

FORE-SIGHT®: The Only Device to Alert Clinicians of Compromised Cerebral Perfusion

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A 67 year-old man with known aortic valve insufficiency and an aneurysm of the ascending aorta exhibited sudden chest pain and shortness of breath. Emergency CAT scan, cardiac catheterization and trans-esophageal echocardiogram revealed a dilated aortic root, severe aortic insufficiency and severe mitral regurgitation without evidence of aortic dissection. Given the patient's serious hemodynamic status, he was taken to the operating room for emergency cardiac surgery.

The plan was to cannulate the right axillary artery in order to facilitate the aneurysm repair. However, the patient rapidly deteriorated so cannulation of the left femoral artery and vein was immediately performed without difficulty. Baseline S_{iO_2} levels were 66% and 67% in the right and left cerebral hemispheres

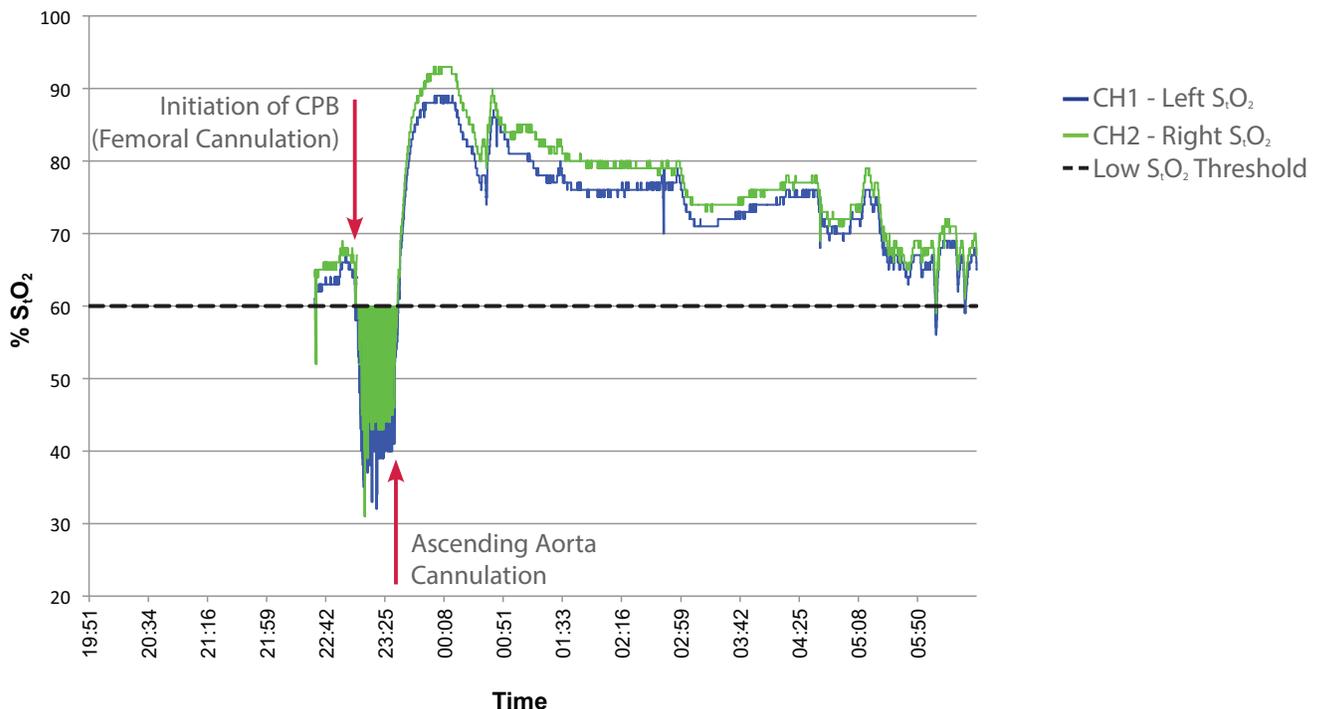
respectively. Cardiopulmonary bypass was initiated and almost immediately the S_{iO_2} levels decreased into the 30-40% range in spite of acceptable perfusion inflow-line pressures. Increased perfusion flow rates did not improve S_{iO_2} . An arterial blood gas on bypass revealed a PaO_2 level of 200 mm Hg and a $PaCO_2$ of 47 mm Hg with a mean arterial pressure between 55 and 61 mmHg.

Given the low cerebral oxygen saturation levels, central cannulation of the distal ascending aorta was performed with an 8 mm arterial cannula to allow antegrade cerebral perfusion. The S_{iO_2} levels immediately rose to 73% and 76% in the right and left hemispheres respectively. After cooling, the surgeon completed a successful replacement of the ascending aorta, the aortic root (valve conduit) and the mitral valve, using hypothermic circulatory arrest and retrograde cerebral perfusion.



Conclusion:

Cerebral oxygen saturation readings derived from the FORE-SIGHT ELITE cerebral oximeter was the only parameter that alerted the surgical team that cerebral perfusion was compromised and that the brain was receiving insufficient oxygen. The early alert by the ELITE cerebral oximeter allowed the surgeon to quickly rectify the adverse conditions, avoiding a potentially profound cerebral anoxic injury for the patient.



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