2023 Oxygenator (inlet pressure)

Permission to print:	Yes
Category	Oxygenator
Incident type	Good Catch No Harm Incident
Duration of incident:	minutes
Description:	During a CPB procedure for CABG in September 2023, worsening high inlet pressures with an Inspire 8F oxygenator (physio™ coated) occurred. Circuit was physio coated encompassing a roller pump with softshell venous reservoir plus external cardiotomy. The patient was a 61-year-old male of 114 Kg with a 2.4 L/min/m2 of 5.6 L/min. The prime consisted of 4% albumin and Hartman's solution. No haematological abnormalities were noted. After being on bypass for approximately 30 minutes, whilst cooling to 34°C, preoxygenator line pressures trended higher despite constant flows. The ACTS started at @ 600 sec pre CPB, going to @ 500 sec early stage, then up to 800 sec post extra boluses of heparin. With discussion with the surgeon, the patient was gently rewarmed to address any theoretical cryoglobulin scenario. Despite rewarming, the inlet pressures inexorably continued to rise necessitating the reduction in main pump flows so as not to exceed 650 mmHg inlet pressures. A consensus was made to exchange the oxygenator with another Inspire 8F. The strategy to do this involved the surgeon removing the x-clamp, resumption of cardiac activity and ventilation. The patient core temperature was 35°C. With the assistance of another perfusionist, the oxygenator was exchanged in less than 4 minutes. Subsequent perfusion, rewarming and weaning from CPB was uneventful. The CABG was completed with the patient's proximal grafts anastomosed and rewarming ensued. The patient's post operative progress was uneventful with no sequelae noted. The defective oxygenator was examined for abnormalities or thrombus, but none were seen. It was sent back to the manufacturer in Italy for detailed investigations, however no abnormalities or defects were detected. We still incorporate a post oxygenator arterial filter – even though the oxygenator has an integrated filter. The additional arterial filter gives us confidence that any residual air retained in the circuit after oxygenator exchange is caught. The decision to exchange an oxygenator during CPB is a vexed one. Should the patient be rewarmed to possibly dissolve cryoglobulins or be cooled further to extend the period of 'safe' circulatory arrest? It is a clinical judgement call that must weigh heavily on the perfusionist.
GOOD CATCH - what went well	Close monitoring of patient and extra corporal parameters. Proximate availability of duplicate equipment and consumables. Secondary perfusionist Ongoing emergency protocol and practice programme. Effective communication and trust amongst members of the team.
What could we do better	As no harm occurred, we can assume we made the correct decision.
Preventive actions	Oxygenator changeouts are by their nature rare and unpredictable. Having an ongoing emergency protocol and practice programme addresses this perfusion emergency. Importance of adequate length of tubing and ease of accessibility to the oxygenator must continue to be made.
Type of incident:	Equipment
Hospital incident filed:	Yes
Ext Authority Advised	Yes
Discussed with team:	Yes

Knowledge issue	No
Protocol issue	No
Skill issue	No
Team Issue	No
Patient outcome variance f	Nil
Commentary	Oxygenator change out is a relatively uncommon event in a single centre, however PIRS continues to receive sporadic such reports and this is highly likely underreported to voluntary reporting systems. This instance was managed expertly by the team although it would have been more challenging had this occurred during ischaemic arrest with an open aorta. Interestingly the circuit did not include a PRONTO line or the equivalent that allows changeout without having to interrupt CPB. PIRS continues to advise consideration of this safety device. PIRS2 Ed