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Anaesthetic Management of Cleft Lip Repair with Atrial Septal Defect

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Abstract: Anaesthesia for cleft surgery in infant and children carries a higher risk with general anaesthesia and airway complications due to associated respiratory problems and associated congenital heart defects makes management further more difficult. Surgical repair of the cleft lip/palate in infants and children is a great challenge to the anaesthesiologist due to its peculiar site and association of variety of developmental anomalies and perioperative complications. Hence anaesthetic management of cleft repair needs skilled personnel, meticulous monitoring and post-operative care in an intensive care unit setup to minimise the complications.

1. Introduction

Orofacial clefts are one of the most common birth defects with a reported worldwide incidence rate ranging from 10 per cent to 22.1 per cent per 10,000 live births.Anaesthesia for cleft surgery in infant and children carries a higher risk with general anaesthesia and airway complications due to associated respiratory problems and associated congenital heart defects makes management further more difficult.Surgical repair of cleft lip is usually done at 1-3 months of age for cosmetic purpose and cleft palate at 6 months to 1 year of age to promote facial growth and the speech. The successful outcome following cleft repair depends on the age of the patient,associated morbidities, anaesthetic expertise and post-operative care.Infants with facial deformities are usually associated with abnormal dentition/hearing defect, recurrent ear/upper respiratory tract infection (URTI), pulmonary aspiration and Poor nutrition.

2. Case Report

A 9months old baby weighing 8kgs came for cleft palate repair for which basic lab investigations and preoperative assessment was done.on examination child is active,alert with vital parameters being normal. Airway assessment was done with copur scoring being 6. Routine lab investigations were within normal limits.On auscultation a systolic ejection murmur was heard at left upper sternal border following which echo cardiography was done which revealed atrial septal defect with ejection fraction being 55%.

On the day of surgery patient was shifted to operation theatre, baseline monitors were connected and intravenous access was secured with 22G venflon. General anaesthesia was given with propofol, Fentanyl, atracurium dosage according to weight of the patient.
Direct laryngoscopy with Mcintosh blade No.1 was performed after achieving adequate depth of anaesthesia. Bilateral air entry confirmed along with waveform capnography and mechanical ventilation started. Throat packing was done. Anaesthesia was maintained with FiO2 50% by adding air, Sevoflaurane 1.5-2%. The surgery lasted for 90 mins, after which anaesthetic agent was turned off and Inj. Paracetamol 120mg IV and Inj. Dexamethasone 2mg IV were administered.Patient was reversed with Neostigmine and glycopyrrolate after resumption of spontaneous respiration.
The child was then extubated after achieving adequate tidal volume. Following extubation child developed upper airway obstruction and SpO2 levels decreased to 60%. .Immediately nasopharyngeal airway was inserted and face mask was applied with 100%O2 along with jaw thrust.SpO2 improved to 95%. Adrenaline nebulization done and he was observed in PACU postoperatively for 24 hrs.

3. Discussion

Surgical repair of the cleft lip/palate in infants and children is a great challenge to the anaesthesiologist due to its peculiar site and association of variety of developmental anomalies and perioperative complications.

Both the heart and palate develop in gestational weeks 5 through 9 as part of the cardio craniofacial development module, which relies on complex signaling processes among interdependent embryonic tissues.
Anomalous development of the heart and palate may occur as a result of shared genetic or environmental factors during embryogenesis. However, the molecular mechanisms underlying non-syndromic clefting are poorly identified and no genetic marker or environmental factor has been identified that is responsible for nonsyndromic malformation of both the heart and palate.Post-operative respiratory obstruction may result following the closure of wide cleft palate or syndromic cleft associated with hypoplasia of mandible, haematoma or due to accidental left-over packs.Large defect leads to the eventual development of pulmonary vascular obstructive disease – Eisenmenger's syndrome. Morbidity in these patients is due to chronic cyanosis, thromboembolic events, cerebrovascular complications and the hyperviscosity syndrome.

Hence anaesthetic management of cleft repair needs skilled personnel, meticulous monitoring and post-operative care in an intensive care unit setup to minimise the complications.

4. References

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