



ANAESTHESIA MANAGEMENT IN CLEFT LIP AND PALATE PATIENTS. A CASE SERIES OF 5 PATIENTS

Anaesthesiology

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ABSTRACT

Cleft lip and palate are the most common craniofacial abnormalities worldwide. If left uncorrected, cleft lip can have significant social and psychological consequences for both the child and family. A cleft palate interferes with the feeding and speech as consequence of velo-pharyngeal insufficiency. Clefts are not simply surgical problem but individuals with clefts or other craniofacial anomalies require the coordinated care of several specialists such as pediatricians, plastic surgeons, anesthesiologists, neonatologists, dentists, as well those in speech pathology, otolaryngology, audiology, genetics, nursing, mental health and social medicine. We here discuss 4 cases of cleft lip/palate patients posted for cleft surgery & 1 case of neonate other than cleft surgery.

KEYWORDS

CLEFT LIP AND PALATE, ANESTHESIA MANAGEMENT

INTRODUCTION

"A surgeon wrote in 1912 that the difference to the surgeon between doing a cleft lip or palate operation with a thoroughly experienced anesthetist and an inexperienced one, is the difference between pleasure and pain!"(3).

Cleft of a lip and/or a palate is a congenital birth defect which is characterized by complete or partial cleft lip and/or the palate. Cleft lip and palate anomaly constitute nearly one-third of all congenital malformation of the craniofacial region with an average worldwide incidence of 1 in 700. Based on rough estimates, it is suggested that approximately 35,000 newborn cleft patients are added every year to the Indian population. Embryologically clefts arise due to failure of fusion or breakdown of fusion between the nasal & maxillary processes & the palatine processes that occur around 8 weeks of gestation(2). If not corrected a cleft lip or palate can lead to dental problems, ear infection, and possible hearing loss, feeding difficulties, speech problems & low self-confidence. The optimum anesthetic management will depend on the age of the patient, presence of variety of clefts, availability of monitoring devices, expertise of anesthetist, & availability of level of postoperative care.

PREOPERATION EVALUATION

Patient's routine information such as age, height & weight was noted. Special history like upper respiratory tract infection, chronic rhinorrhea, airway obstruction, snoring, difficulty in feeding & breathing were elicited. Perinatal background such as pregnancy evaluation, kind of delivery, complications during delivery, need of NICU admission were also ruled out. Patients were taken for surgery with the relief of respiratory tract infection of approximately 4 to 6 weeks of duration. History of congenital cardiac anomalies & craniofacial deformities with different syndrome were elicited. Complete physical examination, including the possibilities of difficult venous access & airway was done. All routine investigation were normal including echocardiography. Testing for COVID 19 by RT PCR done for all patients preoperatively.

CASE 1: A 7 Months old male child weighing 9kg with 10.2 gm of hemoglobin & total leucocytes count of 10,000/cumm, with congenital bilateral cleft.

CASE 2: A 7-month-old male child weighing 7.4kg with 10.2gm of hemoglobin & total leucocytes count of 9,800/cumm, with congenital complete left side cleft lip & cleft palate.

CASE 3: A 7-month-old male child weighing 6kg with 10.1gm of hemoglobin & total leucocytes count of 9,900/cumm, with congenital

incomplete left side cleft lip.

CASE 4: A 9 months old male child weighing 7kg with 10.1gm of hemoglobin & total leucocytes count of 9,900/cumm, with congenital complete right-side cleft lip with cleft palate admitted for cleft lip repair.

CASE 5: A 1 day old female child weighing 1.6kg with 19.2gm of hemoglobin & total leucocytes count of 18,300/cumm, with congenital complete right sided cleft lip – cleft palate, polydactyly in 3 limbs, mild hydronephrosis with upper hydroureter on both side, with no active respiratory infection, admitted for umbilical hernia of 22mm size (omphalocele) repair. PICC LINE – PERIPHERALLY INSERTED CENTRAL CATHETER was inserted before extubation under anesthesia. It is a catheter that enters the body through the skin at a peripheral site, extends to the superior vena cava & stays in place (dwells within the veins) for several days or weeks. It is used when more than 2 weeks of the treatment needed

Figure 1



Case 2

Figure 2



Case 4

Figure 3



Case 5

ANESTHETIC MANAGEMENT

Informed & written consent of the parents about the anesthesia was taken & possibility of adverse events was explained. In Operation Theater IV cannula of 24g inserted into the largest vein on the forearm under inhalational anesthesia & Isolyte P was started and calculated according to Holiday Segar's formula. All patients were premedicated with Intravenous Glycopyrrolate 0.004mg/kg. Intravenous Ondansetron 0.15mg/kg Intravenous Fentanyl 1 mcg/kg except case 5 was given. Inj paracetamol 10mg/kg. All patients were monitored throughout surgery with ECG, SpO2 & ETCO2. Preoxygenation done with 100% O2 for 3 minutes. Induction – Inhalational (Sevoflurane) + Intravenous (inj propofol 1-1.5mg/kg + inj scoline 2mg/kg). FOR CASE 1, 2, 3, & 4 : Patient intubated with Appropriate size Oral RAE ET tube, which passes out over the lower lip, B/L air entry confirmed & tube was fixed at the middle of lower

