



Case History No 6



Département Anesthésie Réanimation A
Hôpital Lapeyronie, CHU Montpellier, France. Dr Olivier Raux
23rd October 2004

Monitoring and treating severe haemodynamic instability secondary to a large haemoperitoneum, pneumothorax and facial injury from a road traffic accident

Oesophageal Doppler Monitoring

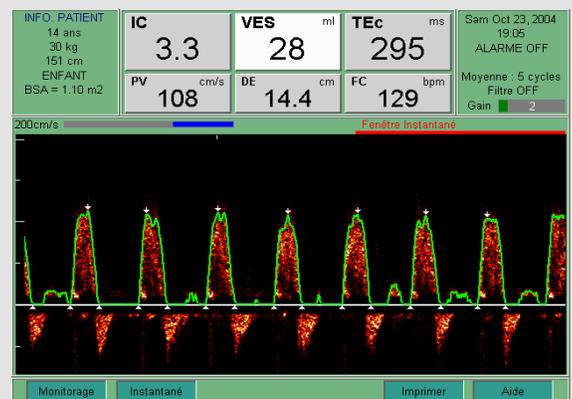
This 14-year-old child was involved in a road traffic accident resulting in polytrauma requiring an emergency laparoscopic investigation of the hepatic abdominal region and splenectomy.

CardioQ monitoring began shortly after anaesthetic induction and hypovolaemia was quickly identified.

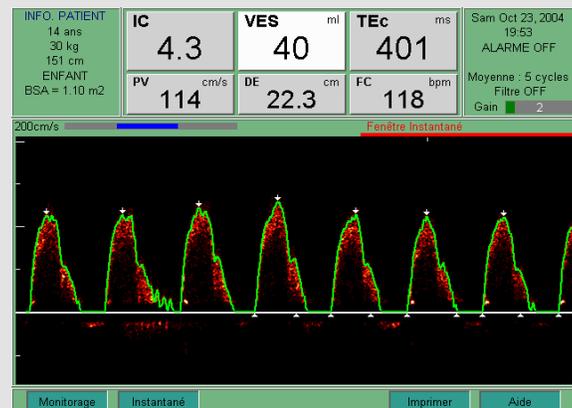
In **Screenshot 1** it can be seen that the stroke volume is low at only 28 ml, there is a tachycardia of 129 bpm and the flow time corrected is abnormally low 295 ms, indicating a raised systemic vascular resistance, in this case caused by peripheral and splanchnic vasoconstriction. This is the normal physiological response to compensate for the reduced circulating blood volume in order to maintain blood pressure. Even so at this time, due to the large blood loss the patient was also hypotensive.

Over the following 45 minutes the patient was given a rapid blood transfusion, **Screenshot 2**, taken 50 minutes later shows the results of the blood transfusion. Cardiac index has risen to 4.3 l/min/m², the flow time corrected is up to 401 ms and the heart rate is down to 118 bpm. More importantly the stroke volume has improved from 28 to 40 ml.

Screenshot 1: Post-anaesthetic induction indicating hypovolaemia



Screenshot 2: After a rapid blood transfusion

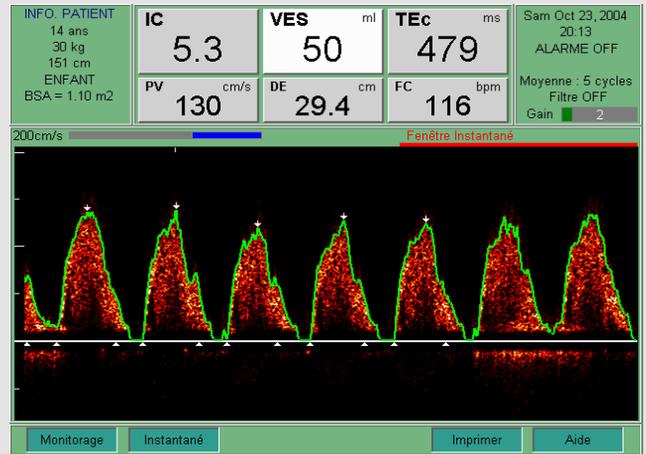




The patient's cardiac output continued to rise and 20 minutes later in **Screenshot 3** it is seen that the cardiac index had risen to 5.3 l/min/m². Both flow time corrected and the stroke volume had also risen to 479 ms and 50 ml respectively. However at this time the patient was still hypotensive and was given norepinephrine to compensate. It is interesting that even when the patient was hypotensive, there was very good flow and cardiac output.

Screenshot 4 was taken just a few minutes later as the surgeons were closing the abdomen. It is seen that the flow time corrected has reduced to 375 ms; this is still well within normal limits and is probably caused by an increasing systemic vascular resistance following the norepinephrine infusion. At this stage the patient would appear to be well filled. The patient was transferred to the intensive care unit for further treatment and monitoring.

Screenshot 3: Good cardiac index despite low blood pressure



Screenshot 4: Reduction of FTc and SV in response to Epinephrine

