Unsuspected difficult intubation caused by a laryngeal web

Z.-K. CHONG, B. JAWAN, Y.-Y. POON AND J.-H. LEE

Summary
We report a case of unsuspected difficult intubation in an adult caused by laryngeal web formation in the anterior commissure of the larynx. After induction of anaesthesia, most parts of the posterior commissure of the vocal cords were seen clearly at laryngoscopy, but a 7.5-mm internal diameter (id) tracheal tube could not be advanced below the level of the vocal cords because of resistance. Intubation was re-attempted several times after oxygenation by mask with trials of smaller tubes. Finally, a 5.0-mm id cuffed tube was passed successfully through the vocal cords and secured in place. Because of the unexpected difficulties in intubation, an otolaryngologist was consulted to examine the larynx with a microscope. A web of 0.5 cm in the anterior commissures was found which caused subglottic stenosis. (Br. J. Anaesth. 1997; 79: 396–397).

Key words

We present a rare case of difficult intubation in an adult after induction of anaesthesia caused by a laryngeal web.

Case report
A 65-yr-old male, ASA II, was admitted for radical nephroureterectomy because of malignant obstructive uropathy. Past surgical history included laparotomy under general anaesthesia more than 30 yr previously and extracorporeal shock wave lithotomy (ESWL) twice under i.v. general anaesthesia without tracheal intubation in the past month. Medical history revealed that pulmonary tuberculosis had been diagnosed and treated decades ago. Mild hoarseness without dyspnoea was noted. Laboratory data, including electrocardiogram, haematology and serum electrolytes, were normal. Chest x-ray revealed minimal fibrotic pulmonary tuberculosis in the right upper lung. General anaesthesia was induced with fentanyl 100 μg and 2.5% thiopentone 300 mg i.v. No premedication was given.

Suxamethonium 60 mg was given to facilitate tracheal intubation. Most parts of the posterior commissure of the vocal cords were seen clearly at laryngoscopy, but a 7.5-mm internal diameter (id) tracheal tube could not be advanced below the level of the vocal cords because of resistance. Intubation was re-attempted several times after oxygenation by mask with trials of smaller tubes. Finally, a 5.0-mm id cuffed tube was passed successfully through the vocal cords and secured in place. Because of the unexpected difficulties during intubation, an otolaryngologist was consulted to examine the larynx with a microscope. A web of 0.5 cm in the anterior commissures was found which caused subglottic stenosis. The arytenoids, vocal cords and epiglottis were free of disease or tumour. The consultant advised no treatment because the web caused only mild hoarseness without any other symptoms. Bronchial culture was obtained. The operation was carried out as scheduled and the patient’s trachea was extubated uneventfully in the post-anaesthesia recovery room. There was no respiratory problem noted during hospitalization. The patient was discharged from hospital 1 week later.

Discussion
The cause of difficult intubation in our case was extremely rare. There are only a few reports of difficult intubation caused by laryngeal web in the literature. All were not suspected before induction of anaesthesia and most resulted in morbidity. Emergency tracheostomy was necessary before operation to maintain airway patency in one adult, and after operation in two children because of airway obstruction after extubation. Severe respiratory distress was also noted in a child. Laryngeal webs consist of thin transparent or thick fibrous membranes and may be congenital or acquired. Congenital webs, usually symptomatic in infancy or early childhood, are the result of incomplete recanalization of the primitive laryngeal airway. Their incidence has been estimated at approximately 1 in 10 000 births. Seventy-five percent of laryngeal webs are located at the level of the vocal cords, the remainder being either sub- or supraglottic. The
Difficult intubation caused by a laryngeal web

The majority of glottic webs lie anteriorly between the cords; only 1–2% are located posteriorly. The disease is suggested by clinical symptoms such as stridor, weak crying and feeding problems, but endoscopic vision is essential for a definite diagnosis. Usually the symptomatic laryngeal web is treated by one of the following surgical procedures: surgical division, endoscopic insertion of a keel or laser treatment. Webs without any clinical symptoms are not treated as the incised and divided adjacent cords may adhere together because of scarring.

The aetiology of laryngeal web formation in our patient is not known. Congenital anomaly, post-inflammatory or post-traumatic injuries may be possible causes. Our patient underwent laparotomy more than 30 yr ago without apparent complications. He also had pulmonary tuberculosis diagnosed and treated decades ago. Both of these may be possible causes of laryngeal web formation in this patient. Sputum culture for tuberculosis was negative.

Airway management of unsuspected laryngeal web is clinically the same as managing patients with subglottic stenosis. Different sizes of tracheal tube should be available during induction of anaesthesia and the tracheal tube should not be advanced with force when resistance is encountered. Further traumatic injuries to the cords should be avoided as it may induce scarring and enhance web formation in the future, especially if both sides of the cords are injured. Web formation in the posterior commissures has been reported after intubation; if this is encountered, it is best to awake the patient, postpone the operation and consult an otolaryngologist for evaluation of the airway anatomy. For emergency surgery, examination of the larynx with a flexible fiberoptic laryngoscope under local and topical anaesthesia before re-attempting intubation may minimize traumatic injuries to the vocal cords. Increased risk of laryngospasm, trauma and distressing iatrogenic airway obstruction while participating in awake fiberoptic laryngoscopy should always be borne in mind. Anaesthesia via a laryngeal mask, which is not traumatic to the vocal cords, would be an alternative choice. Another important point is postoperative follow-up of the patient as local bleeding, oedema and further formation of web may occur. The patient should be warned of these complications and the condition should be mentioned to the surgeon and anaesthetist if surgery is contemplated in the future.

References