

Radiological images through an anaesthesiologists' looking glass: Airway management in cervical lipomatosis in an infant

Sir,

Paediatric airways are inherently challenging. Anterior neck masses can advance the level of the difficulty posed. Such patients undergo imaging studies such as computed tomography (CT) or magnetic resonance imaging (MRI) before they are scheduled for definitive surgical intervention. Various softwares to view CT/MRI images can be used by anaesthesiologists to assess and to formulate an airway management plan. We report the case of an 8-month-old child weighing 9 kg with a huge anterior neck mass [Figure 1a] posted for excision.

A small swelling was noticed by the parents at the neck of the child at 3 months of age which gradually grew to the present size. He did not have any symptoms suggestive of airway obstruction. On examination, it was found to be a solid mass. CT images showed a 9.3 cm × 8.0 cm × 8.6 cm lesion suspected to be lipomatosis. There was displacement of the floor of mouth and larynx to the right with resultant narrowing of the airway [Figure 1b and c]. Along with the printed CT images, we also received a soft copy of the CT scan given on a digital versatile disc that could be



Figure 1: Clinical picture of the patient, (a) computed tomography image of deviated larynx (at the level of epiglottis) from mid vertebral axis, (b) measurements of airway lumen (at the level of first tracheal ring) using OsiriX Lite™ (c)

viewed on the digital imaging and communications in medicine (DICOM) Viewer. The Difficult airway cart was kept ready. Front of neck access in this patient would have been technically difficult due to the huge mass covering an entire anterior aspect of the neck. Otorhinolaryngologists were kept on standby for rigid bronchoscopy.

We pre-medicated the child with injection midazolam 0.05 mg/kg intravenous to achieve easy parental separation; a crying child would have resulted in increased airway secretions and worsened the already narrowed airway calibre. Sevoflurane was administered using Jackson Rees' circuit and mask to achieve a minimum alveolar concentration of 1.5. We used a paediatric optical laryngoscope, Airtraq® (Prodol Ltd., Vizcaya, Spain) and intubated the trachea with a 4.0 mm internal diameter endotracheal tube (ETT). Nasal oxygen was provided continuously during our attempt to secure the airway. Muscle relaxant injection atracurium 0.5 mg/kg was given after confirming ETT placement. Patient maintained stable haemodynamics throughout surgery. He was extubated and shifted to the recovery room for observation. Recovery was uneventful.

Whenever any patient undergoes CT scan, the diagnostic laboratory provides a hard copy (CT plates) and a soft copy (digital versatile disc). CT plates have too many images and create more confusion in anaesthesiologists' mind. However, with the help of DICOM Viewer and the softcopy provided one can procure customised images. These DICOM Viewers can be freely downloaded. The OsiriX Lite™ (demo version, Pixmeo, Geneva, Switzerland) imaging software allows Virtual endoscopy, a novel tool which can also be used to generate high-quality airway images to generate a 'fly-through' airway reconstruction.^[1]

The CT images showed deviated larynx from the midline [Figure 1b]. Supraglottic airway devices could not have been used for ventilation or as an intubation conduit since the median axis of larynx did not align with that of the oral cavity.^[2] We opted for videolaryngoscopy as the first plan of intubation since the magnified view would have benefited not only the anaesthesiologist performing laryngoscopy but also the assistant to provide optimum external laryngeal manipulation. Cystic lesions have the advantage of the reduction in size after aspiration.^[3] However, in our child, the lesion was solid in consistency, hence, pre-operative aspiration to improve the airway was not an option. An awake fiberoptic intubation,

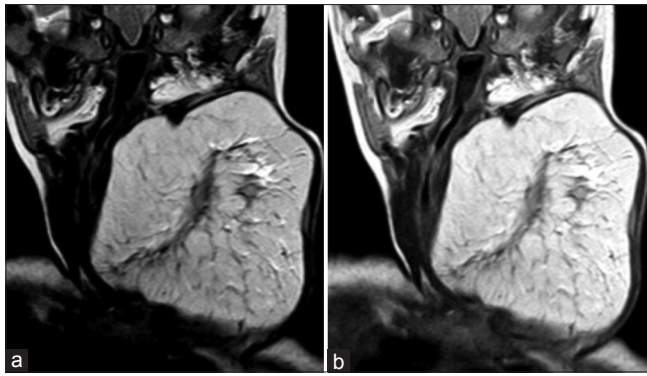


Figure 2: Magnetic resonance imaging coronal section Original, (a) after contrast changes using OsiriX Lite™ (b)

though a first choice in adults, was not possible in our patient.

Three dimensional reconstruction of the airway^[2] as well as a simulated virtual bronchoscopic movie^[4] using CT images have been described in the management of difficult airway.

Using DICOM viewer we can make contrast changes and delineate the airway precisely [Figure 2]. Customised reconstruction of CT images will give a better idea about level and extent of airway narrowing/deviation, helping the anaesthesiologist to formulate the best and safest plan for securing the airway.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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