ACUTE RESPIRATORY OBSTRUCTION FROM A VEIL

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Introduction
Respiratory obstruction is a life-threatening event whenever it occurs. It is an event that requires prompt intervention as death can occur almost immediately from hypoxia. Even in survivors, complications such as pulmonary oedema, cerebral ischaemia and adult respiratory distress syndrome may occur. There are several known causes of acute airway obstruction ranging from foreign body in the upper airways, infection and goitre to obstructive airway diseases. Upper airway obstruction by Ascaris worm has also been reported. This is a report of a case of uncommon cause of airway obstruction arising from mode of dressing and normal domestic activity.

Case report
A 45-year-old Nigerian Muslim housewife presented at the Casualty with a two-hour history of progressive difficulty in breathing, vomiting and deteriorating level of consciousness. She was well until about two hours prior to presentation when she had gone to grains-grinding centre to grind her guinea corn for the day’s meal. She was dressed like a typical Muslim woman in a long wrapper and a veil (hijab) covering her head, neck and shoulders and exposing only her face. As she bent down to collect her basin of ground guinea corn from under the machine, the belt of the rotating machine trapped her veil. She was consequently dragged towards the machine with the veil, which immediately formed a tight noose around her neck. The machine was switched off in order to rescue her and relieve respiratory obstruction. On being rescued, she complained of neck pains, especially on swallowing saliva and difficulty in breathing which got progressively worse and she had to be rushed to the hospital. She was said to have vomited once on the way to the hospital.

On examination, she was drowsy, restless, severely dyspnoeic and tachypnoeic, with audible inspiratory stridor. Her neck was hyperaemic and bruised. While lots of frothy sputum exuded from her mouth. There was flaring of the alae nasi and use of accessory muscles of respiration was observed. Her respiratory rate was 60/min. The trachea was central. There were fine rhales and diminished air entry in both lungs, she had a pulse rate of 110/min and blood pressure of 100/60 mmHg.

A diagnosis of acute asphyxia following trauma was made by the casualty officer and resuscitation commenced. She was given oxygen by ventimask. Venous access was gained using a 20G venflon cannula and 500ml of 5% dextrose in 0.9N saline was set up. She also had 200mg hydrocortisone and 250mg aminophylline intravenously. She was noticed to be more cyanosed, dyspnoeic and not responding to commands despite the above resuscitative measures so a call was put through to theatre for the anaesthesiologist to assist in airway management and resuscitation.

On arrival at the casualty department, the anaesthesiologist found a severely dyspnoeic and cyanosed patient. The pulse was thready with a rate of 54/min. This prompted the decision to intubate and the intravenous atropine 0.6mg, Ketamine 50mg were given. Blind naso-tracheal intubation was done using a lubricated size 6.5mm Mallinckrodt naso-tracheal tube. Oxygen from a bull nose cylinder was connected to the nasotracheal tube via an Ambu bag and the lungs ventilated. Furthermore 40mg Furosemide was given intravenously. A size 4 McIntosh laryngoscope blade was inserted in the oropharynx and gentle suctioning of the pharynx was done under direct vision. Inspection of the oropharynx revealed no foreign body but the tissues looked congested. There was improvement in her colour, pulse rate and volume after about thirty minutes. She resumed spontaneous respiration and was no longer cyanosed even with breathing room air. She regained consciousness about an hour after intubation and was sedated with intravenous diazepam 10mg. The nasotracheal tube was left in situ and she was nursed in the casualty observation room. Twenty-four hours after admission, she was taken to the operating theatre where there were facilities for rapid re-intubation should the need arise. Tracheal extubation was done without problems. Her recovery was uneventful and she was discharged home the next day.

Discussion
The anaesthetist is sometimes called upon to secure the airway in clinical settings different from that in the operating room. This can be difficult and quite challenging because the clinical problem is often...
different from normal general anaesthesia conditions where appropriate facilities are available. This patient was rushed to the casualty department and the anaesthetist called in to maintain a patent airway as a matter of urgency. Fortunately, a pre-packed resuscitation box is always available so that whenever a call for resuscitation comes from any part of the hospital the anaesthetist who receives the call just takes the box and rushed to the scene. This resuscitation kit is a light plastic box containing a functioning laryngoscope, endotracheal tubes (various sizes), two ampoules each of atropine, aminophylline, adrenaline, one bottle of ketamine, one bottle of suxamethonium bromide, needles, ampoules of sterile water, syringes and cannulae. The anaesthetist who uses the box has a responsibility to replenish any items used. This arrangement helped to reduce the delay in responding to the emergency.

There are various ways of managing acute airway obstruction. The ability to manage an obstructed airway successfully requires skill and quick thinking. The specific line of management would depend on the cause of the obstruction, the urgency as well as the available facilities at that location. Blind nasal intubation was done in this case because it was the fastest way of securing a patent airway that the anaesthetist was conversant with.

This patient was strangled by her veil. Strangulation resulted in congestion and inflammation of the laryngeal and pharyngeal tissues with resultant supraglottic oedema and respiratory obstruction. When the obstruction was relieved by freeing her from the belt of the grinding machine, dyspnoea got progressively worse. This dyspnoea may have been due to the development of acute pulmonary oedema. Transient, self-limiting, non-cardiogenic pulmonary oedema occurring immediately after relief of acute upper airway obstruction has been reported. The mechanism for development of pulmonary oedema following strangulation is related to the development of negative intra pleural pressures within the lungs as a result of forced vigorous attempts to inspire against an obstructed airway. Patients with upper airway obstruction usually compensate well initially but when exhaustion sets in, deterioration can be quite rapid. Because airflow is turbulent during respiratory obstruction, the resistance to airflow depends on the density of gas inhaled. Administering a mixture of helium in oxygen may reduce the density of oxygen and improve airflow. This would give time to prepare for a planned endotracheal intubation or tracheostomy in the operating room.

Other methods of managing acute airway obstruction include awake nasal intubation, use of laryngeal mask airway (LMA), cricothyroidotomy, fibreoptic laryngoscopy and tracheostomy. Awake nasal intubation was not attempted because that would require considerable time and patient cooperation is required. Fibreoptic laryngoscopy and intubation is another management option in securing difficult airways. Bullingham et al have used it in the management of an impaled neck. This option is applicable where there are appropriate equipment, expertise and time. In this patient there was shortage of time and lack of equipment. The use of the LMA in emergency airway management has been advocated even in cases of obstruction due to supraglottic oedema. This would be ideal if available, although positive pressure would be required after insertion to create a passage for air to enter the larynx as advocated by King et al.

Cricothyroidotomy is another emergency airway management method. It can however, be difficult where there is oedema distorting the structures. Tracheostomy is technically difficult in a patient with respiratory distress and Desjardins et al have ruled it out as the airway of choice in emergency situations. They rather advocate orotracheal intubation even in patients with signs of airway obstruction.

The urgency to establish an airway in this case was dictated by dyspnoea, cyanosis, bradycardia and deteriorating level of consciousness, which was not responding to oxygen administration by mask. Blind nasal intubation was the least traumatic airway management option available under the prevailing circumstances.

References