lip. Oral packing was done by Anesthesiologist in cleft lip & by Surgeon in cleft palate or lip with palate. Difficult laryngoscopy was observed in patients with complete cleft lip defects as in case 2 & 4 more so when the defects was present over the right side. Oral RAE no 4 uncuffed used in the 4 cases discussed above. Head ring & Roll under the shoulder were used to extend the neck & eyes were protected with gauze piece. FOR CASE 5: Patient was intubated with ET TUBE number 2.5mm portex uncuffed, B/L air entry confirmed. Tube was fixed at right sided angle of mouth. Anesthesia was maintained by controlled ventilation with tidal volume of 6-8ml/kg & frequency of 16-18 cycles/min with 100% O₂, N₂O, Sevoflurane & Inj Atracurium 0.5mg/kg. In CASE 5, PCV 10 ml given to the patient slowly intraoperatively. Surgeon injected lignocaine+ adrenaline (5mcg/kg) into the surgical field to reduce blood loss, improve the surgical field and provides analgesia.

EXTUBATION

After completion of surgery, thorough oral suctioning was done, in CASE 1 TO 4, oral pack was removed under vision after doing check laryngoscopy by anesthesiologist & after ensuring a clear airway, Neuromuscular blockade was reversed with Inj glycopyrrolate 0.008mg/kg & Inj neostigmine 0.05mg/kg. Extubation was undertaken only after the return of consciousness with protective reflexes intact. A tongue stitch was placed in patients to prevent airway obstruction. This pulls the tongue forward away from the posterior pharyngeal wall as a treatment for postoperative airway obstruction.

POSTOPERATIVE ANALGESIA and POSTOPERATIVE MANAGEMENT

All the patients were closely observed in recovery room for evidence of bleeding / airway obstruction & only returned to the ward when fully awake. Supplemental oxygen was given until the children were fully awake. Paracetamol Suppository 40mg/kg loading dose followed by 20mg/kg every 6-8 hours was given via rectal route.

DISCUSSION

Cleft lip/palate (CLP) is more common in males, most common type is left complete clefts of lip & palate. Incidence is greater in first degree relatives of those with CLP. Risk is higher if the mother smokes or drinks over 10 units of alcohol during each month of pregnancy, if she has insufficient folic acid, having obesity, taking medicines for epilepsy – topiramate or valproate during the first 3 months of gestation. Suggested theory for failure of fusion include mechanical obstruction by tongue position, structural hypoplasia or primary breakdown. Clefts of the lip & alveolus can be diagnosed reliably at the 18-20-week antenatal ultrasound scan (2). Clefts of the palate are not easily seen by ultrasound & can only be excluded by examination of the palate after delivery. CLP results in difficulty in feeding since birth, suckling, swallowing may be impaired. The neonate may fatigue during feeding leads to inadequate weight gain & nutritional abnormalities. Chronic upper respiratory tract infections are common secondary to regurgitation of fluids & food predisposing them to lower respiratory tract & ear infections. Cleft palate leads to problems with phonation of the palatal consonants such as P, R, T, and D etc. in children with CLP, alveolar ridge, a ridge of bone that supports the upper teeth and gums, might not fully develop and tooth decay is also more common.

There are different methods of describing cleft types e.g. the LASHAL CODE. 'CODE' indicates area of the mouth affected by the cleft. An uppercase letter indicates a complete cleft, and lowercase letter indicates an incomplete cleft, and a dot or dash indicates nonaffected area. 1) LASHAL complete bilateral cleft lip and palate; 2)l left incomplete unilateral lip only, no palate involvement; 3) ...S.. soft palate only, no lip involvement.

There is a RULE OF TEN for defining timing of surgery. For CLEFT LIP it is – 10pounds, 10gm of Hb, 10 weeks of age, and 10,000TLC. CLEFT PALATE – 10kg, 10gm of Hb, 10 months of age and 10,000TLC. Cardiac abnormalities such as Tetralogy of Fallot, atrial septal defect, and ventricular septal defects are the most frequent associate comorbidity in children with clefts. There are syndromes associated with cleft lip and palate anomaly such as 1) Pierre Robin syndrome having cleft palate, small jaw and Glossoptosis, 2) Treacher Collins Syndrome having small jaw and mouth, Choanal atresia, Ear and Eye abnormality, 3) Goldenhar syndrome having Hemifacial and Mandibular Hypoplasia, Abnormalities of Cervical spine, external Ear and Eye abnormalities. Anesthesia related problem associated with

these syndromes are Difficult Intubation and Chronic Airway Obstruction as they get older.

Regional analgesia provides excellent analgesia postoperatively like Infraorbital nerve block for Cleft Lip surgeries and maxillary nerve block for cleft palate surgeries.

CONCLUSION

Proper preoperative evaluation to rule out upper respiratory tract infection, congenital cardiac anomaly (by ECG and 2D Echocardiography), vigilance to deal with difficult airway and providing adequate analgesia leads to a successful outcome in patients of Cleft lip and palate.

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