2024 Coagulation (Oxygenator)

Permission to print:	Yes
Category	Coagulation
Category 2	Oxygenator
Severity	Good Catch No Harm Incident
Description:	The patient was a booked urgent CABG x 3, in hours on a weekday with a full perfusion team. The HLM and bypass circuit were set up. We used a Terumo System 1 and consumables included Liva Nova 1/2 inch pack (with Pronto line), Medtronic Fusion Oxygenator, reservoir and CDI 550. Patient preoperative factors were unremarkable, however it was noted patient had factor V Leiden which was flagged at time out with no change of plan from anaesthetics or surgical team. The patient was for central cannulation and following loading dose of heparin (the loading dose of heparin was 40000 units), an ACT sample was collected. The ACT reading 445. A subsequent 10,000 units Heparin was administered by anaesthetics, the ACT was 440. A further 15000 units of Heparin was administered and 1 unit of FFP was commenced. [In answer to a question from PIRS] There was no discussion about anti thrombin 3, however it is available within the hospital. A further 10000 units of heparin was added to the pump prime (total of 20000 units in prime). A third ACT was taken and commenced bypass once it reached 480, with a final result of 581. Bypass commenced at 10:20 with no issues identified. Cross clamp was applied at 10:23, and hyperkalaemic cardioplegia was administered both antegrade and retrograde. Upon completion of cardioplegia (10:28) a significant rise in pre membrane pressure was identified by the perfusionist (Pressure drop of 270mmHg) which continued to rise over following 10 minutes. During this time period the post membrane pressure was within normal limits (<200 mmHg). Other parameters that were concerning included: increased potassium, increase in pCO2, minor decrease in PO2 (captured by CDI550). The oxygenator was inspected and foreign deposits were evident. A decision was made to change out the oxygenator and other members of the perfusion were called to assist with oxygenator changeout. The anaesthetic and surgical team were notified. Oxygenator change out was carried out without incident using the Pronto line. No cooling of patient was required or disruption to patient flow or surgical procedure. Post oxygenator change out all patient parameters were within normal limits. The rest of the procedure was without incident and patient was weaned from bypass at 12:11. Manufacturer was notified and oxygenator flushed and returned for investigation. A discussion [was held] with anaesthetics and the surgical team, and a hospital risk report was submitted.
GOOD CATCH - what went well	Changes in parameters were noticed early: increase in K, increase in oxygenator transmembrane pressure, rising pCO2 and slight decrease in pO2. Discussion [was held] with the anaesthetist regarding changes in parameters and the actions we were taking. The surgeon was notified of incident and actions. An early decision was made to change out the oxygenator. This incident occurred during normal working hours and we had three perfusionist on shift. This was very helpful as assistance was readily available and there was no disruption to the surgical procedure as timely action was possible. Our unit has recently changed our circuit to include a Pronto line as well as a pre membrane pressure monitor. The change in the pre and post membrane pressures was an obvious sign that there may be issues with the oxygenator and further investigations were required. The Pronto line enabled the oxygenator change to be done without any

	interruption to the surgical procedure. We believe that this one incident has justified out changes to the circuit.
What could we do better	Nothing entered
Preventive actions	Increased wet labs for emergency incidents to increase staff confidence and abilities when any issues arise in the future.
Type of incident:	Management
Duration of incident:	minutes
Hospital incident filed	Yes
Ext Authority Advised	No
Discussed with team:	Yes
Rule issue	No
Protocol issue	No
Team Issue	No
Violation	No
Patient outcome vari	unknown
Commentary	This report is an exemplar for management of a compromised oxygenator. It highlights excellent communication and teamwork and again the compelling rationale for the inclusion of a PRONTO line (or equivalent circuit modification) to enable changeout of the oxygenator without interruption of CPB and minimising patient risk. PIRS ed