**Título:** HIGH-FREQUENCY OSCILLATORY VENTILATION IN A NEONATE WITH CONGENITAL DIAPHRAGMATIC HERNIA FOR VATS

**Autores:** João Saldanha Marques, Francisca Tavares, Rosa Araújo

**Instituições:** Centro Hospitalar Universitário São João (CHUSJ) - João Saldanha Marques, Rosa Araújo Centro Hospitalar Tâmega e Sousa (CHTS) - Francisca Tavares

**Área Terapêutica/Tema:** Anestesia e Cuidados Intensivos Pediátricos (Paediatric Anaesthesia and Intensive Care)

Introduction

Video-assisted thoracoscopic surgery (VATS) offers significant advantages for repair of congenital diaphragmatic hernia (CDH). However, insufflation of CO2 combined with one-lung ventilation poses a challenge to control acidosis and maintain oxygenation. HFOV is a protective mechanical ventilation used in perioperative management of CDH, particularly in neonates. Intraoperative application of HFOV maintains ventilation with effective CO2 removal. We report intraoperative institution of HFOV in a neonate presenting CDH for VATS.

Case Report

A 4-day-old, 37-week gestational age, 2.55kg neonate without other congenital malformations or pulmonary hypertension was scheduled for VATS of left CDH. In early postpartum period, the neonate developed acute respiratory distress and he was immediately intubated and transferred to Neonatal Intensive Care Unit (NICU), where he started HFOV and an umbilical artery and vein catheter as well as peripheral intravenous access were placed. Use of vasopressors (norepinephrine and dopamine) was necessary to maintain adequate blood pressure. The patient started conventional mechanical ventilation (CMV) the day before surgery without complications.

In the OR, monitoring according ASA standards and TIVA were performed. Vasopressor support was still in course to maintain normotension. Despite trying different modes of ventilation, delivery of adequate tidal volumes was not feasible and a markedly increase of PaCO2 occurred even before CO2 insufflation. A ventilator from NICU was requested and the neonate was switched back to HFOV with an adequate ventilatory response and without hemodynamic repercussion. Throughout the surgery, HFOV parameters were guided by SpO2, DCO2 and PaCO2 values. Due to surgical reasons, near the end VATS was converted to thoracotomy and an accidental extubation occurred. Patient was re-intubated without experiencing significant desaturation. Bowel contents were returned to the abdomen and the diaphragm defect repaired. Intraoperative time was 228 minutes.

Following surgery, the neonate was transferred to NICU and successfully extubated to nasal cannula on postoperative day seven. During the stay in NICU, the patient was diagnosed with opioid withdrawal syndrome which was treated with fixed boluses of morfine. The neonate was discharge home on the 16th postoperative day on room air and total enteral feeding.

Discussion

In this case only ventilation with HFOV allowed VATS to be performed. Intraoperative use of HFOV provided adequate oxygenation and ventilation and appears to be a useful form of mechanical ventilation during CDH repair in neonates. One limitation of this form of ventilation is that capnography isn’t feasible. Because HFOV is used primarily in the ICU setting, anesthesiologists may be unfamiliar with this technique, necessitating appropriate training with this mode of ventilation.

References

1. J Pediatr Surg.2009;44:1702-1707

2. Anaesth,Pain & Intensive Care.2012;16:287-292



\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_