Original Research Paper

Volume-7 | Issue-11 | November-2017 | ISSN - 2249-555X | IF : 4.894 | IC Value : 79.96

Anesthesiology

AIRWAY MANAGEMENT OF A NEONATE POSTED FOR EXCISION OF PLUM SIZED TONGUE TERATOMA: OUR EXPERIENCE

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ABSTRACT Teratomas are defined as true neoplasm composed of tissues from all three germinal layers and may exhibit variable levels of maturity. Most often they are benign in their histology. When neonatal airway is associated airway pathology, it superimposes more and more difficulty on an already potentially difficult airway. Airway management in neonates with tongue teratoma, is a nightmare for anesthesiologists, especially in view of age (non cooperation), bag and mask ventilation (chubby cheeks and inadequate mask size), difficulty in visualising glottis (anteriorly placed larynx and in our case reduced room for laryngoscopy), extrinsic and intrinsic pressure on airway causing distorsion and risk of bleeding. In case of anticipated difficult airway with intra-oral masses, our goals of management should be careful assessment of the airway, optimization, preparation of good anesthetic plan, provision for emergency surgical airway, look for associated congenital lesions, check for laryngoscopy (optional).

KEYWORDS : Teratoma, Airway, Neonate

Introduction:

Teratoma are true neoplasms composed of multiple tissues, foreign to the anatomic site of origin[1,2]. The most common sites are the sacrococcyx, anterior mediastinum, testicle, ovary, or retroperitoneum[4,5]. Nasopharynx and cervical region are the most common sites[6] among head and neck. Congenital malformations such as cleft palate, bifid tongue, dorso-nasal fistula and nasal dermoid cyst may be associated with teratoma of oropharyngeal region in 6 % cases[7,8]. Pure oral presentation involving tongue is rare[6] . We report a rare presentation of large tongue teratoma in neonate and anesthesia plan for airway management that was successfully treated with surgery.

Case report:

A 5 day old male neonate weighing 3 kg, was scheduled for tongue teratoma excision. He was referred from other hospital to pediatric surgery outpatient clinic with chief complaint of plum sized tongue mass protruding out from oral cavity, feeding difficulty and associated mild respiratory distress. Computed tomography demonstrated no extension to pharynx along with no vessel encasement.

On examination the tongue mass was not only filling his whole oral cavity but also protruding out of the mouth, distorting normal facial contour and there was no associated anomaly. On visualization, there was no clear space above the tongue. We tried to pulled out neonate's tongue gently in order to examine the intraoral space and managed to appreciate one finger space above tongue assuming an oral airway can be inserted if needed. Investigations revealed haemoglobin level of 14.8g/dl and total leucocyte count 5,830/mm^3 platelet count 2,59,000/mm^3. On chest auscultation Respiratory and Cardiovascular system was found clinically insignificant. The parents were counseled concerning the airway difficulty during intubation and possibility of tracheostomy if required. On the day of surgery, the patient was moved to the operating theatre (OT) with intravenous line insitu in right hand. Neonate was positioned supine and routine monitors including electrocardiogram (ECG), pulse oximeter (SpO_2) and noninvasive blood pressure monitor (NIBP) were attached. Heart rate (HR) was 160-170/min and his SpO_2 was 96% on air. In OT, equipments necessary to manage a difficult airway and tracheostomy were kept ready. We were lucky to manage plum sized tongue mass to place inside R.C. mask num 2. Other face masks either too small to ventilate or too big to prevent leak. Preoxygenation was done with 100% oxygen for 5 mins and adequate bag movement was observed. The neonate was premedicated with inj atropine 0.01mg/kg intravenously. Anesthesia was induced with sevoflurane in 100% oxygen. There was inadequate bag movement was noticed inbetween induction. Tongue was pulled out and an oral airway gently inserted above the tongue. When deep plane of anesthesia was reached, oral airway had been removed and tongue was pulled gently forward further with wet gauze by an assistant, giving adequate room for laryngoscopy. Oral laryngoscopy was attempted using Miller's size 0 laryngoscope blade and Endotracheal tube(ETT) 2.5, was secured. Pharyngeal packing was done. Subsequently inj fentanyl 2mcg/kg and inj atracurium 0.25mg/kg were administered intravenously. Ventilation was assisted by paediatric breathing circuit and maintained with sevoflurane 2%, N_2O:O_2(50:50%) and intermittent doses of atracurium. Rectal paracetamol suppository 30mg/kg was also inserted. Surgical excision of mass was proceded uneventfully. The mass was 4*4 cm in size. Histopathological report was revealed immature teratoma with no malignant changes. There was approximately 30 ml blood loss, replaced with whole blood. The surgery was lasted for 90 mins. Reversal was done with inj neostigmine 0.05mg/kg and glycopyrrolate 0.01mg/kg intravenously. Pack was removed and gentle oral suctioning was done. Trachea was extubated in left lateral decubitus position with the child fully awake. He was then moved to anesthesia ICU for observation. Analgesia was maintained with rectal suppository. After 3 days he was discharged from ICU and shifted to ward from where he was discharged with good recovery.

