivery line after administering cardioplegia to prevent the problem suggests that this is a design issue rather than an isolated device or a batch issue (that would generate a recall). PIRS Ed

