

Emergency Tracheal Reconstruction in a Patient of Tracheal Stenosis

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CASE REPORT

A 30 year old female patient presented with complaints of progressive difficulty in breathing for the last 20 days. There was no diurnal variation and no history of cough, fever or any cardiac complaints. On history it was found that patient was mechanically ventilated for 15 days due to organophosphorus poisoning. On examination there was cyanosis, active accessory muscles of respiration and wheezing. Hence a provisional diagnosis of post intubation tracheal stenosis was made and patient was nebulised with bronchodilators and given deriphylline and antibiotics.

X-ray chest showed reduced air column at the level of C6-C7. Bronchoscopy revealed severe tracheal stenosis 5 cm away from the vocal cords with granulation tissue below larynx on left side. But the procedure triggered oedema in the trachea and airways causing sudden increase in respiratory rate (35/minute), dyspnoea and cyanosis. Patient was put on 100% oxygen and nebulised with bronchodilators and adrenaline and emergency tracheal reconstruction was planned. In operation theatre, patient could be ventilated (though with difficulty) and an endotracheal tube of size 3.5 mm only could be passed due to profound oedema. Patient was ventilated with it till tracheal resection when 6.0 mm cuffed endotracheal tube was inserted in distal segment. There was distorted infracricoid trachea admitting only a 6F size infant feeding tube. Wall of the trachea was thickened with eccentric lumen. The length of the stenosed segment was 2.5 cm with peritracheal adhesions. Post operative period was uneventful with usual management of tracheal reconstruction and patient was discharged after 10 days.

DISCUSSION

Tracheal stenosis due to prolonged intubation is a known complication occurring due to the pressure exerted by the cuff on the tracheal wall mucosa. The mucosal capillary pressure is exceeded when cuff pressure is more than 25-30 mmHg causing mucosal ischaemia, ulceration and chondritis of tracheal cartilages which heal by fibrosis leading to tracheal stenosis.² To reduce the incidence of tracheal stenosis large volume low pressure cuffs were

developed, which are the only ones used in modern practice, but still the incidence of post intubation tracheal stenosis remains significant (11% in one prospective study³). Incidence of clinical stenosis is probably directly proportional to duration of intubation. Whited⁴ found a 12% incidence of laryngeal stenosis in patients with tracheal intubation for 11 days or longer, a 5% incidence between 6-10 days of intubation, and a 2% incidence with less than 6 days intubation. But tracheal stenosis can be caused by intubation lasting as short as 24 hour.⁵ Preventive measures like cuff pressure measurements and periodic release of cuff pressures should be undertaken in all ventilated patients. Habit of inflating the cuff only just to prevent leakage around cuff should be inherent with all resident and technicians.

Patients with tracheal stenosis can present after a variable period of time and mostly it takes 3 months as symptoms become significant only when trachea is stenosed by more than 30%.⁶ Patients commonly present with shortness of breath with inspiratory stridor and/or expiratory wheeze. This is often misdiagnosed for asthma. A history of progressive dyspnoea and wheeze unresponsive to bronchodilators, coupled with a high index of suspicion in patients who have recently undergone a prolonged period of tracheal intubation, are probably the most important indicators of tracheal stenosis. Plain radiography, CT scan and bronchoscopy are useful in diagnosing and detailing the stenosis. There is characteristic reduction in peak expiratory flow with plateau in expiratory curve in flow loop studies. Linear tomography has been recommended as the technique of choice.⁶

Steroids, both intravenous and inhalational have been used to treat some cases of tracheal stenosis, may be with predominant oedema.⁷ Laser excision has been undertaken in some cases with variable results.⁸ Rigid bronchoscopy and tracheal dilatations is the procedure of choice in less serious cases and to provide time for surgical reconstruction in critical patients. Tracheal dilatation with stenting has also been described.⁹ Tracheal reconstruction remains the definitive procedure in serious cases, but with mortality upto 3%.¹⁰

To summarize, post intubation tracheal stenosis is a

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significant complication, specially with prolonged intubation and so all preventive measures should be undertaken. A high index of suspicion of tracheal stenosis should be kept in any patient with history of tracheal intubation presenting with dyspnoea and wheeze, particularly unresponsive to bronchodilators.

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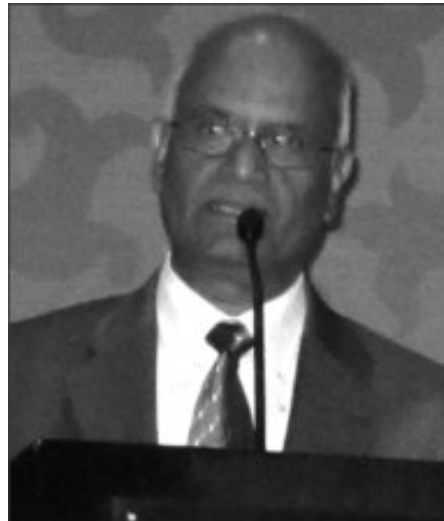
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CONGRATULATIONS

To

Dr. Hari Har Dash

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For having been awarded **“2010 Teacher of the year Award”** by the International Society of Neurosciences in Anesthesiology and Critical Care”

on

15th October, 2010 at San Diego, USA

on its annual conference.