

[NM-345] Device Failure in a Patient Receiving Nebulized Epoprostenol

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Introduction: Intravenous epoprostenol is a well-established treatment for severe idiopathic pulmonary arterial hypertension (PAH). When nebulized, this agent can offer an additive effect to inhaled nitric oxide (iNO) as a pulmonary vasodilator in patients with severe PAH and concurrent lung disease as it is administered only to those alveoli participating in gas exchange, thereby reducing V/Q mismatch. We describe the use of nebulized epoprostenol which was implicated as a cause of two ventilator circuit failures. **Case Report:** A newborn post-natally diagnosed with obstructed, supracardiac total anomalous pulmonary venous connection, aortic arch hypoplasia and an atrial septal defect underwent emergent surgical repair. He remained on extracorporeal circulatory support for 4 days and was weaned off support using infusions of milrinone, epinephrine and iNO. Lung biopsy revealed Heath Edwards classification of grade III PAH and severe parenchymal lung disease. Persistent right ventricular dysfunction induced hemodynamic instability prompted the addition of nebulized epoprostenol therapy, which was titrated to 50 ng/kg/min. On day 14 of this therapy, the patient acutely worsened, demonstrating signs of hypercarbia, hypoxemia and acidosis. A fracture of the Y airway access adapter was identified and replaced. Arterial blood gases improved but did not return to baseline. An additional crack in the continuous nebulization T connector was identified and replaced. There was an immediate improvement in the patient's gas exchange and hemodynamic status. Close inspection demonstrated diffuse drug deposition and hairline fractures in both ventilator circuit pieces (Figure 1). **Summary:** Nebulized epoprostenol is gaining popularity as an unlabeled treatment option in the management of pediatric PAH. This case report should remind clinicians to consider the interaction of nebulized medications with ventilator circuit plastic as a possible cause of device failure in the differential diagnosis of acute hypoxemia and hypercarbia.

References:

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Product Information: FLOLAN(R) IV injection powder, epoprostenol sodium IV injection powder. GlaxoSmithKline, Research Triangle Park, NC, 2011.

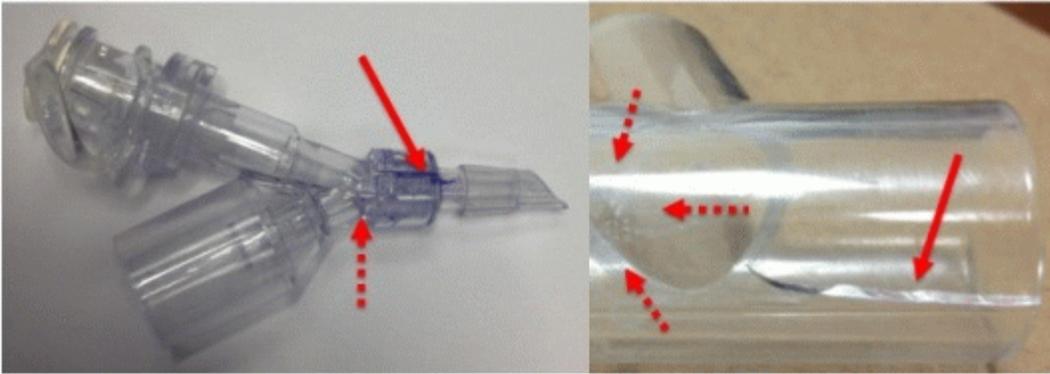


Figure 1: Ventilator circuit device fractures demonstrated by solid arrows on y- and t-connectors on left and right pictures, respectively. Also note diffuse drug deposition on devices demonstrated by dashed arrows.
