

2018 Coagulation

Permission to print:	Yes
Incident type	Good Catch No Harm Incident
Type of incident:	Management
Category	Coagulation
Description:	<p>Procedure - Triple valve repair, Patient - 27kg, 123cm, 4years, RHD CPB circuit - Paediatric circuit, 1/4 3/8 AV loop, PALL IL-3 Arterial filter, Terumo RX1530 oxygenator, Hem concentrator BC60, Prime - Plasmalyte 700ml, RBC 266ml, Tranexamic Acid 8ml, Heparin (1000U/ml) 3000UI, cefazolin 0.8g, Calcium 1ml, TOTAL PRIME 983.6ml Cannula used - 16Fr DLP Arterial, changed to 4.5mm Stockert Arterial, 20Fr & 24Fr Metal angled venous cannula, 16Fr Vent, 09:56 - Arterial cannulation , Line pressure 60mmHg, swing great, All OK 09:57 - 1st ACT post heparinisation 470 (8500UI of heparin given my Anaesthesia) 09:58 - addition of 500UI of heparin to CPB circuit (3000UI of heparin in Prime) 10:03 - Bypass Start, immediate cooling to 28 degrees, Metaraminol given due to low BP (30mmHg) flows at 3liter index, NIRS 55, line pressures 280 mmHg 10:12 - ACT 365, 3000UI heparin added 10:14 XCLAMP on, Cardioplegia given (1000ml over 7min) During the time of cardioplegia administration arterial line pressure increased. Surgeon notified. Possibility that xclamp is obstructing cannula or it's inserted to deep. Surgeon to rectify once cardioplegia is administrated. Arterial line pressures 300 - 350mmHg. Flows are decreasing from a 3L index to 1.5L index, NIRS 74%, BP 30 - 40mmHg, Call additional Perfusionist into the room, Test of circuit pressure post filter in the arterial line (added a 1/4 1/4LL connector into the recirculating line with a pressure dome, used the cardioplegia circuit to measure pressure, Pressures high >330mmHg) 10:29 - ACT 530 addition of 1000UI heparin 10:35 - decision to change Arterial Cannula (16Fr DLP to a 4.5mm Stockert), Cooling rapidity, 10:33 - 10:40 - NIRS 84%, 1.5L index max, BP <30mmHg, Line pressure 420 mmHg, flow of max 1L index) NIRS 81:45 - decision to clamp and bypass arterial line filter, immediate improvement, arterial line pressures (110mmHg), increase to a 2L index, NIRS 95, BP>35mmHg, Isoflurane increase from a 1% to 2% due to increase in pressures, stop rapid cooling (pt naso temp at 24 degrees) 10:49 - ACT 795 11:10 - maintenance 'plegia dose given 11:16 - change of arterial line filter (1.5min Circulatory Arrest for [completion] of de-airing new [pre primed] arterial filter) 11:22 - rewarming 11:28 - ACT 539, heparin 1200UI added 11:48 - ACT 550, heparin 1000UI added 11:58 - RBC unit added (Hb 102, HCT 31.4) 12:06 - Hot shot initiated 12:21 - ACT 475, heparin 2200UI added 12:31 - XCLAMP off 12:36 - ACT 599, HEPARIN 1300UI added 12:52 - RBC unit added (Hb 106, HCT 32.9, low reservoir volume) 12:55 CPB stop Total of 800UI/kg of heparin was given during the Operation Post Protamine ACT was 137. It would have been helpful if during all this we would have called back the anaesthetist to make him aware of the issues happening. On review it was revealed that the arterial line at the operating table was pinched in a retaining clamp that likely contributed to restricted flow and back pressure in the arterial line. This may have been resolved at the same time as the filter was changed and could have been a further contributory factor.</p>

GOOD CATCH - what went well Communication between the surgeon and 2 perfusionist, Once the arterial cannula was replaced and the problem continues the surgeon urged to continue finding the problem and continued with the surgery. This led to the idea of clamping out the filter to eliminate a possible, then probable problem. great communication between the perfusionists. One primed and got the replacing filter ready while the other concentrated on the bypass. Replacement of the filter and de-airing was less the 2min.[sentence redacted]

Preventive actions Develop Flip Chart for high Line Pressure. Mandatory question from the surgeon before applying the Ao X Clamp that perfusion is AOK. Anaesthetist to remain in the OR until

effective myocardial protection confirmed post X Clamp.

Manufacturer advised:

Discussed with team: Yes

Ext Authority Advised No

Hospital incident filed: Yes

Knowledge issue No

Rule issue No

Skill issue No

Commentary Coagulation has featured as a predominant cause of SAE in the perfusion literature. Anticoagulation practices vary and is an inexact science. The preventive plan to standardise confirmation by the surgeon that all is well prior to aortic cross clamping is a sound response. This provides the opportunity to address subtle concerns and if necessary separate from CPB. PIRS Ed