

Total intravenous anaesthesia (TIVA) for tracheoplasty surgery under extracorporeal membrane oxygenation (ECMO) in a 1 year old patient with congenital heart disease.

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INTRODUCTION

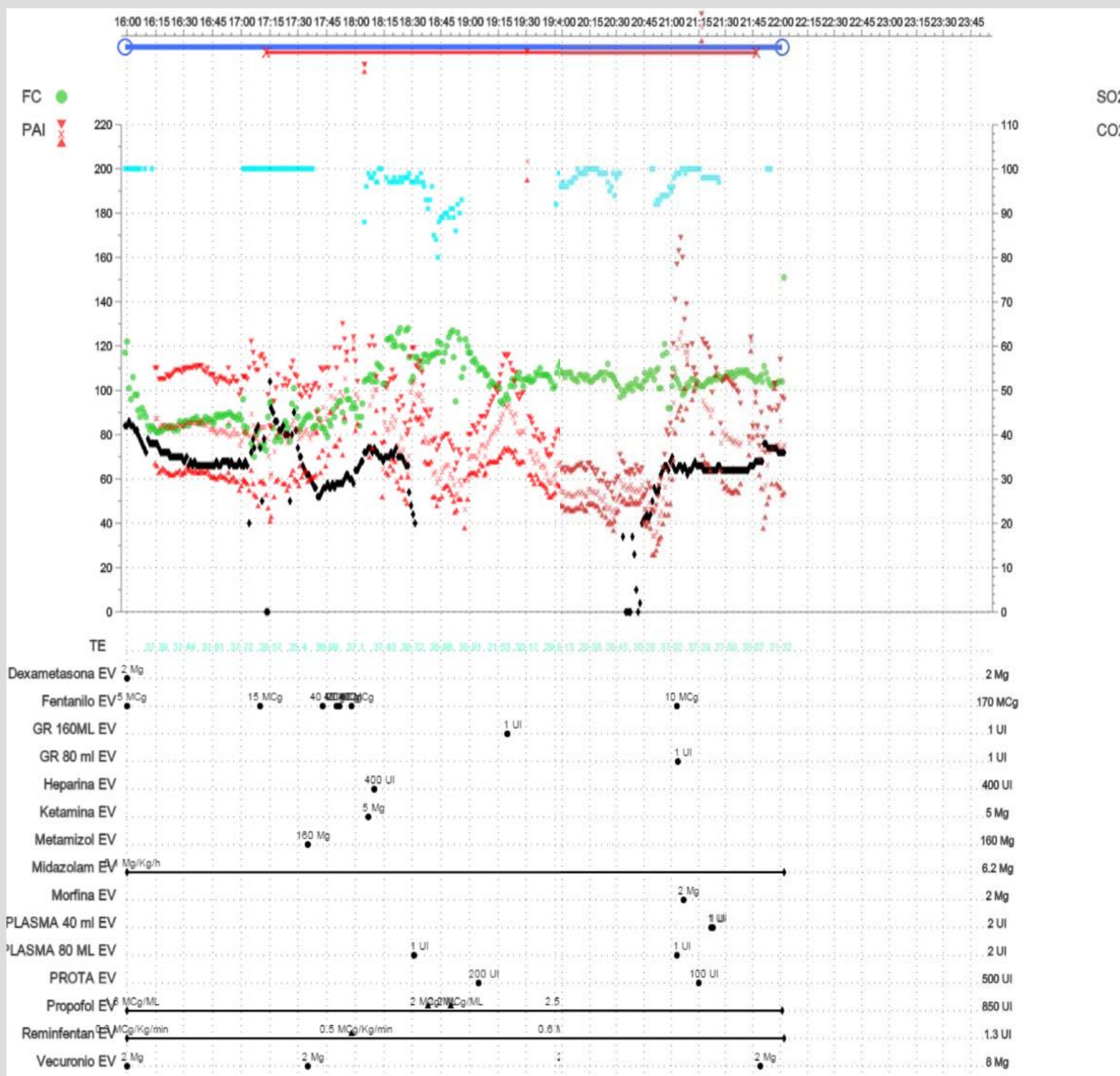
- Congenital obstructive anomalies of the trachea represent a unique perioperative challenge.
- ECMO provides adequate respiratory support during tracheoplasty surgery.
- Use of TIVA technique provides hemodynamic stability.
- Bispectral monitoring was used setting a BIS target.

CASE DESCRIPTION

A 13-month-old male, 6.7 kg, diagnosed with a non-inherited genetic disorder, congenital heart disease (intra-atrial communication type Ostium Secundum and interventricular defect) and systemic pulmonary hypertension.

At that time, he was tracheostomized and hospitalized in the Pediatric Intensive Care Unit with respiratory failure due to recurrent tracheal granulomas.

The surgical plan was to perform a tracheoplasty under ECMO.



TECHNICAL DECISIONS

- ECMO support (veno-venous) was sufficient for gas exchange during surgery and the patient was successfully weaned off intraoperatively (213 minutes). No ECMO-related complications occurred.
- A total intravenous technique was performed through TCI system (correlation with pediatric Paedfusor model through computerized software) and bispectral monitoring was used setting a BIS target of 45-55, dose titration. We used the Marsh adult pharmacokinetic model and adapted it for the child's weight, guided by electroencephalographic monitoring and BIS.
- Due to the involvement of the respiratory system in the procedure, we chose to perform a TIVA technique in order to achieve the correct depth of hypnosis. The exchange of airway devices was needed in multiple occasions; after induction of anesthesia we removed the tracheal cannula and replaced it with a 4mm endotracheal tube. During the procedure the endotracheal tube was removed because of the surgical technique.
- When all the patient's blood flow went into ECMO, an increase in Propofol dose from 2,5 to 2,8 mcg/ml was necessary to keep BIS values in the range of 45/55, accordingly with an expected larger distribution volume.
- With this technique we achieved sustained hemodynamic stability, one of the main goals for this patient and his comorbidities. The anesthetic record shows the patient did not require any vasopressor or inotropic drugs.

References

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