

2019 air entrainment

Permission to print:	Yes
Region	ANZ
Description:	<p>1. Pre-op – The Level alarm activated and was unable to de-activate or override the alarm on the display control unit. Rebooted whole machine, reset and checked alarms ... all ok.</p> <p>2. Ran onto bypass, surgeon asked to leave some blood in the atrium, level was at 500 mls after filling. I was looking at the pressure and alarm display monitor checking. There was no alarm I only heard that sucking noise and saw the pump boot full of air, no blood in the reservoir and air in the Sorin Inspire 8F oxygenator integrated filter. Turned pump off, then the alarms sounded. Clamped lines and tried to deactivate the alarms with no response from the alarm display. Arterial pump [seemed to be] seized, and I had to use brute strength to get the handle to rotate the pump. Gave the patient back volume [using the hand crank] carefully watching for any air. Once patient pressures were normalised [the X clamp had not been applied], I tried again to deactivate the alarms, but had to reboot the whole system. I de-aired the oxygenator through the integrated filter vent lines which had been opened as soon as we ran on bypass, set and checked the alarms and waited to see if any other events transpired. All seemed to be working again and we made the decision to run back on with the same system.</p> <p>3. Shortly into giving the first dose of cardioplegia there appeared on the display, "no monitoring control pump 1", shortly followed by "no monitoring pump 2a", next "cardioplegia 1 was in alarm" and finally "pump communication failed cardioplegia 1". It stopped recording cardioplegia doses delivered, I could change the blood/cardioplegia ratios, but it didn't change the pumps rotation and the timer buttons also stopped. I ran the whole 4 hour case with no safety devices and used my phone timer for cardioplegia doses. We keep a manual record. I contacted Liva Nova and sent them photos. Immediately after the case I left the whole system on and I phoned Liva Nova and they sent in a service engineer who downloaded all the information. I had a spare pump set up for arterial pump tubing close by in case the system failed again. The pump was removed from use immediately.</p>
GOOD CATCH - what went	<p>The perfusionist dealt with each of the issues as they arose and followed an action plan. No air went through to the patient and the patient was extubated the next day, behaving appropriately. Both surgeons said that no air went through to the patient. They were not concerned by the event at all as they thought I had managed it all appropriately.</p> <p>The Inspire 8F oxygenator was able to be effectively deaired through the purge lines despite being 1/2 full of air / foam.</p>
What could we do better	In retrospect I would have listened to my head and changed out the heart lung
Preventive actions	Have filed a report with hospital and ireported to the TGA. Liva Nova have replaced the EP board and sent our away to be tested.
Catagory	Air in circuit
Incident type	Near Miss
Commentary	This report of air entrainment to the HLM illustrates a series of good catches - things that went well to avoid patient harmis. The report is an example of ordered problem solving in a demanding situation. It also is a testament to the ability of the oxygenator with integrated filter to manage gross air - something

that has concerned those contemplating the shift to integrated filtration. It is a salient reminder that current safety technology is fallible.. The reporter could have used the S5 "total" override function activated by the two hand icons below the variable speed control knob that would place the HLM in a manual mode (no servoregulation) but - if functional - leaves audible alarms active. PIRS
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