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Sudden hypoxemia during cesarean section under general anesthesia has many possible causes, including main stem intubation, aspiration, heart failure, fluid overload, anaphylaxis and amniotic fluid embolism. Diagnosing the cause of sudden hypoxemia can be difficult and potentially useful hemodynamic measurements such as cardiac output are seldom obtained in parturients prior to the occurrence of patient deterioration, due to the invasiveness of the methods required.

We report a case of a parturient with von Willebrand’s Disease, type 2b, undergoing cesarean section under general anesthesia, who developed sudden hypoxemia, diffuse rales and wheezing, in whom electrical velocimetry corroborated a diagnosis of sudden left ventricular failure due to increased venous return at delivery, exacerbated by prior iatrogenic fluid overload.

Electrical velocimetry, a new impedance cardiography algorithm, demonstrated decreases in nominal stroke and cardiac indices during the hypoxemic episode, suggesting that the etiology may have been acute left ventricular failure. Delivery and subsequent oxytocin administration are normally followed by increased cardiac output. The deviation from normal in this case was felt to be significant. Furosemide was given and the patient’s oxygenation and auscultatory examination improved concurrently with a gradual increase in nominal stroke and cardiac indices. These findings suggested an improvement in cardiac function due to diuresis. Electrical velocimetry is easy to apply and completely painless and non-invasive. The technique derives a stroke volume from a patient size factor, ICON (an index of average aortic blood flow velocity during systole) and the duration of left ventricular ejection.
Figure 1  Electrical velocimetry demonstrates that hypoxemia, wheezing and rales after cesarean delivery under general anesthesia are associated with decreased stroke and cardiac indices, suggesting left ventricular failure. Furosemide and diuresis are accompanied by clinical improvement and increased stroke and cardiac indices.