

Management of a Case of Stridor Post-Tracheostomy

Dr. A. Ramakrishna Rao, Dr. M. Bharathi, DrSamson,

1. Associate Professor 2. Assistant Professor 3. Postgraduate

Department of Anaesthesiology and Critical Care, Siddhartha Medical college, Andhra Pradesh.

Abstract: A 20 year old male patient presented with complaints of shortness of breath with exacerbations on exertion and was admitted in our hospital. He had a past history of organophosphorus poisoning for which he was mechanically ventilated through tracheostomy tube. He is now diagnosed with retrosternal tracheal stenosis and posted for tracheal reconstruction.

Keywords: Shortness of breath, Tracheostomy, Tracheal stenosis, Tracheal reconstruction

I. Introduction

Tracheal stenosis is a delayed but a serious complication of tracheostomy. It is insidious in onset, signs and symptoms may be mistaken for variety of other diseases. The ideal curative treatment is surgical resection of stenosis with end to end anastomosis. Maintenance of airway poses a challenge to the Anesthesiologist.

II. Case Report

A 20 year old male patient, with a history of Organophosphorus poisoning one year back underwent mechanical ventilation for 2 weeks, first with endotracheal tube for 3 days and later on for 12 days with tracheostomy tube, performed at C3 – C4 level. He was then discharged after closure of tracheostomy. Patient was asymptomatic for 1 month, later on he developed dyspnea of gradual onset, initially exacerbated on exertion and supine position, progressed to dyspnea at rest. He now presented to the emergency department with shortness of breath and falling oxygen saturations. As all attempts to intubation failed, emergency tracheostomy was performed at a level lower down near to the sternal notch with the tube partially passing through the stenotic segment. The patient recovered well and reached an SPO₂ of 98% on room air. He left against medical advice and presented with similar respiratory crisis within 2 weeks after a bout of URTI with tracheostomy tube in situ. On examination, RR- 42/min, NYHA Grade IV dyspnoea, Stridor (+), SPO₂ -89% with oxygen supplementation, He was started with nebulisation and antibiotics. His condition gradually improved and dyspnea decreased from NYHA IV to NYHA III. He was shifted to RICU for observation. Computed tomography revealed Retrosternal Tracheal Stenosis of 2cm in length, situated **4cm** above the carina. At this stage, surgery was planned and a preanesthetic check was advised. Patient is a known asthmatic for which he was on irregular treatment. He had no other significant medical history.

2.1 Laboratory investigations: Surgical profile was normal. Baseline ABG - pH- 7.42 ; PCO₂ -38.8mmHg ; HCO₃⁻ - 24.4 ; PO₂ -75.0mmHg and BE- 0.4 .

On examination, patient was conscious, coherent, comfortably sitting, respiratory rate of 20/min, portex tracheostomy tube of ID 6mm in situ, bilateral equal air entry, no adventitious sounds and an SpO₂ of 98% on room air. Examination of other systems revealed no abnormalities.

Airway assessment was normal. As a rough guide to estimate the endotracheal tube to be placed, suction catheters of different sizes were passed through the tracheostomy. A **16F** suction catheter could be passed without resistance and a rough estimate of 4.5 to 5mm was assessed to pass through the stenotic segment.

Patient was shifted to OT, connected to standard monitoring. Baseline vitals were BP - 110/80, Pulse rate - 86/min, SPO₂ -95%. He was put on oxygen inhalation with Mapleson's F circuit at 4L of O₂ flow. Inj Ketamine 50mg and Inj Glycopyrolate 0.2mg were given intravenously. Patient's premedication was adequate. Left radial artery and right subclavian vein were cannulated for IBP & CVP monitoring respectively.

Trachea was anesthetized with 10% lignocaine spray through tracheostomy tube. After adequate suctioning, the tracheostomy tube is withdrawn and a 5.0 mm ID Portex cuffed endotracheal tube was passed through the stenotic segment. Placement confirmed with EtCO₂ and auscultation. He was then induced with Inj Propofol (100mg). Neuromuscular block was achieved with Inj Vecuronium bromide (5mg). Baseline ABG was sent, results being within normal limits. He was maintained on IPPV with 6 lit of O₂; 1% sevoflurane; Inj Vecuronium bromide and continuous infusion of ketamine at 15mcg/kg/hr. Intraoperatively, after the stenotic segment was dissected, under strict aseptic precautions, a 7.0 mm size cuffed reinforced endotracheal tube was passed through the lower cut segment of the trachea and ventilation was maintained (The ET tube of 5.0 mm ID passed through the tracheostomy simultaneously being extubated).

After the cut ends of trachea were partially approximated with sutures, a 7.0mm size cuffed reinforced endotracheal tube was passed orally, the previous tube passed through the distal segment of trachea simultaneously being withdrawn. Tube placement was confirmed. SPO₂ was 100% throughout the procedure. At the end of the surgery, a cast was applied to maintain neck flexion. Patient was then reversed with Inj Neostigmine (2.5mg), and Inj Glycopyrrolate (0.5mg). He was conscious, coherent with adequate tidal volume and normal respiratory rate but was not extubated to provide spillage to the trachea. He was shifted to ICU with T-piece and monitored overnight. Post op vitals being stable. He was carefully and slowly extubated on the 1st post op day having all the Resuscitation equipment ready which was uneventful. Flexible fiberoptic laryngoscopy was performed to check for vocal cord movements which were normal. The cast was removed on the 5th POD. Rest of the post-operative period was uneventful and he was discharged 2 weeks later.

III. Conclusion

Switching of tracheal tubes during the procedure with patient on IPPV provides a better alternative than CPB (can prevent complications pertaining to CPB) and this can be achieved with complete preoperative assessment, meticulous planning, speedy action and good coordination between anesthesia and surgical teams.

References

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