



Case History No 5



Département Anesthésié Réanimation A
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Monitoring Haemodynamic Changes during Paediatric Laparoscopic Surgery
 Oesophageal Doppler Monitoring

This 6-day-old patient underwent laparoscopic video surgery for the treatment of a duodenal duplication with CardioQP haemodynamic monitoring.

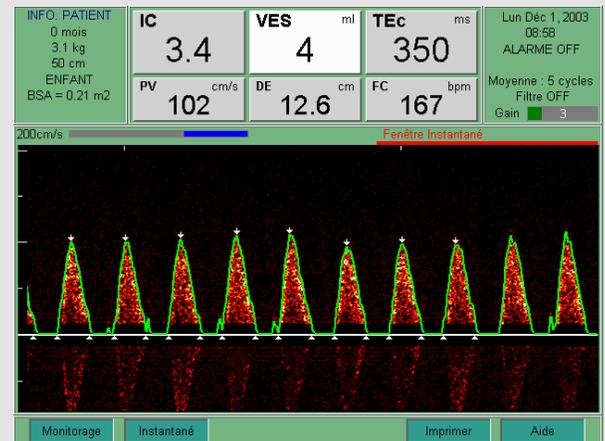
Screenshot 1 taken shortly after induction of anaesthesia shows the patient to have an adequate cardiac index (IC) at 3.4l/min/m², a heart rate (FC) of 167 and a left ventricular stroke volume (VES) of 4 ml.

30 minutes later **Screenshot 2**, shows an increase in peak velocity, indicating an increase in myocardial contractility. This was found to be in response to painful stimuli, alerting the anaesthetists and allowing them to rapidly modify the depth of anaesthesia.

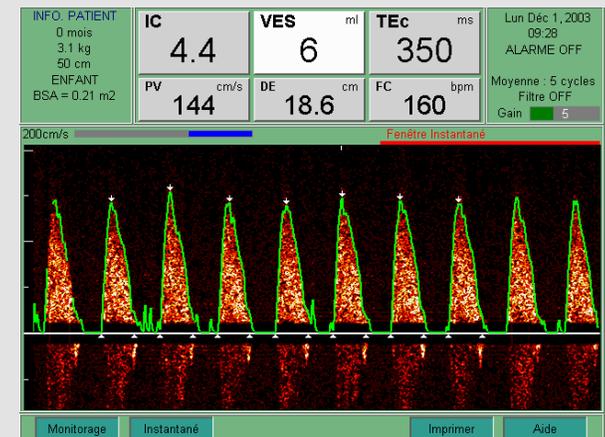
Insufflation of the abdomen results in significant changes to the patients' haemodynamic status.

Screenshot 3 shows that both the peak velocity and the flow time corrected (TEc) have fallen with the consequent reduction in stroke volume and cardiac index. These changes are often seen during laparoscopic surgery as the increased intra-abdominal pressure often causes an increase in afterload and a simultaneous decrease in preload.

Screenshot 1: Post induction of anaesthesia



Screenshot 2: Stress response to pain indicated by increasing PV





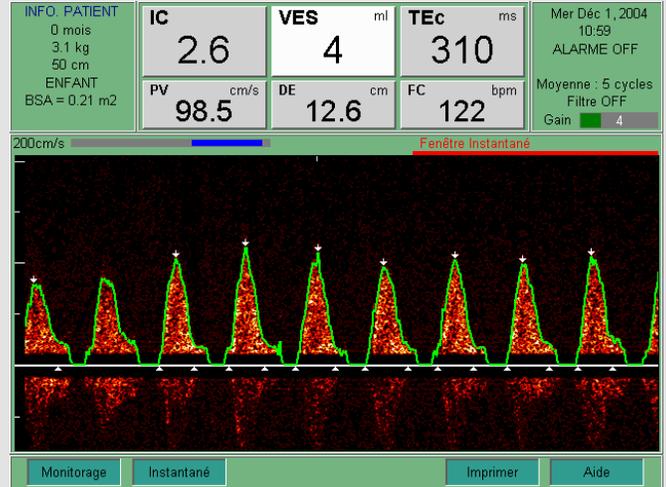
Typically normovolaemic patients compensate quickly in this situation. **Screenshot 4** shows that the peak velocity and flow time corrected have both risen increasing the stroke volume from 4 to 5mls. The heart rate has also increased by over 27% to 151 bpm. This results in the cardiac index increasing from 2.6 to 3.6 l/min/m².

Screenshot 5 was taken just after the deflation of the pneumoperitoneum. It can be seen that the patient has returned to a 'normal' baseline haemodynamic status similar to **Screenshot 1**.

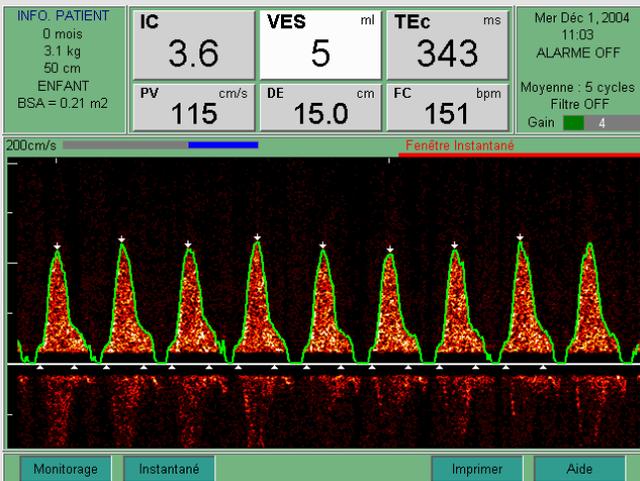
Comment

This case is a good example of the haemodynamic changes that occur in a small normovolaemic child during laparoscopic surgery.

Screenshot 3: Haemodynamic changes due to abdominal insufflation



Screenshot 5: Return to baseline haemodynamic status



Screenshot 4: Patient compensation after abdominal insufflation

