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A Case of Unanticipated Difficult Intubation in a Child with Laryngeal Web Posted for Cataract Surgery

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Abstract

We describe case of 9 year old female child who was diagnosed to have congenital bilateral cataract. Child was posted for left eye cataract surgery. Unanticipated difficult intubation is a challenge to the anaesthesiologist. Here we report a rare case of Laryngeal web which was incidentally reported while intubation. We successfully intubated the patient with smaller size, uncuffed 4 no. endotracheal tube.

Keywords: Difficult intubation, Laryngeal web, Cataract surgery

Introduction

Laryngeal web is one of the rare anomaly. Acquired lesions are more common. Congenital webs are uncommon contributing only 5% of all congenital laryngeal lesions with an incidence of 1 in 10,000 birth. Laryngeal web can be acquired by trauma during intubations, infection like tuberculosis and chronic aspiration. Congenital webs are formed during embryogenesis of the laryngotracheal groove during 7th and 8th weeks of gestation. In this form, actively proliferating epithelium temporarily obliterates the developing laryngeal opening. 75% of laryngeal webs occur at the level of the vocal cords and rest are in subglottic or supraglottic location. Patients can have symptoms like mild dysphonia, dyspnoea to stridor, depending on the site (supraglottic, glottic or subglottic), size (percent of glottic involvement), and type (thick or thin) of the web [1].

Undiagnosed laryngeal web making difficult intubating conditions is rare. Laryngeal web may be asymptomatic or reported incidentally while intubation as in our case. But we successfully intubated the patient with smaller size, uncuffed 4 no. endotracheal tube.

Case report

A 9 year old female child came to preanaesthetic checkup OPD with diagnosis of bilateral congenital cataract. She was posted for left eye cataract surgery. Child was full term normal vaginal delivery with birth weight of 2 kg. Her Mother had regular antenatal check up and antenatal period was uneventful. No significant medical or surgical history was present. Child was diagnosed to have congenital bilateral cataract.

On general examination child was playful. Her weight was 18 kg. Pulse was 110/min and BP was 90/60 mm of Hg in right upper limb in supine position. Her respiratory rate was 24/min. On airway examination mouth opening was 3 fingers with MallamPatti grade I. Examination of other systems and investigation was normal. In (2D)

echocardiogram Bicuspid aortic valve with no evidence of stenosis was present with normal ejection fraction 55%.

Preoperative consent was checked. Patient was nil by mouth for 6 hrs before surgery. We premedicated the patient with Inj Ranitidine 25 mg, inj Ondensetron 2 mg, inj Glycopyrolate 0.08 mg, inj Midazolam 0.5 mg, and inj Fentanyl 20 mcg IV, We preoxygenated the patient with 100% oxygen for 5 minutes. Induced with inj propofol 40 mg. Mask ventilation was checked and inj Atracurium 10 mg was given. During intubation under laryngoscopy, there was good visualization of vocal cords with Cormack-Lehan grade I. Intubation with south pole cuffed Endotracheal tube (ET) size no. 6.5 was tried but not negotiated, Then tried with 6 no. & then with 5.5 ET tube but was not negotiated beyond the cords. Child was then ventilated again with bag and mask ventilation for 3 minutes & then tried for intubation with 3 no. ET tube & it was successful. Now this 3 no. ET tube was removed & again intubated with 3.5 no. & finally with 4 no. uncuffed ET tube as sequential dilatation, airentry was found equal. ET tube was fixed and connected to JR circuit. All the attempts were done very gently by senior anaesthesiologist. Maintained on O_2 + N_2O - 50: 50 + Isoflurane 1% + Inj Atracurium 2.5 mg. Inj Hydrocortisone 40 mg was given IV.

Further intra-operative period was uneventful. Patient was reversed with Inj neostigmine 0.9 mg and Inj glycopyrolate 0.16 mg on return of good spontaneous respiratory efforts and child was extubated. Patient was conscious, oriented & respiration was regular and maintained saturation on room air. Child was shifted to Paediatric Intensive care unit (ICU) for observation. Post-operatively patient was advised inj Dexamethasone 4 mg IV and nebulisation with normal saline. Patient was diagnosed to have subglottic stenosis and complete airway investigations were done for confirmation of the diagnosis. Patient was discharged on eighth postoperative day and recovery was uneventful.

Discussion

In anticipated difficult airway we evaluate the patient with detailed upper airway examination, patency of nostrils, radiographic evaluation to detect exact site and extent of laryngeal web as layrngoscopy will not be useful to detect subglottic extension of the web as in our case. In such cases virtual bronchoscopy can provide necessary information.

Unanticipated difficult intubation is always challenging to anaesthetist and specially in paediatric patients where there are maximum chances of early hypoxia. In our case we could manage with small size endotracheal tube after sequential dilatation. Around 8-10 cases of congenital laryngeal web have been reported. All were asymptomatic and were detected during unanticipated difficult intubation as in our case. Some were managed with LMA, some with smaller size endotrachral tube, 1 case required post operative tracheostomy and in 1 case the case was postponed and surgery was rescheduled after 7 days.