Discussion:

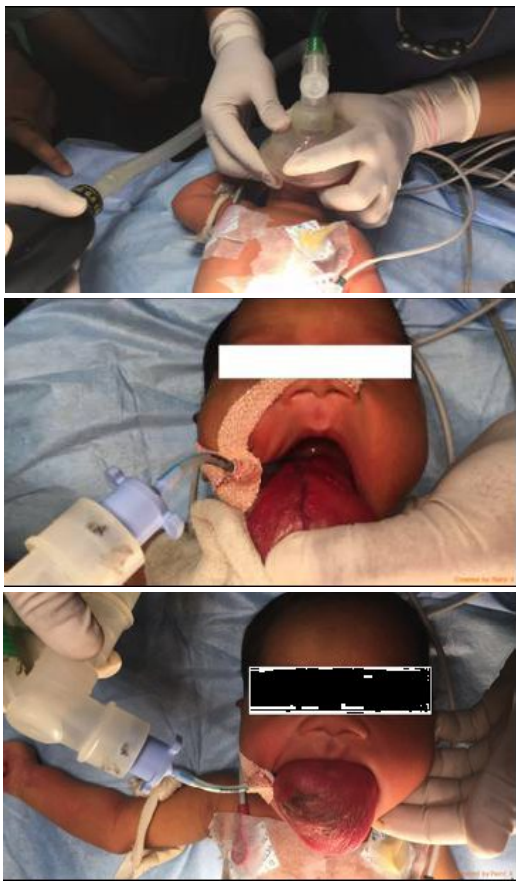
They are true neoplasms originating from pluripotent cells and are composed of tissues from all three germinal layers. These are usually benign in nature [2,3] and are more common in female[6,11].In our case neonate was a male baby and teratoma was found benign in histopathological report.

Oropharyngeal teratoma usually exists as unability in closing mouth and feeding problems[14,15.] Our patient presented with complained of difficulty in feeding and mild respiratory distress in supine position. As prognosis worsens with increasing size of tumour[16], early complete excision was planned. In our case, particular emphasis was given on: careful assessment of the airway, induction of general anesthesia taking all precautions with provision for emergency surgical airway, exclusion of associated congenital lesions, maintenance of spontaneous respiration and establishment of a reliable airway with an appropriate induction agent [17]. During pre anesthesia check up, we assessed intraoral space simply grasping and pulling tongue as much as possible. I used this technique for intraoral space assessment to determine ease for insertion of laryngoscopic blade with avoidance of trauma. The other technique that helped us was big sized face mask and pulling out the tongue during period of apnoea for intermittent positive pressure ventilation. All options eg. intravenous vs mask induction should be discussed prior to the procedure. In our case, intravenous line was already inplace, it was easy to start I.V. induction but we decided to preserve spontaneous respiration during induction due to high chances of non ventilation situation to be encountered. Therefore we decided to first secure the airway with sevoflurane inhalational induction without any sedation which could further compromise already compromised airway. Muscle relaxant was used only after intubating trachea, with the anticipation of complete airway obstruction due to loss of muscle tone under general anesthesia. Fibreoptic nasal intubation would have been the better choice but this technique requires sedation in a neonate and there is non availability of a neonatal scope, so arrangements to surgically secure the airway were kept ready[19]. Tracheostomy under local anesthesia in a moving neonate was impossible. On the other hand, we had in mind the higher rate of

complications and mortality of the tracheostomy in childrens[20,21]. Obstruction and decannulation are the most serious early complications in children[22,23]. These are the points, which made us not to select this approach as the first line. There is very limited data available on optimal anesthetic management for this age group which makes cases with airway compromised in neonates much more challenging.

Conclusion:

In conclusion anesthesia for a neonate with oral teratoma requires expertise, preparation and vigilance. Knowledge of the disease and affected airway along with experience in neonatal anesthesia and would help the anesthesiologist to ensure that all necessary equipment is available and to determine the safest plan for administering anesthesia.



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