We have done retrospective airway evaluation of our patient. In radiogram of cervical spine there was narrowing of airway at C5-C6 level measuring 5.2 mm, below this airway was 8 mm and above it was measured 9.5 mm as shown in Fig. 1 A and 1 B.

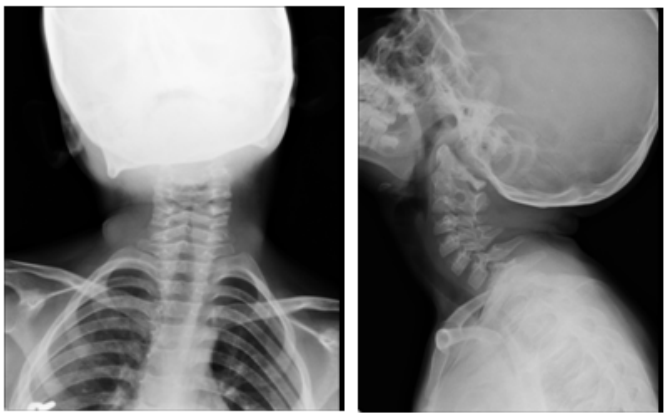

Fig. 1A and 1B: Radiogram of cervical spine

On CT scan examination of airway, there was focal acute angled narrowing was seen in the subglottic region with average anteroposterior diameter of 5.5 mm at the level of C5-C6 vertebra and no narrowing was noted in the tracheal and glottic region as shown in Fig. 2-10.

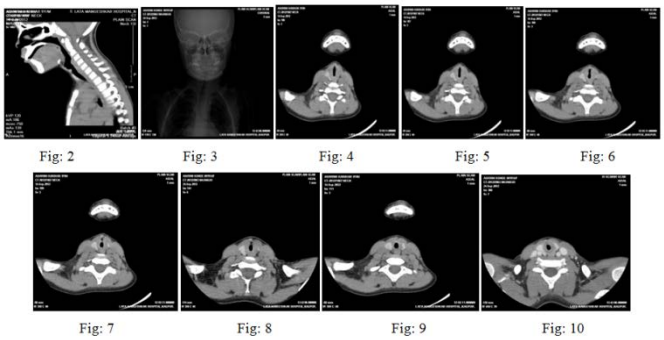

Fig. 2-10: CT scan examination of airway

In Virtual Bronchoscopy findings were subglottic stenosis of grade 3/4 with length of anterior web was < 5 mm and supraglottic region, glottic region were normal with normal vascularity and mucosa as shown in Fig. 11.

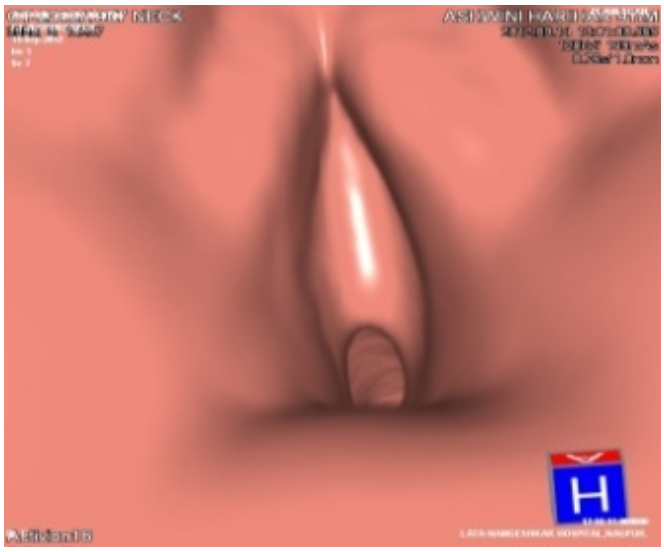

Fig. 11: Virtual Bronchoscopy

Depending on the degree of occlusion of the laryngeal lumen four types are present. In type I 35% occlusion of anterior part of glottis is present, in type II 35 to 50% occlusion of the lumen with visibility of vocal cords, in type III 50 to 70% lumen covered with vocal cords, in type IV 70 to 90 % lumen occlusion with inability to visualize vocal cords [2].

In our case grade II-III type where 50% occlusion of laryngeal lumen was present, but we successfully intubated the patient with smaller size endotracheal tube.

Many associated diseases have been reported with laryngeal webs like Laurence Moon Beidl-Bardet syndrome, Di George syndrome, velocardiofacial syndrome or shprintzen syndrome with deletion of chromosome 22q11 [3], VATER [4], Simpson-Golabi-Behmel syndrome [5], ventricular septal defect [6] and tracheoesophageal fistula [7] are also noted.

Conclusion

Unanticipated difficult intubation is a nightmare for anaesthetists and may result in catastrophic outcomes like cerebral hypoxia and cardiac arrest. We should ready for difficult intubation in each and every case and particularly in paediatric patients where there is minimum margin of safety. To avoid these complications quick decision, prompt action and team work is necessary

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